

DE GRUYTER

# FASHION AND ENVIRONMENTAL SUSTAINABILITY

ENTREPRENEURSHIP, INNOVATION AND TECHNOLOGY

*Edited by Leo-Paul Dana, Rosy Boardman, Aidin Salamzadeh, Vijay Pereira and Michelle Brandstrup*

BUSINESS & ECONOMICS

DE  
|  
G

## **Fashion and Environmental Sustainability**



# **Fashion and Environmental Sustainability**

---

Entrepreneurship, Innovation and Technology

Edited by

Léo-Paul Dana, Rosy Boardman, Aidin Salamzadeh,  
Vijay Pereira and Michelle Brandstrup

**DE GRUYTER**

Free access to the e-book version of this publication was made possible by the 21 institutions that supported the open access transformation Purchase to Open Pilot in collaboration with Jisc.

ISBN 978-3-11-079520-2  
e-ISBN (PDF) 978-3-11-079543-1  
e-ISBN (EPUB) 978-3-11-079551-6  
DOI <https://doi.org/10.1515/9783110795431>



This work is licensed under the Creative Commons Attribution 4.0 International License. For details go to <https://creativecommons.org/licenses/by/4.0/>.

Creative Commons license terms for re-use do not apply to any content (such as graphs, figures, photos, excerpts, etc.) not original to the Open Access publication and further permission may be required from the rights holder. The obligation to research and clear permission lies solely with the party re-using the material.

**Library of Congress Control Number: 2023937360**

**Bibliographic information published by the Deutsche Nationalbibliothek**

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available on the internet at <http://dnb.dnb.de>.

© 2024 the author(s), editing © 2024 Léo-Paul Dana, Rosy Boardman, Aidin Salamzadeh, Vijay Pereira and Michelle Brandstrup, published by Walter de Gruyter GmbH, Berlin/Boston.  
The book is published open access at [www.degruyter.com](http://www.degruyter.com).

Cover image: Photography of Clemy Dana in Florence, 1951. Photography taken by Alberto di Leone d'Ana.

Typesetting: Integra Software Services Pvt. Ltd.

Printing and binding: CPI books GmbH, Leck

[www.degruyter.com](http://www.degruyter.com)

---

This book is dedicated to Ellen Margrethe Thorsen (1930–2023) who throughout her life valued products of quality and taught her children and grandchildren not to waste.

Her way of thinking, taking the best of old traditions and adapting to the present, exemplified a good life while respecting the environment.





# Foreword

When I began my journey in the garment industry during my studies, I encountered a profound revelation. My employer was importing T-shirts made in Pakistan to the United States, at an unbelievably low cost of USD 1.80 per dozen, including transportation to New York. To put it into perspective, this meant that the cost of a single T-shirt amounted to a mere 15 cents, encompassing raw materials, processing chemicals, labor costs, factory rent, overhead, amortization of machines and equipment, transportation from the factory to New York harbor, and even the profit for the Pakistani factory owner.

Even in a time when ethical standards differed greatly from today, such low costs raised challenging ethical, social, and environmental questions. Looking back, I now realize that my lack of conceptual background and knowledge hindered me from addressing these issues more effectively. I often wish I had possessed a book like “Fashion and Environmental Sustainability: Entrepreneurship, Innovation & Technology” during those days. This realization exemplifies just how much the garment industry has evolved over the past 40 years, as people carried out their work without giving due consideration to social or environmental implications.

Times have changed, and the garment industry has undergone a remarkable transformation, propelled by the extensive use of technology. Today, anyone involved in the industry must possess a profound understanding of all the parameters that affect it, including sustainability, social dynamics, cultural influences, ethical practices, and environmental considerations.

New business models and digital technologies have also revolutionized the garment industry, leaving a lasting impact. The integration of robotics with digital tools like computer-aided design (CAD) and computer-aided manufacturing (CAM) has streamlined production processes, making them faster and more efficient. Furthermore, the utilization of e-commerce platforms, digital marketing techniques, artificial intelligence, and social media has facilitated global market access and enhanced consumer connections for brands and manufacturers alike.

Overall, the garment economy remains in a constant state of evolution, influenced by changes in production and distribution methods, shifting consumer preferences, and advancing technology. Those companies that can adapt and leverage these changes will find themselves well-positioned for success in the future.

“Fashion and Environmental Sustainability: Entrepreneurship, Innovation & Technology” offers a comprehensive overview of the ever-evolving world of the garment industry. This book is a valuable resource for students, professionals, and individuals with a general interest in the subject. The authors have masterfully explained the intricacies of the industry in an informative and accessible manner. Their inclusion of prac-



tical examples and case studies brings the concepts to life, providing invaluable insights for those entering or already working in the industry.

This essential guide delves into the industry's history and its transformation over time. It provides a clear understanding of various business models and digital technologies that currently shape the industry. Combining academic knowledge with practical expertise, this book is a must-read for anyone seeking a deeper understanding of the complex and dynamic nature of the garment industry.

Raphael H. Cohen  
University of Geneva

# Contents

**Foreword — VII**

**About the Editors — XIII**

**Editorial Board — XV**

## Part I: **Introductory Chapters**

Michelle Brandstrup and Léo-Paul Dana

**1 Fashion and Environmental Sustainability — 3**

Allan Degen and Léo-Paul Dana

**2 Wool: A Conventional Material for Fashion — 11**

Chanuka Swarnathilake

**3 Leather: A Conventional Material for Fashion — 21**

Priyanka Sharma, Sandeep Singh and Sonika Singh

**4 Cotton: A Conventional Material for Fashion — 29**

## Part II: **Investigating the Industry: International Perspectives**

Noah Mindel, Saffron Tellier and Léo-Paul Dana

**5 Lubertex Pivot in Canada — 43**

Ebere Ume Kalu, Agatha N. Okeke, Rosemary Ifeoma Nwokike  
and Emmanuel Chinedu Eleje

**6 Evolution, Innovation and Sustainable Entrepreneurship in Africa's  
Fashion Industry — 51**

Nilam Adhyapak and Bhagirathi Panda

**7 Impact of COVID-19 on Apparel Enterprises in India: An Analysis of  
Sustainability — 69**

Manish Mishra, Rohit Kushwaha and Nimit Gupta

**8 Investigating Social and Environmental Impacts of the Indian Clothing  
Sector — 89**

Jan Vang and Léo-Paul Dana

- 9 Sustainability Themes in the Garment Industry: Insights from a Workshop in Bangladesh — 97**

Birhanu Shanko Dura and Berihun Bizuneh

- 10 The Impact of Foreign Direct Investment on Sustainable Economic Growth: A Focus on the Textile and Apparel Industries in Ethiopia — 103**

Anne-Kirstine Dyrvig

- 11 Sustainability in Contemporary Kink Fashion — 127**

### **Part III: Innovations in Design, Supply Chain and Marketing**

Eric Braune and Anne-Laure Boncori

- 12 Production Innovation for Sustainability in the Fashion Industry — 133**

Courtney Chrimes and Hilde Heim

- 13 The Fashion Product Passport: In Search of the “Killer App” — 149**

Nadia Weber and Elaine L. Ritch

- 14 Fast Fashion: Exploring the Impact of Impulse Buying among Scottish Generation-Z Consumers — 169**

Ruth Marciniak

- 15 Sustainable Assessment and Fashion Brand Ratings — 185**

### **Part VI: Circular Initiatives as Sustainable Alternatives for End of Life**

Aidin Salamzadeh, Morteza Hadizadeh, Yasaman Yazdanpanah  
and Agu Godswill Agu

- 16 Marketing Innovation Drivers: Toward Reusing and Recycling — 203**

Abram Kok and Léo-Paul Dana

- 17 Kringloopwinkel Steenwijk — 223**

## Part V: Toward the Future with Sustainable Fashion Business Models

Hafiz Wasim Akram and Léo-Paul Dana

**18 Unconventional Materials for Fashion — 231**

Aidin Salamzadeh, Jumana Nalakam Paramba, Michelle Brandstrup  
and Léo-Paul Dana

**19 A Sustainable Business Model for the Fashion Sector — 237**

Mizanur Rahman, Nafizur Rahman, Aidin Salamzadeh and Léo-Paul Dana

**20 Strategic Drivers of Corporate Environmental Sustainability — 251**

Fanny Adams Quagrainie

**21 An Environmental Sustainability Model for Ghanaian Clothing: A Fashion  
Cycle Approach — 261**

Md. Saidur Rahaman, Nishath Anjum, Iqbal Hossain Moral  
and Léo-Paul Dana

**22 Business Models in Bangladesh: Problems and Prospects — 279**

Hela Ben Miled-Cherif, Florent Pratlong and Léo-Paul Dana

**23 Entrepreneurial Strategies Towards Responsible Brand Identity:  
A Comparative Study of Sneaker Companies — 293**

Pramit Banerjee and Naman Sharma

**24 Human Resources and Thinking about Sustainability — 313**

Vijay Pereira, Daicy Vaz and Arup Varma

**25 Workers' Rights — 327**

**Index — 343**



## About the Editors

**Léo-Paul Dana** is Professor at Dalhousie University and at ICD Business School, Paris, France. He is currently Visiting Professor at LUT School of Business and Management, Lappeenranta University of Technology, Finland and associated with the Chaire ETI at Sorbonne Business School. A graduate of McGill University and HEC-Montreal, he has served as Marie Curie Fellow at Princeton University and Visiting Professor at INSEAD and at Kingston University.

**Rosy Boardman** is a Senior Lecturer in Fashion Business at the University of Manchester. Rosy's research primarily focuses on digital strategy and innovation in the fashion industry, utilising eye tracking and qualitative research methods. Her interest is in exploring fashion marketing's current and future developments in relation to the customer experience, as well as how technology can be used to help solve issues relating to environmental and social sustainability for fashion brands. Rosy has published several peer-reviewed papers in world-leading journals as well as two books, and has been invited as a keynote speaker at various universities / conferences based on her eye tracking & digital marketing expertise.

**Aidin Salamzadeh** is an assistant professor at the University of Tehran. His interests are startups, new venture creation, and entrepreneurship. Aidin serves as an associate editor for *the Journal of Enterprising Communities*; *Revista de Gestão*; *Innovation & Management Review* (Emerald), *Entrepreneurial Business and Economics Review*, *Journal of Women's Entrepreneurship and Education* as well as *The Bottom Line* (Emerald). Besides, he is a reviewer in numerous distinguished international journals. Aidin is a member of the European SPES Forum (Belgium), the Asian Academy of Management (Malaysia), Ondokuz Mayıs University (Turkey), and the Institute of Economic Sciences (Serbia). He co-founded the Innovation and Entrepreneurship Research Lab (London).

**Vijay Pereira** is Full Professor of International and Strategic Human Capital Management at NEOMA Business School. He was Associate Dean (Research) at the Australian University of Wollongong (Dubai). Professor Pereira is the Associate Editor (Strategic Management and Organizational Behavior) for the *Journal of Business Research*, the Global Real Impact Editor for the *Journal of Knowledge Management* and the editorial and advisory board for the journals *Production and Operations Management* and *Journal of Management Studies* (both listed in *Financial Times* ranking). He has a record of attracting funding and has published widely, in over 100 outlets, 20 special issues and 10 books, including in leading international journals such as the *Human Resource Management* (*Financial Times* ranked), *Academy of Management Perspectives*, *Academy of Management Discoveries*, and *Journal of Business Ethics*.

**Michelle Brandstrup** studied at Kingston University and obtained her post-graduate degree at the Designskolen Kolding. With a diploma in tailoring, and another in fashion design, she has been employed in Berlin, Paris and at Christianshavn, in Copenhagen. She is currently a fashion designer at Kabooki, where she has been heading the launch of a new brand. She was nominated for the Scandinavian Designers Nest award.



# Editorial Board

Wilfred Isak **April**, Goethe Institut Namibia  
Helene **Balslev Clausen**, Aalborg University, Denmark  
Eric **Braune**, INSEEC, France  
Laura **Broccardo**, University of Turin, Italy  
Davide **Calandra**, University of Turin, Italy  
Andrea **Caputo**, University of Trento, Italy & University of Lincoln, UK  
Jack **Coffin**, University of Manchester, UK  
A. Allan **Degen**, Ben-Gurion University of the Negev, Israel  
Janine **Dixon**, University of Manchester, UK  
Stephen **Doyle**, University of Manchester, UK  
Nikolaj **Dragomirov**, University of National and World Economy, Bulgaria  
Charlene **Gallery**, University of Manchester, UK  
Bella **Galperin**, The University of Tampa, USA  
Elisa **Giacosa**, Università degli Studi di Torino, Italy  
Claudia E. **Henninger**, University of Manchester, UK,  
Hiro **Hirogaki**, Kyushu University, Japan  
Mitsunori **Hirogaki**, Kyushu University, Japan  
Albert **James**, Dalhousie University, Canada  
Loris **Landriani**, Uniparthenope University of Naples, Italy  
Aurelie **Le Normand**, University of Manchester, UK  
Julie **Mallet**, Kingston University, UK  
Caroline **Merdinger-Rumpler**, University of Strasbourg, France  
Guido **Migliaccio**, University of Sannio, Italy  
Ramo **Palalic**, Sultan Qaboos University, Oman  
Florent **Pratlong**, La Sorbonne, France  
Veland **Ramadani**, South-East European University, North Macedonia  
Tahir **Rashid**, University of Salford, UK  
Neil **Robinson**, Edge Hill University, UK  
Daniella **Ryding**, University of Manchester, UK  
Daniele **Sasso**, Università Campus Bio-Medico di Roma, Italy  
Jean-Francois **Sattin**, La Sorbonne, France  
Amon **Simba**, Nottingham Business School, UK  
Annarita **Sorrentino**, Uniparthenope University of Naples, Italy  
Rachel Parker **Strak**, University of Manchester, UK  
Ciro **Troise**, University of Turin, Italy  
Iliaria **Tutore**, Uniparthenope University of Naples, Italy  
Jan **Vang Brambini-Pedersen**, University of Southern Denmark, Odense, Denmark  
Delia **Vazquez**, University of Manchester, UK  
Claudio **Vignali**, University VITEZ, Bosnia  
Sanja **Vlahovic**, Università degli Studi Internazionali di Roma, Italy  
Yao **Yao**, University of Manchester, UK  
Ni **Zeng**, University of Manchester, UK







Part I: **Introductory Chapters**



Michelle Brandstrup and Léo-Paul Dana

# 1 Fashion and Environmental Sustainability

**Abstract:** This chapter provides a short overview of the history of the textile and garment industry. It concisely traces moments of the evolution of relevant technology and briefly discusses materials.

**Keywords:** environmental sustainability, fashion, history, materials, technology

As explained by Strand, “A textile is not simply a binary system of spun, twisted, or spliced fibres, but first and foremost a result of complex interactions between resources, technology, and society (2010, p. 150).” It is, indeed, essential to not ignore interaction with society. Sustainability includes fulfilling the needs of society today, without compromising the life of society in the future – while ensuring a socially acceptable balance between economic growth, the environment and the well-being of society.

In former times, Indigenous societies wore clothes that had little if any negative impacts on the environment. In 1742, a new era began as cotton mills were established in England; by 1773, the industrial revolution had begun and all-cotton textiles were being produced in factories. By the mid-nineteenth century, practical sewing machines were being manufactured for small-scale garment-makers. In the United States, Singer was issued a patent in 1851 and became a prominent manufacturer of sewing machines (see Figure 1.1). In Sweden, Husqvarna began producing sewing machines in 1872 (see Figure 1.2).

With the industrial revolution, automation (see Figures 1.3 and 1.4) and the assembly line were introduced to the garment industry, with opportunities for employment but also social changes (see Figure 1.5); volume and profits became priorities while the environment was neglected. In today’s society, sustainability<sup>1</sup> is becoming increasingly important after many decades of carelessness.

During the 1970s, the American textile producer Malden Mills<sup>2</sup> experimented with polyester. In 1981, the company introduced fleece to the sportswear market. This innovation – a vegan alternative to wool – was very successful, and the technology is improving; today, plastic bottles can be recycled into fleece yarn as fine as cashmere. A drawback, however, is that fleece is made from non-renewable resources; another is that fleece needs much chemical coating to make it windproof or water resistant.

---

1 In 1987, the *Brundtland Report* – named for Gro Harlem Brundtland – developed guiding principles for sustainable development.

2 This firm is now known as Polartec.

---

**Michelle Brandstrup**, Denmark

**Léo-Paul Dana**, Dalhousie University, ICD Business School Paris, and Lappeenranta University of Technology, e-mail: toledo@uma.es



Figure 1.1: Classic Singer sewing machine (photo: Léo-Paul Dana).



Figure 1.2: Husqvarna sewing machine (photo: Léo-Paul Dana).



**Figure 1.3:** Carding machine to clean and disentangle wool to produce a continuous web for subsequent processing (photo Léo-Paul Dana).



**Figure 1.4:** Wool spinner (photo: Léo-Paul Dana).

Each time they are washed, synthetic fleece jackets release as many as 250,000 synthetic fibres, some of which can end up in the oceans where their size allows them to be ingested by fish, eventually going up the food chain and reaching humans. Fleece has a short life span, needing to be frequently replaced. Like other synthetic fibres,



**Figure 1.5:** Dormitory built for employees of a textile factory at Gutle, Austria (photo: Léo-Paul Dana).

fleece does not biodegrade; instead, it binds with harmful chemical pollutants – such as pesticides – found in wastewater.

In contrast, sustainable materials include wool (Figure 1.6), worn since approximately 3000 BC or possibly earlier; organic cotton, cultivated since 3000 BC (Figure 1.7) and later central to the garment industry, both large-scale (Figure 1.8) and small-scale (Figure 1.9); and leather (Figure 1.10), used by man since at least 1300 BC.

Wool, being an animal fibre, consists mostly of protein, while cotton consists mostly of cellulose. Although wool and leather are environmentally sustainable, we acknowledge the concern of vegans, members of animal-rights groups and other people who have ethical concerns about the quality of life of livestock involved.

In addition to ethical concerns, we also recognise religious perspectives. The Bible introduced the concept of not wearing a garment made of blended materials: “Thou shalt not let thy cattle gender with a diverse kind; thou shalt not sow thy field with two kinds of seed; neither shall there come upon thee a garment of two kinds of stuff mingled together” (Leviticus 19:19). Deuteronomy recapitulates, “Thou shalt not wear a mingled stuff, wool and linen together” (Deuteronomy 22:11). The next three chapters discuss wool (Chapter 2), cotton (Chapter 3) and leather (Chapter 4); this will conclude Section I of the book.

In Section II, we have international perspectives from the fashion industry. Readers gain insights from Bangladesh, Ethiopia, India and beyond. Section III of the book



**Figure 1.6:** Shaving the wool off of a sheep is called shearing (photo: Léo-Paul Dana).

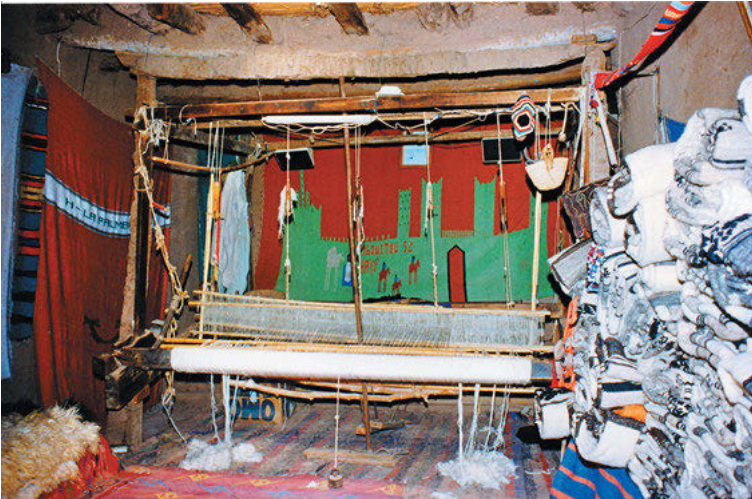


**Figure 1.7:** Cotton plant (photo: Léo-Paul Dana).





**Figure 1.8:** Cotton used in large-scale manufacturing (photo: Léo-Paul Dana).



**Figure 1.9:** Artisanal loom (photo: Léo-Paul Dana).



**Figure 1.10:** Rababa made of goat leather (photo: Allan Degen).

focuses on innovations in the industry, followed by Section IV, the chapters of which examine circular initiatives as sustainable alternatives for end of life. Section V concludes the book looking toward a sustainable future with sustainable business models for fashion.

## References

Strand, E.A., Frei, K.M., Gleba, M., Mannering, U., Nosch, M.-L., & Skals, I. (2010). Old Textiles – New Possibilities. *European Journal of Archaeology*, 13(2), 149–173.



Allan Degen and Léo-Paul Dana

## 2 Wool: A Conventional Material for Fashion

**Abstract:** This chapter introduces the reader to wool, woven garments which have been worn by humans for about 5,000 years. Wool is among conventional materials used in fashion today.

**Keywords:** conventional materials, fashion, sustainability, wool

Wool is a fibre forming a protective coat on animals such as camels, goats,<sup>1</sup> llamas, rabbits, yaks (Degen et al., 2007) and sheep.<sup>2</sup> Its composition is largely keratin, a fibrous protein that is more resistant to damage than cotton and other plant fibres that are composed mainly of cellulose.

Sheep were domesticated over 9,000 years ago, and humans have worn woven woollen garments since approximately 3000 BC. A woollen textile from approximately 1500 BC was found preserved in a bog in Denmark,<sup>3</sup> and archaeological evidence revealed that Karakul sheep have been raised continuously in the Bukhara region, Uzbekistan, since 1400 BC. Romans brought sheep to the British Isles in 55 BC. Being poor, medieval peasants often wore rough wool, woven by women; individuals seldom had more than one set of clothing.

Over a billion sheep produce more than a billion kilograms of wool each year, but this is only about 1% of the fibre used in garments. Today, China, Australia,<sup>4</sup> New Zealand, Turkey, United Kingdom, Morocco, Iran, Russia, South Africa,<sup>5</sup> India,<sup>6</sup> Argentina, Kazakhstan, the United States and Uruguay are among the leading producers of wool.

The quality of wool is based on the diameter, the crimp, the colour and the length of the fibre. The diameter ranges between ultrafine of less than 15.5 microns and coarse of greater than 45 microns. Wool with a small fibre diameter is soft and deli-

---

<sup>1</sup> While mohair comes from the Angora goat, cashmere wool comes from Kashmir and pashmina goats. For a discussion of cashmere quality see: Ansari-Renani et al. (2012).

<sup>2</sup> Angora wool is made from the fur of the Angora rabbit.

<sup>3</sup> See also Hald (1980).

<sup>4</sup> Today Australia produces 80% of the Merino wool used in luxury fashion and suiting around the world.

<sup>5</sup> For a thorough discussion of wool in South Africa, see Greeff (2014).

<sup>6</sup> Indian wool is largely coarse used in the production of rugs.

---

**Allan Degen**, Ben Gurion University

**Léo-Paul Dana**, Dalhousie University, ICD Business School Paris and Lappeenranta University of Technology



**Figure 2.1:** Nepalese woman in Lower Mustang weaving a rug from sheep wool (photo: Allan Degen).

cate and is used for such items as sweaters and shawls, whereas wool with a large fibre diameter is strong and durable and is used for such items as rugs (Figure 2.1), tapestries (Figure 2.2), overcoats and tents. The crimp is the natural wave in the fibre and can range from approximately one per cm in coarse wool to 12 per cm in fine wool – the greater the number of crimps, the softer the wool. The length of the fibre ranges between 4 cm in fine wool to 36 cm in coarse wool. Wool is usually white or off-white but can be darker, in particular the coarse wool.

Generally, animals need not be killed for the wool. Most wool is obtained from shearing live animals, but, in addition, fine soft wool is combed out from the undercoat in some animals. This is the case for Kashmir goats producing cashmere wool, with a fibre diameter of less than 19 microns, and for yaks, producing down wool with a fibre diameter of 18 microns. In addition to the fine undercoat, Kashmir goats have a longer thicker layer (70–90 microns) (Kerven and Toigonbaev, undated), whereas yaks have developed a thick, long outer layer of coarse wool of 70–90 microns and a middle layer of finer wool of 20–50 microns (Jing et al., 2022) (Figures 2.3 and 2.4). These outer layers are shorn and used for carpets, tents, outerwear and rope.

The wool of dromedary camels sheds or is simply pulled off by hand in the summer. Very little amount of wool is produced by these camels, and some is woven into tents (Degen et al., 2019). Bactrian camels produce a much heavier wool layer; the



**Figure 2.2:** Woman in Cape Town, South Africa, weaving a tapestry from sheep wool (photo: Allan Degen).



**Figure 2.3:** Tibetan woman drying coarse yak wool (photo: Allan Degen).



**Figure 2.4:** Nepalese man in Lower Mustang spinning yak wool (photo: Allan Degen).

calves produce fine wool, which becomes coarser with age, and female camels produce finer wool than male camels (Schmidt et al., undated). Karakul wool (also known as Persian wool) is obtained by killing unborn fetuses or lambs up to three days of age (Degen, 2013). The newborn lambs possess a tightly bound, curly, soft wool that is often black in colour. The colour fades and these desired traits are lessened after three days. The wool is used for hats and high fashion clothing. Older Karakul sheep produce coarse wool that is shorn for carpets and outer garments.

Over time, wool quality has been improved through selective breeding; Argentina, Uruguay and Uzbekistan are examples of countries with highly developed sheep genetic improvement programmes. There are hundreds of breeds of sheep. While Romney and Awassi produce a coarse wool ideal for carpets, other breeds, including Merino and Rambouillet,<sup>7</sup> produce fine wool ideal for apparel. Merino sheep were exclusive to Spain until 1789, when Charles IV presented six Merino sheep to the Republic of the Seven United Netherlands – the predecessor of today's Dutch monarchy. After the Dutch arrived at the Cape of Good Hope in the seventeenth century, this breed spread to the Dutch United East India Company colony, now a part of South

---

<sup>7</sup> Rambouillet wool is similar to Merino, with a longer staple and less sheen.

Africa. Here, entrepreneur John Macarthur bought some, and transported them to Australia where they flourished. Sheep arrived in the Canadian prairies during the early nineteenth century. In Saskatchewan, some sheep farms eventually became large cattle ranches. During the US Civil War, Union uniforms were made of wool, despite their use in warm weather. In the early twentieth century, German colonists brought over karakul sheep to Namibia, where they were raised in large numbers.

Wool is very highly absorbent, and when it absorbs moisture, thus increasing its weight, it becomes warmer to the wearer. Since moisture absorption and release are gradual, wool does not cool the wearer by drying quickly. Other advantages of wool include the fact that it ignites at a higher temperature than cotton and some other fibers. Also, it has a lower rate of heat release than cotton and it forms a char that is self-extinguishing. Wool is, therefore, ideal for garments made for firefighters and soldiers.

Wool is natural, renewable and biodegradable, and therefore considered a sustainable material for making garments. The animals providing the wool are part of the carbon cycle, consuming plants and converting carbon to wool. By weight, wool is comprised of 50% carbon. Compared to other textile fibre products, woollen garments have long lifespans and can be worn longer than most other clothing. Also, wool products tend to be washed infrequently and at lower temperatures than other materials; this has less environmental impact. Although wool has a market share of approximately 1% of textile fibres, it represents 5% of recycled fibres. That said, attention should be made to animal welfare, as wool is sourced from sheep.

The International Wool Textile Organisation is committed to wool textile education. The organisation supports degree programmes that link with research and encourages collaboration between academia and industry by encouraging cross-disciplinary approaches. Various universities prepare people for careers in wool. These include the University of New England, the only university in Australia to offer a comprehensive range of sheep and wool units developed and funded by industry. Courses were developed by the Australian Wool Education Trust to encourage graduates into a career in the Australian sheep and wool industry. At Queensland University of Technology, the Creative Industries Faculty and the School of Design offer teaching and research in design and sustainability, while science degrees provide skills relevant to profitable and sustainable textile industries.

In France, HEC Paris offers a unique “Luxury Certificate” programme. While luxury wool products are popular in France, many are exported. In Germany, Hochschule Niederrhein University of Applied Sciences – based in Mönchengladbach – is among the leading faculties of clothing technology in Europe, with teaching and research covering topics from fibre to final textile products. In Kazakstan, Kazakh Institute of Karakul Sheep Breeding, Academy of Agricultural Sciences in Shymkent, specialises in the breeding of Karakul sheep and in grading the quality and colour of wool. In Wellington, New Zealand, Massey University offers undergraduate and PhD degrees in Textile Design. An objective here is to support sustainable economic growth.

In addition, a large number of women weaving co-operatives have been established, many of them specialising in wool. These co-operatives provide income for the



women and preserve the traditional weaving styles of the area. Here, we mention a few of these co-operatives. Ccaccacollo Women's Weaving Co-op, located in Sacred Valley, near Cusco, Peru, is owned by 46 Quechua speaking women whose aim "is to help bring back the weaving traditions that had been lost over the previous generations as there wasn't a way to earn a significant income." The co-op specialises in alpaca and llama wool (Figures 2.5 and 2.6) (Planeterra, n.d.).



**Figure 2.5:** Peruvian women spinning alpaca wool (photo: Allan Degen).



**Figure 2.6:** Peruvian women weaving alpaca wool (photo: Allan Degen).

Lakiya Negev Bedouin Weaving Cooperative, located in Lakiya, Israel, was established by two Bedouin women “to preserve traditional weaving and provide employment for Bedouin women. Today, there are 30 to 60 Bedouin women employed at the cooperative” (Degen & El-Meccawi, 2022). All weaving is on a ground loom, and only coarse Awassi sheep wool is used to produce carpets and bags (Figures 2.7–2.11). Lectures are presented on all stages of the process, including shearing the sheep, preparing the wool, weaving and finishing the product (Degen & El-Meccawi, 2022).



**Figure 2.7:** Bedouin girl in the Negev Desert shearing an Awassi sheep (photo: Allan Degen).

Cross Roads, a Global Textile Marketplace, represents cooperatives, artisans, and companies. Adventure Yarns is an international development project based in Tajikistan and Kyrgyzstan that started in 2009, managed by ICARDA and funded by IFAD: “The objective is to assist Tajik farmers to produce quality Angora and Cashgora goats and work with spinners and knitters to produce luxury mohair and Cashgora yarns and knitted products for export. The export of yarns and handicrafts is expected to improve livelihoods of farmers and rural women while offering customers quality, fairly traded products made from natural fibers” (Clothroads, n.d.).



**Figure 2.8:** A Bedouin woman in the Negev Desert spinning Awassi sheep wool. The tent in the background is composed of Awassi sheep wool, some camel wool and goat hair (photo: Allan Degen).



**Figure 2.9:** Bedouin woman in the Negev Desert weaving a tent composed of Awassi sheep wool, some camel wool and goat hair (photo: Allan Degen).



**Figure 2.10:** Beduin woman in the Negev Desert finishing a pillow cover woven from Awassi sheep (photo: Allan Degen).



**Figure 2.11:** Examples of Awassi wool at the Lakiya Negev Bedouin Weaving Cooperative – the wool is dyed in 27 colours (photo: Allan Degen).

## References

- Ansari-Renani, H.R., Mueller, J.P., Rischkowsky, B., Seyed Momen, S.M., Alipour, O., Ehsani, M., & Moradi, S. (2012). Cashmere quality of Raeini goats kept by nomads in Iran. *Small Ruminant Research*, 104, 10–16.
- Clothroads. (n.d.). *Cooperative-companies*. <http://www.clothroads.com/cooperative-companies/>
- Degen, A.A. (2013). Karakul sheep production in Kazakhstan: an efficient collective enterprise under the state farm (*sovkhov*) system and its collapse with the break-up of the Soviet Union. *World Review of Entrepreneurship, Management and Sustainable Development*, 9(1), 1–9. <https://doi.org/10.1504/WREMSD.2013.050932>
- Degen, A.A., El-Meccawi, S., & Kam, M. (2019). The changing role of camels among the Bedouin of the Negev. *Human Ecology*, 47(2), 193–204. <https://doi.org/10.1007/s10745-019-0062-y>
- Degen, A.A., & El-Meccawi, S. (2022). Ground loom weaving among Negev Bedouin women. In L-P. Dana, V. Ramadani, R. Palalic & A. Salamzadeh (Eds.), *Artisan and handicraft entrepreneurs: Past, present, and future* (pp. 3–32). Springer Nature.
- Degen, A.A., Kam, M., Pandey, S.B., Upreti, C.R., Pandey, S., and Regmi, P. (2007). Transhumant pastoralism in yak herding in the Lower Mustang district of Nepal. *Nomadic Peoples*, 11(2), 57–85. <https://doi:10.3167/np.2007.110204>
- Greeff, R. (Ed.) (2014). *Wool in South Africa*. Cape Wools.
- Hald, M. (1980). *Ancient Danish textiles from bogs and burials*. National Museum of Denmark.
- Jing, X., Ding, L., Zhou, J., Huang, X., Degen, A.A., & Long, R. (2022). The adaptive strategies of yaks to live in the Asian highlands. *Animal Nutrition*, 9, 249–258. <https://doi.org/10.1016/j.aninu.2022.02.002>
- Kerven, C., & Toigonbaev, S. (n.d.). *Cashmere from the Pamirs: Helping mountain farmers in Kyrgyzstan, Part 1 Wool and cashmere – FAO*. <https://vdocument.in/part-1-wool-and-cashmere-fao.html?page=16>
- Planeterra. (n.d). *Ccaccaccollo Women’s Weaving Co-op*. <https://planeterra.org/ccaccaccollo-womens-weaving-co-op/>
- Schmidt, S., Chimiddorj, A., Shand, N., & Officer, D. (n.d.). *Spinning a value chain from the Gobi: Camel wool in Mongolia, Part 1 Wool and cashmere – FAO*. <https://vdocument.in/part-1-wool-and-cashmere-fao.html?page=27>

Chanuka Swarnathilake

### 3 Leather: A Conventional Material for Fashion

**Abstract:** This chapter discusses leather, one of several conventional materials long worn by people. Although leather is made from a dead animal, no animal needs to be killed solely for leather. Most leather is a by-product of the meat industry. Today, the fashion industry is the main driver of the leather trade.

**Keywords:** conventional materials, fashion, leather sustainability

Natural leather is made from animal skin, mainly from cow hide (Figure 3.1), but can also be made from other species, including buffalos, goats (Figure 3.2) and sheep (Figure 3.3). Man-made leather is also produced; however, this chapter focuses only on natural leather.



**Figure 3.1:** Cow leather case to hold injera, Ethiopian flat bread (photo: Allan Degen).

---

Chanuka Swarnathilake, Graduate Research Assistant



**Figure 3.2:** Goat leather shirt for Ethiopian girl (photo: Allan Degen).

In the past, humans hunted animals for food and later realised that the skins could be used for clothing (Figure 3.4). The use of animal hides to make clothing goes back to ancient times, with the use of leather first recorded in history with the Egyptians in 1300 BC. Other peoples in Asia, Europe and North America also used leather for clothing in the same era to protect the body and keep warm. Later, around 1200 BC, the Greeks began to use leather for decorative clothing and armour, which was expanded during the Roman Empire (MAHI Leather, n.d.).

In the modern world, leather has been used for making military materials including belts, boots, coats, shoes and armor tools. It was introduced as a fashion item during the 1960s and the influence of actors in the film industry helped leather to become a popular item in the fashion industry. Singers and models contributed to the popularity of leather clothing, including jackets and trousers. With time, leather clothing became attractive among more people (MAHI Leather, n.d.).

Cowhides are by-products of the food industry. They are sent to a tannery<sup>1</sup> (see Figure 3.5) and later converted into fashion items including shoes and bags. Leather made from sheepskin is used to make winter clothes, for example, jackets, and gloves that feel soft. Leather products made from pig skin are also soft, durable and afford-

---

<sup>1</sup> A tannery is a place where skins are processed. Tanning is the process of treating skins and hides of animals to produce leather.



**Figure 3.3:** Sheep leather overcoat with wool lining (photo: Allan Degen).

able. Goat leather has unique qualities including being water-repellant and can easily be air-dried. Leather products made of other animal skins, for example, alligators, cats, dogs, fish, horses, kangaroos, seals and snakes, are durable and can last for more than 50 years (Steel Horse Leather, 2020).

From the sustainability perspective, leather and leather by-products can be recycled (Smit and Zoon, n.d.). Leather pieces can be reused, for example as boxing punch bags, or they can be combined with other materials to make composite products like leatherboard (Leather Naturally, n.d.).

Leather naturally absorbs and holds moisture from the skin until it evaporates. Another advantage of leather products is that they can be dry cleaned (Leather Naturally, n.d.). Compared to synthetics, leather is to be considered more eco-friendly (Buckle and hide leather works, n.d.).

Leather Working Group (LWG), a global body, works together with different actors in the leather value chain where leather is used, ensuring responsible leather production. LWG is committed to delivering several United Nations Sustainable Development Goals (SDGs) (Leather Working Group, n.d.).





**Figure 3.4:** Tibetan man wearing leather coat and hat (photo: Allan Degen).

Given the current demand for natural leather in the fashion industry, various universities offer degree programmes related to leather. The University of Northampton offers courses which are unique in the UK and make the graduates highly employable. Students explore the world of fashion using numerous materials including leather and other eco-friendly products. The courses contain marketing elements, which include guest lectures from prominent industry experts. The students also have the opportunity to enter their designs into national and international shows and have travel opportunities to fashion capitals such as Tokyo and New York (University of Northampton, n.d.).

The State University of New York (SUNY) offers a certificate programme to students and individuals pursuing additional knowledge in leather. This programme aims to develop skills to a professional level in leather apparel design for both menswear and womenswear. Students discuss leather science, sourcing, history, and trends, use of decorative techniques, cut garments. They learn various sewing techniques, draw, design, and render leather apparel and accessories, and, moreover, drape, create patterns and spec leather garments and accessories (State University of New York, n.d.).



**Figure 3.5:** Tanning leather (photo: Léo-Paul Dana).

The Leather School of Hermès recruits participants for a diploma program developed to gain all required skills in producing leather products, such as gloves and bags. They use innovative and effective techniques in their training to make sure that every participant obtains all required skills (Hermès, n.d.).

Today, consumers have changed. They have a good understanding in terms of the quality of the products, types of leather products, and texture due to the ease of internet access and especially social media platforms like Facebook and Instagram. Manufacturers of leather products, including fashion brands, should consider the responsibility and sustainability of their products since consumers are more focused on these aspects now.

Critics of the leather industry should also be mentioned, although large-scale leather manufacturers are making efforts for production process to be eco-friendly. Mass customisation, that is the industry catering to the needs of specific customer groups or individuals, is a strategy to reduce the wastage caused (Magzter, n.d.).

Over time, the use of leather products evolved from fulfilling basic and military needs to fashion items including clothing, footwear and bags. With society changing and the influence of celebrities, fashion items made from leather became a more mainstream material. With increasing customer awareness of sustainable products, manufacturers are more conscious of the environment and move forward to deliver what customers are expecting.

International movements, such as the Leather Working Group, are trying to develop sustainable industries and make sure to be responsible for what customers are expecting. Various universities offer degree programmes by incorporating modern technologies that can be beneficial for the sustainability of the industry. According to De Klerk, Kearns and Redwood (2018), brands should notify consumers regarding their good environmental practices and ethical standards.

As animal activists express concern about the killing of animals, the future may see increasing use of leather alternatives. Among these are: Pinatex, made from pineapple leaf fibres; and MuSkin, which is produced from mushrooms.

## References

- Buckle and hide leather works. (n.d.). *Leather is timeless: Benefits of wearing leather*. <https://www.bucklehideleather.com/blogs/news/leather-is-timeless-9-benefits-of-wearing-leather>
- De Klerk, H.M., Kearns, M., & Redwood, M. (2018). Controversial fashion, ethical concerns and environmentally significant behaviour: The case of the leather industry. *International Journal of Retail & Distribution Management*. [http://nectar.northampton.ac.uk/15536/1/de\\_Klerk\\_et\\_al\\_IJRDM\\_2018\\_Contraversial\\_fashion\\_ethical\\_concerns\\_and\\_environmentally\\_significant\\_behaviour\\_The\\_case\\_of\\_the\\_leather\\_industry.pdf](http://nectar.northampton.ac.uk/15536/1/de_Klerk_et_al_IJRDM_2018_Contraversial_fashion_ethical_concerns_and_environmentally_significant_behaviour_The_case_of_the_leather_industry.pdf)
- Hermès. (n.d.). *The leather school: passing on values and skills*. <https://www.hermes.com/ca/en/story/175546-the-leather-school>
- Leather Naturally. (n.d.). *Benefits of leather*. <https://www.leathernaturally.org/Education/Fact-Sheets/Benefits/Benefits-of-leather>
- Leather Working Group. (n.d.). *Focus areas*. <https://www.leatherworkinggroup.com/about>
- Magzter. (n.d.). *The importance of leather*. <https://www.magzter.com/stories/Lifestyle/Shoes-and-Accessories/The-Importance-Of-Leather>
- MAHI Leather. (n.d.). *Uses of leather*. <https://mahileather.com/blogs/news/uses-of-leather#:~:text=Unlike%20many%20other%20fabrics%20and,leather%20clothing%20has%20become%20timeless>
- Oregon State University. (n.d.). *Apparel design*. <https://business.oregonstate.edu/programs/undergraduate/apparel-design>
- Smit and Zoon. (n.d.). *Sustainability of leather*. [https://www.smitzoon.com/en/leather-sustainability/?gclid=CjwKCAiAzKqdBhAnEiwAePEjksuAi9\\_V9XqEy3GjDuDdsftNs5E98YdJkHfHZwmy6qfg1tCH5zYRoCKJkQAvD\\_BwE](https://www.smitzoon.com/en/leather-sustainability/?gclid=CjwKCAiAzKqdBhAnEiwAePEjksuAi9_V9XqEy3GjDuDdsftNs5E98YdJkHfHZwmy6qfg1tCH5zYRoCKJkQAvD_BwE)

Southern Illinois University. (n.d.). *Fashion studies*. <https://academics.siu.edu/design/fashion-design>

State University of New York. (n.d.). *Leather apparel*. <https://www.fitnyc.edu/academics/academic-divisions/ccps/credit/certificates/leather-apparel.php>

Steel Horse Leather. (2020). *What is leather made of*. <https://steelhorseleather.com/blogs/the-journal/what-is-leather-made-of>

University of Northampton. (n.d.). *Leather and fashion*. <https://www.northampton.ac.uk/study/courses-by-subject/leather-and-fashion>



Priyanka Sharma, Sandeep Singh and Sonika Singh

## 4 Cotton: A Conventional Material for Fashion

**Abstract:** This chapter discusses cotton, one of several conventional materials long used for the making of clothing. Although cotton plantations have been known to cause much environmental degradation, it is possible to grow cotton while respecting the environment.

**Keywords:** conventional materials, cotton, fashion, sustainability

### Introduction

Cotton agriculture (Figure 4.1, 4.2, and 4.3) has long been characterised by unsustainable practices such as mono-cropping, heavy irrigation and the consumption of synthetic fertilisers and pesticides, but there is currently a shift toward increasingly sustainable methods. Many development programmes to increase cotton production sustainability have been launched in order to safeguard farmers' livelihoods and the environment. In recent decades, there has been a great deal of interest in integrating production risk management with the goal of protecting the environment and natural resources. Domestic and worldwide regulatory measures have been implemented, and these restrictions have caused big merchants to recognise that the entire footprints of their items must be decreased in order to increase the trust of individuals who buy their products. As an outcome of these policies, a variety of production methods and standards have emerged with the goal of fostering sustainable farming and goods.

### Importance of Cotton

Other than providing a fundamental requirement of life, cotton also serves as one of greatest contributors to the net foreign exchange of several nations, through exports of raw cotton, semi-finished goods such as yarn and textiles and completed items including garments and knitwear. In India, an example of a country for which cotton

---

**Priyanka Sharma**, University School of Business, Chandigarh University, Gharuan, Mohali, India

**Sandeep Singh**, University School of Applied Management, Punjabi University Patiala, Punjab, India,  
e-mail: banger.singh36@gmail.com

**Sonika Singh**, Chandigarh Business School of Administration, CGC Landran, Mohali,  
e-mail: sonika.4828@cgc.edu.in

has extremely high importance, cotton is also known as white gold. Cotton comprises one of the most significant commercial crops grown in India, accounting for around 25% of total world cotton output. It is vital to the livelihoods of an estimated 6 million cotton growers and many millions of workers employed in associated activities such as cotton processing and trading. The Indian textile industry uses a wide variety of fibres and yarns, with cotton outnumbering non-cotton fibres.



**Figure 4.1:** Cotton (photo: ISAAA KC).

## Cotton Farming Challenges

Agriculture is unquestionably a major user of water. As a result, the amount of water which an individual consumes every day in food items is substantially more than the amount of water that a human drinks. Domestic and industrial usage comprise for 10% and 20% of all freshwater extracted for human use, however, although agriculture uses over 70% and considerably more in some places. Freshwater accounts for less than 2.5% of total volume of water on the planet; due to its placement in glaciers and ice caps, two-thirds of this water is unusable. According to Gleick (1993), just 0.77% of this water is located in groundwater, soil pores, lakes, wetlands, rivers, plant life and the atmosphere, totalling less than 10,665,000 km<sup>3</sup>. The troubling rate where the freshwater is being drained, as well as the high levels of water contamination, indicate that a freshwater emergency will develop in the coming years. According to the United Nations World Water Development Report, the average quantity of water per individual will be reduced by one-third over the next 20 years. According to the findings of the WWF (1999), cotton is a major driver of freshwater system damage on a regional and worldwide scale.

The three most important freshwater consumers are rice, wheat and cotton. Groundwater is projected to account for 31% of fresh water used for agriculture in Pakistan, while significant use of groundwater for irrigation in China has resulted in a drop in groundwater levels. As per the WWF (1999), cotton cultivation has a number of negative effects on freshwater biodiversity and ecosystems including runoff from cotton-cultivated areas, pollutants in drains, pesticide use, withdrawal of water for irrigation, vast irrigation and dam construction.

#### 1. Runoff from farms

When the top of agricultural land is filled to the maximum capacity and cannot soak water that comes its way, water is regarded as in excess. Such water is referred to as “runoff” because it goes to nearby bodies of water. Poor water treatment and irrigation inexperience are two causes of runoff, which not only transfers extra water but also carries pesticide, fertiliser and salt residues from the cotton crop (Beven, 2004; Jordanien et al., 2011).

#### 2. Use of insecticides

Contamination occurs when field runoff contaminates water bodies, resulting in fish deaths. Some of the factors that determine fish deaths are intensity and content, duration of exposure, temperature, water pH, fish species traits, physiological state and past exposure. Organochlorine and organophosphate insecticides are more hazardous than herbicides. Organochlorine is the most hazardous and chronic of the two; it increases bioaccumulation and magnifies pesticides in aquatic food chains due to close interaction between aquatic species and water.

#### 3. Drainage and leaching

Saline soil or saline irrigation is a key issue in cotton farming. It limits soil water availability to crops and is akin to water scarcity. Cotton is sensitive to saltwater and has the ability to reject sodium ions. This may lead to a circumstance in which issues are only recognised after they accumulate. Salinity, which is prevalent in the dry and Mediterranean climates in the irrigated cotton belt that spans from Spain to Central Asia and America, has been found to harm more than half of the irrigated land in 24 main irrigation nations. Egypt, Pakistan, India, Uzbekistan (50 percent of the total of irrigated land) and Northwest China have all reported salinity issues.

#### 4. Withdrawal of water for irrigation

Cotton cultivation in the field has three types of water usage effects: evaporation of infiltrating rainwater for cotton growth, extraction of groundwater for irrigation, and contamination of water induced by fertiliser and pesticide leaching (Falkenmark, 2000; 2003; Falkenmark & Rockstrom, 2013; FAO, 2002; Wani et al., 2009). Water consumption is assessed in terms of quantities utilised per year. The amount of released chemicals after usage into the volume dilution necessary to compute the pollution level is used to measure water quality. Cotton production at the field level depletes re-



sources (fertilisers and pesticides) from the environment; in exchange, contaminated water is returned, resulting in resource pollution. Grey water is water that can be readily recycled from restrooms, kitchens and other places. Furrow irrigation is used for most cotton production, whereas sprinkler and drip irrigation technologies are limited. These techniques are estimated to irrigate 0.7% of the world's land (Sandra et al., 1996).



**Figure 4.2: Cotton Field** (photo: Vijaya Narasimha).

#### 5. Contamination and degradation of bodies of water

Cotton farming is typically connected with the utilisation of chemicals, and discharge water consists of nutrients, salts, and pesticides. Excess irrigation in comparison to ET requirements, as well as water leaching to regulate salinity, generate positive circumstances for groundwater contamination. Surplus irrigation and leaching in cotton production require a large quantity of water to be withdrawn from water bodies, necessitating replenishment; if efficient replenishment initiatives are not implemented, there will be shortage of water in the downstream area, likely to result in the degradation of bodies of water and the environment. Water scarcity necessitates efficient water usage in agriculture and crop management. This is a significant issue in Central Asia, the Aral Sea and Uzbekistan.

#### 6. Extensive irrigation

Cotton crops grown with intensive irrigation tend to create more runoff through into groundwater due to enhanced percolation, resulting in increasing groundwater tables. This results in the formation of shallow water tables. According to Willis and

Black (1996) and the OECD (1998), recharging from irrigated agriculture is linked to the formation of shallow water tables. This situation also causes a dry environment and soil salinisation. This state is unavoidable in locations where evapotranspiration surpasses rainfall and the volume of freshwater utilised for irrigation, such as Pakistan (15% of irrigated land), Uzbekistan (50% of irrigated land) and Brazil's salinity reports (Gillham, 1995; OECD, 2010).

#### 7. Construction of dams

The development of man-made storage structures, such as dams, disrupts natural water flow and nearby ecosystems. The impact on residents is determined by the location and size of the dam. A dam of this type is often erected to generate hydroelectricity, provide water for irrigation, household and industrial usage and manage floods. Dams have significant environmental implications in both upstream and downstream locations, in addition to the global and regional levels. Large dams' environmental impacts may be directly tied to river characteristics and riparian or streamside ecosystems. The dam wall may obstruct fish movement, and breeding sites may be isolated from rearing habitats. Sediments that are vital to the processes and downstream ecosystems are being obstructed, threatening the survival of fertile deltas, barrier islands, rich flood plains and coastal wetlands. Dams' many repercussions include the extinction of fish and aquatic species, the extinction of birds in flood plains, massive losses in forest, farmlands, and wetlands and the erosion of coastal deltas.

#### 8. Land reclamation

The expansion of agricultural land has been connected to increasing agricultural activities as well as a shift away from the natural ecosystems and landscapes. Cotton farming causes salty soils due to water logging and leaching. Based on their features and genetic makeup, salt-affected soils are classed as sodic soils or saline soils. Surplus water-soluble salts and adequate interchangeable sodium likely to impede with plant development are referred to as alkali or sodic soils. Saline soils, on the contrary, contain neutral salts in sufficient concentrations to effect crop development. Issues with conventional cotton growing have resulted in tremendous resource usage, raising numerous difficulties in many regions of the world. This calls for a variety of restorative and protective measures to aid in the growth of healthy, sustainable crops for the development of goods and the preservation of the environment for succeeding generations. Sustainable crop management assists in anticipating all upcoming issues in cotton cultivation and attempting to handle them using the resources available.

## Sustainable Crop Management

Sustainable crop production and management are gaining popularity as they tackle a wide range of issues and possibilities for all stakeholders. Environmental health, economic profitability and social and economic equality are the three aims of sustainable agriculture. In this context, it is vital to preserve and improve land and natural resources while also considering agricultural labourer circumstances, rural people's wants and requirements, consumer health and well-being for the present and future. Sustainable crop production is the environmentally and ethical method to cultivate crops by following procedures that include care for the environment, treating employees fairly and supporting rural and local communities. Sustainable crop management is based on agricultural systems that may be used for an extended length of time while causing little environmental impact. The next part offers an overview of the principles that aid in sustainable agricultural production and manufacturing.

### 1. Importance of traditional methods of agriculture

Traditional agriculture protects agrobiodiversity, genetic diversity and indigenous ecological knowledge. Notwithstanding agricultural industrialisation, many farmers remain to labour with small-scale varied agro-systems. Moreover, understanding of traditional agro-systems and related plant variety is the consequence of the combination of natural and social systems, which results in various farmland for multiple uses and local food self-sufficiency. Ethnobotany is the study of folk expertise about agriculture, land features and environmental circumstances; it examines the most adaptable traditional practises that have been passed down through the generations. All traditional agriculture is site-specific and may not be suited for other locations. Small farmers typically replicate nature by constructing a crop system that mimics the wild species of the specific region. This cohabitation with the natural environment and biotic complexity results in effective cropping systems and significant yield, promoting both productive and safeguarding activities.

### 2. Multi-cropping

Crop selection is an art that necessitates meticulous preparation in agriculture. Monocropping has replaced multi-cropping as a result of rapid industrialisation in farming. Multicropping is an agricultural practise of producing various crops solely on a single piece of land over the same or subsequent growing seasons. Crop rotation, or growing two or more distinct crops in close proximity to neighbours or as cover crops (intercropping), protects plants against insect and pest infestation, fixes nitrogen, offers shade, improves soil health and promotes water retention. When there is a large distance across rows of plants, short-duration crops including green and black gram or soybean can be cultivated to boost soil fertility and optimise monetary returns without harming cotton plant development (Dury et al., 2011; Sankaranarayanan et al., 2011).

### 3. Minimal/no pesticide use

Crop protection is critical for surviving weeds, animals, pests, diseases and viruses. According to Oerke and Dehne (2004), considering crop protection techniques, losses for some commodities (wheat, rice, corn, barley, potatoes, legumes, sugar beets and cotton) ranged from 50% to 80% over 17 areas from 1996 to 1998. Chemical pesticides such as herbicides, insecticides, microbicides and fungicides have enhanced agricultural productivity, but they have several adverse effects. Damage to agricultural lands, fisheries, and flora and fauna; non-intentional damage of beneficial pest killers, which enhances the virulence of many agricultural pests; and increased morbidity and death in humans because of pesticide exposure and intake of food grown in the environment are among the repercussions (Tisdell & Wilson, 2001; Fitt, 2000).

### 4. Soil health focus

Soil management is critical for preserving and improving soil structure and fertility. Plants cultivated in a sustainable environment are enriched with important micronutrients and macronutrients due to strong soil health that is an outcome of natural cultivation techniques and sustainability practises, according to various studies. The properties between soil particles and soil pores affect air, water, and nutrient transport, root development, and room for soil organisms. Soil health and fertility are greatly influenced by microorganisms and organic materials. Plant material is converted to humus by microorganisms, which acts as a binding material for sustainable soil structure (BCI, 2013). Organic fertiliser usage, crop rotation, mixed cropping, mulching, minimal or no soil tilling and a restriction in heavy machinery use are some sustainable strategies that enhance soil health.

### 5. Choosing sustainable seed and plant varieties

Historic crops are ones that have been cultivated in the past but are no longer employed in industrial agricultural production. They are picked for their flavour and nutritional content, and are produced in a specific habitat that makes them impervious to local pests and better placed to the local environment. For large-scale industrial production, sterile hybrid types are available, and fresh seed stock is often regulated by agricultural business agencies. Genetically modified crops are cultivated to manage pests or allow for more herbicide application, or to meet market desires, for example, genetically modified apple types that do not turn brown when sliced. Sustainable agriculture does not support gene modification due to the possible environmental effect, their impact on consumer health and the vast amounts of chemicals required for their growth.

### 6. Water conservation and sustainable irrigation

Water conservation measures are critical for preserving soil and environmental quality. Overirrigation raises the salinity of the soil and reduces production. Rainwater harvesting, cultivation of drought-resistant crops and low-volume irrigation are some of the strategies used to conserve water in agriculture. According to Howell (2001),

water conservation measures involve enhancing output per unit of ET, minimising losses of useable water into sinks, lowering water pollution and utilising water for high-value purposes.

## Road Map to Sustainable Cotton Production

Sustainable cotton processing is critical since it provides a source of income for many people. Because of the variety of geographical locations, numerous sustainable adaptation solutions are required to meet environmental demands. Climate, water and chemical outputs and inputs, capital and agricultural efficiency, natural resources and local pests all have different elements that necessitate different techniques. Since sustainability is a changing objective that cannot be set permanently, no single answer is easily available. Furthermore, some attempt has been made here to give indications or tools to help people involved in cotton production, processing, manufacturing and retailing work toward long-term goals.

A number of the components categorised underneath the title of technology, agriculture and production are listed here, along with the choice of the cotton wide assortment to be cultivated, the environment within which the cotton plant grows, the techniques to be used prior to harvest for a sustainable crop and the technical methods to be used just after cotton harvest, in addition to the social aspects of the processes.

Sustainability requests both individual and communal efforts from everyone. In terms of domestic and global methods, they include the responsibilities of farmer, producer, retailer, buyer and government. Cotton plants demand the finest management approaches in terms of water management, soil augmentation and plant protection management without jeopardising the wellbeing of the neighbouring habitat and ecosystem. A small number of organisations assist farmers in nurturing soil health by learning the best ways to utilise fertilisers and the benefits of crop rotation, as well as in conserving and restoring environment on and around their farms. Gender inequality and fair labour are also important components of work in India. Women made up just about 20% of those trained in India in 2018–19. Furthermore, many cotton workers, especially those from disadvantaged, rural areas or migrant families, experience terrible working conditions, discrimination and low salaries. Children may also be at risk from working in cotton fields. The government is continually scaling up efforts, in collaboration with Implementing Partners, to deliver high-quality training both to men and women in a culturally sensitive manner.

Sustainability cannot be realised until the social aspect is addressed, and ILO standards must be followed for local communities and to improve the lives of agricultural and plantation workers. The road map also emphasises the involvement of parties across the supply chain, since product demand will increase only if sustainability is ac-



**Figure 4.3: Cotton Bud/Plant** (photo: Bishnu Sarangi).

knowledge, and all persons strive both individually and together achieve sustainability in the framework of sustainable cotton development and processing. Consumers' unwillingness to pay higher costs for sustainable products, as well as manufacturers' insufficient efforts, must be addressed. When a concerted effort is undertaken and only eco-friendly items are provided to buyers, these characteristics will become economically viable. Governments around the world have begun to prioritise sustainability elements in all products. Solutions to these difficulties must be debated on a worldwide scale in conferences and forums in order to transfer research discoveries from laboratories to commercial markets and to change people's and society's perceptions of the environment.

## Conclusion

The worldwide cotton value chain includes no fewer than six million small-to-medium-sized Indian cotton producers and agricultural employees. As a result, the country must guarantee that it not only maintains its place in the global production of cotton but also prepares for a robust, stable and sustainable future.

Adapting to new evolving international market-based initiatives that support sustainable development is one method. This can assist India in remaining internationally competitive in the cotton supply chain and also provide an advantage by utilising the range of development diplomacy to improve its place in the global cotton and textile trade.

The international textile supply chain is enduring a fundamental change; it is trying to pursue environmental and social improvements in attempt to meet the sustainability obligations established in order to minimise the negative effects of climate change on cotton growers and cotton farming. Voluntary Sustainability Standards, which include certification systems, labelling initiatives and private standards, are being used to achieve this. Better Cotton Initiative, Fairtrade Cotton, Cotton Made in Africa, and Organic Cotton are the key voluntary sustainability standards that now dominate the sustainable cotton value chain. Adopting voluntary sustainability standards is certainly advantageous for India. On one side, it will assist it in remaining internationally competitive in the cotton supply chain and strengthening its position in the export market, whereas on the other side, it will assist India in meeting its SDG obligations.

There are several causes for India to stay up to date with the shifts and advances sweeping the global cotton market. It will allow India to defend, enhance and further improve its position on the international development map. Because voluntary sustainability standards in cotton assures an improved manufacturing system, and sourcing techniques, while also touching the livelihoods of hundreds of millions, India must scale it up by linking it with its SDG objectives. India, as a developing country aiming to progress to a more sustainable future, will benefit from comprehending the evident links between voluntary sustainability standards and SDG achievement. A single emphasis on the sustainable ecosystem would not assist it in meeting all of the needs. Corporations, entrepreneurs and governments must collaborate to successfully employ voluntary sustainability standards to accelerate progress toward SDG objectives. The government has more responsibility and they must create an environment that encourages sustainable cotton cultivation and manufacturing, providing financial aid to supply-chain players that are dedicated to voluntary sustainability standards. Existing agricultural policies and programmes must be reviewed to support sustainable output.

## References

- BCI. (2013). *Better cotton production principles & criteria explained*. [http://bettercotton.org/wp-content/uploads/2014/01/Better-Cotton-Production-Principles-and-CriteriaExplained\\_Final-2013\\_eng\\_ext.pdf](http://bettercotton.org/wp-content/uploads/2014/01/Better-Cotton-Production-Principles-and-CriteriaExplained_Final-2013_eng_ext.pdf)
- Beven, K. (2004). Robert E. Horton's perpetual model of infiltration processes. *Hydrol. Process.*, 18, 3447–3460. <http://dx.doi.org/10.1002/hyp.5740>
- Comparison of annual flows & peak discharges. Catena Verlag.
- Dury, J., Garcia, F., & Bergez, J.E. (2011). Models to support cropping plan and crop rotation decisions. *Agron. Sust. Dev.* <http://www.cicr.org.in/pdf/multitier.pdf>
- Falkenmark, M. (2000). Competing freshwater and ecological services in the river basin perspective. *Water Int.*, 25, 172–177.
- Falkenmark, M. (2003). Freshwater as shared between society and ecosystems: from divided approaches to integrated challenges. *Science*, 2037–2049.

- Falkenmark, M., & Rockstrom, J. (2013). *Balancing water for humans and nature: The new approach in ecohydrology*. Routledge. <http://dx.doi.org/10.4324/9781849770521>
- FAO. (2002). *Land–water linkages in rural watersheds*. <ftp://ftp.fao.org/agl/aglw/docs/lw9e.pdf>
- Fitt, G.P. (2000). An Australian approach to IPM in cotton: integrating new technologies to minimise insecticide dependence. *Crop Prot.*, 19, 793–800.
- Gillham, F.E.M. (1995). *Cotton production prospects for the next decade*. World Bank Publications.
- Gleick, P.H. (1993). *Water in crises: A guide to the world's fresh waterresources*. [https://www.2000litergesellschaft.ch/fileadmin/user\\_upload/Referenzen\\_und\\_Literatur/GLEICK\\_1993\\_Water\\_in\\_Crisis.pdf](https://www.2000litergesellschaft.ch/fileadmin/user_upload/Referenzen_und_Literatur/GLEICK_1993_Water_in_Crisis.pdf)
- Howell, T.A. (2001). Enhancing water use efficiency in irrigated agriculture. *Agron. J.*, 93, 1–10.
- Jordanien, P., Aufleger, M., & Mett, M. (2011). *Handshake across the Jordan: Water & Understanding*. Books on Demand.
- OECD. (1998). *Sustainable management of water in agriculture: Issues and policies – the Athens workshop*. OECD Publishing.
- OECD. (2010). *Sustainable management of water resources in agriculture*. <http://www.oecd.org/tad/sustainable-agriculture/49040929.pdf>
- Oerke, E.C., & Dehne, H.W. (2004). Safeguarding production – losses in major crops and the role of crop protection. *Crop Prot.*, 23, 275–285.
- Sandra, L.P., Gretchen, C.D., & Paul, R.E. (1996). Human appropriation of renewable fresh water. *Science*, 271, 785–788.
- Sankaranarayanan, K., Nalayini, P., Sabesh, M., Rajendran, K., Nachane, R.P., & Gopalakrishnan, N. (Eds.). (2011). *Multi-tier cropping system for profitability & stability in Bt cotton production*. CICR. <https://www.cabdirect.org/cabdirect/abstract/20093120021>
- Tisdell, C.A., & Wilson, C. (2001). Why farmers continue to use pesticides despite environmental, health and sustainability costs. *Ecol. Econ.* [https://www.researchgate.net/profile/Clement\\_Tisdell/publication/4840284\\_Why\\_Farmers\\_Continue\\_to\\_Use\\_Pesticides\\_Despite\\_Environmental\\_Health\\_and\\_Sustainability\\_Costs/links/0fcfd50cfc08db1cd7000000.pdf](https://www.researchgate.net/profile/Clement_Tisdell/publication/4840284_Why_Farmers_Continue_to_Use_Pesticides_Despite_Environmental_Health_and_Sustainability_Costs/links/0fcfd50cfc08db1cd7000000.pdf)
- Wani, S.P., Rockstrom, J., & Owe, T.Y. (2009). *Rainfed agriculture: Unlocking the potential*. CABI.
- Willis, T.M., & Black, A.S. (1996). Irrigation increases groundwater recharge in the Macquarie Valley. *Aust. J. Soil. Res.*, 34, 837–847.
- WWF. (1999). *The impact of cotton on fresh waterresources and eco systems*. [http://d2ouvy59p0dg6k.cloudfront.net/downloads/impact\\_long.pdf](http://d2ouvy59p0dg6k.cloudfront.net/downloads/impact_long.pdf)





---

Part II: **Investigating the Industry: International Perspectives**



Noah Mindel, Saffron Tellier and Léo-Paul Dana

## 5 Lubertex Pivot in Canada

**Abstract:** This chapter tells the story of a family business in Canada. When the textile sector changed, this firm opted for a strategic that proved very successful.

**Keywords:** Canada, family business, fashion, pivot

### Introduction

Heidi Luber is the CEO and fourth-generation owner of her family business, Lubertex International. Founded in 1937 in the city of Montreal, by her great-great-grandfather Ben Luber, this enterprise started out as a textile company. The business focused on importing, selling and also manufacturing fabrics. Over time, however, the manufacturing of clothes shifted from Canada to China (see Figure 5.1). Changing times prompted the CEO to pivot the firm to focus on the provision of bed linen to hotels.




**Figure 5.1:** Closed textile factory in Canada (photo: Léo-Paul Dana).

---

**Noah Mindel**, Dalhousie University, e-mail: Noah.Mindel@dal.ca

**Saffron Tellier**, Dalhousie University, e-mail: saffrontellier@gmail.com

**Léo-Paul Dana**, Dalhousie University, ICD Business School Paris, and Lappeenranta University of Technology

Open Access. © 2024 the author(s), published by De Gruyter.  This work is licensed under the Creative Commons Attribution 4.0 International License.

<https://doi.org/10.1515/9783110795431-005>

## Background

At first, fabrics were imported from overseas, primarily from Eastern Europe, and used to manufacture women's wear and home fashions in the Canadian market. Clients would often be denim jeans manufacturers, but products included men's trousers, as well as flour bags, mattress covers, pillow shells and printed cotton. As a teenager, Heidi began working for her father, not thinking that her family business would soon become her career. She expresses how important her involvement in the Jewish Montreal community was and how the community has shaped her career and her values. She began working in the textile industry surrounded by people she grew up with. Her cultural values became based on the city in which she grew up, and the multi-culture of Montreal. This has shaped many of the decisions she has made for the company, and the values she wants to portray to her customers. As Heidi describes, the textile industry was fast-changing, and Lubertex needed to be continuously evolving to stand the test of time. Luckily, her entrepreneurial and innovative skills are leading Lubertex Inc. towards a very bright future. In the following pages, we will be discussing Lubertex's factors of success, the resources used and some of the obstacles faced.

Perseverance is one of Heidi Lubert's most vital qualities. Starting from a young age working for her father in the family business, Heidi was full of new ideas. Although working for her father was not her end goal, she soon found it to be a true passion. With many changes affecting manufacturers in Canada, there was a sense of fear. Her father's generation had never known the textile industry without manufacturers in the same city. With this new fear of the unknown, a decision had to be made on the company's future direction. When the going got tough, Heidi did not step down from the challenge. She had a vision for Lubertex and was not going to let a change in manufacturing bring them down. Heidi and her father made trips to China to begin building strong relationships overseas, which are still as strong as ever.

Being the fourth generation of a family business comes with a lot of pressure. Not only does she want the business to be successful, but she also has a reputation to maintain, and a family legacy to continue to build. With changes in manufacturing and more recent leadership changes, Heidi's motivation is what kept her and the company afloat. As her father began to get older, a change in leadership was coming. Heidi was determined to run the company and make her father proud. Her motivation to succeed created a chain effect throughout the entire organisation. Her ambitious goals for Lubertex motivated those around her, which led to greater success for the business. With Heidi in charge, she was able to gain many new clients throughout North America and parts of Europe. Then the hotel industry became hers to dominate, something that she never thought was possible through her family business.

## Resources

In order to start pursuing an idea and building a company, there are many resources needed to make this dream come true. When thinking about resources, oftentimes, our brains automatically think about money. Money is a major resource needed to build a company, but there are also many non-financial resources detrimental to the success of a business. In the textile industry of which Lubertex is a part, resources like manufacturers, fabrics, transportation and connecting with people across various fields are important.

When Heidi Luber began working with her father, most of the firm's manufacturing was being done in Canada. They would import their fabrics from overseas and had many options to expand within the country by making different types of clothing and bedding. That is what her father had been used to and relied on. At the beginning of her time at the company, most of the textile manufacturing companies in Canada closed, since China was becoming the manufacturing powerhouse that it is now. Many of the Canadian manufacturers were out of business and could not compete with the Chinese prices. Heidi expresses that especially in a city like Montreal, which had a huge textile industry, it was very difficult for her father's generation to survive in textiles. This became a major challenge for Lubertex and required many innovative changes, including a change in the type of resources necessary for the company to survive. This required Lubertex to pivot, as Heidi explains: "We had to decide whether or not to change the business or maybe to close the business."

This pivot led to many changes, specifically changes to their fabrics, when it came to resources. At the time, she and her father flew overseas and decided to have all of their manufacturing done in China. They would not just be supplying the fabric, but making the final product. This change led her and her father to reinvent the organisation completely, and switch their focus by beginning to contact hotels and supply bedding.

## Competitive Advantage

A core is something that allows an enterprise to deliver the benefits that customers value with much greater effectiveness than any other competitor. Lubertex has had many different types of customers, as their resources and focus have changed. Before Heidi worked for the company, many of its buyers were clothing manufacturers. Later, as manufacturing was no longer done domestically, their fabrics changed, and so did their focus. Heidi started to contact hotels. Lubertex has since partnered with many different hotel brands and offers bedding and hotel linens. As the company changed, so did its core. Lubertex's customer service and product differentiation give the firm a competitive advantage, and this helps in defining its core.

Firstly, Lubertex is very customer-centred. Most aspiring entrepreneurs can acknowledge that having a focus on the customer is crucial; it is something that is taught and experienced at all levels of business, ranging from working in fast food establishments to top tech companies. As Heidi mentions when discussing her values and the company's values, growing up in Montreal's Jewish community has significantly shaped who she is and how she treats her customers. Since Lubertex is a family business, treating her clients like family gives her an edge over other competitors.

Secondly, the products that Lubertex supplies hotels with are of superior quality to that of many other vendors. As stated on the Lubertex website, "We are strongly committed to supplying the best product at the best value." This is another example of how the firm delivers value to its customers.

## Customer Value Proposition

One of the main elements in a business model is the customer value proposition, which is what the organisation promises to deliver to the customer. Six key resources are needed to deliver the value proposition, which includes people, technology, products, facilities, channels, and a brand. The resources necessary for running and maintaining a successful business in Lubertex can be related to the customer value proposition.

Heidi Luber describes her relationships with both her manufacturers in China and her clients as one of the keys to maintaining a successful business. The relationships created with her suppliers in China began during Heidi's time at her family business. She and her father were able to travel to China, more specifically to rural cities like Shikiazhuang, to meet with the owners of manufacturing companies and to begin to build a strong relationship. To this day, Lubertex has still maintained a relationship with the same manufacturers as they did over twenty years ago. The relationships Lubertex has with its clients are also very important in a customer value proposition. In order to deliver the best product possible, there must be mutual respect and understanding between parties. This will create a potential for many more years of business to be done together.

Maintaining a solid relationship with manufacturers and clients allows Lubertex to follow through on its promises to its customers. By maintaining these strong relationships, the final products will be up to par. Since both Lubertex and their manufacturers have spent time creating a strong relationship, they have formed a sense of trust. The manufacturer will not want to disappoint the company, and vice versa.

## An Obstacle

Being the fourth-generation family member to take over a long-lasting family business can be a daunting task on its own, but being the first woman in the family to do so in an industry primarily dominated by men might be even more intimidating. When asked about the most significant obstacle she faced, Heidi describes this situation she was facing through a fascinating lens, in her words: “Honestly, being a woman in the industry and having to make a place for me and to prove that I could do at least what he [her father] was doing, if not more or better.” Heidi had a large obstacle to overcome; her challenge was not only to grow the family business, but as the first woman in charge, she most definitely felt some extra pressure to flourish and to make a big splash upon her takeover of the company.

At the time of her takeover, the textile industry was undergoing a large change in Canada, as most manufacturers shifted production to China. They had previously always run their operations locally. Heidi was immediately faced with a difficult problem, either changing the business and how it operated or closing it altogether after four generations of it being within her family. As a woman, fourth generation business owner, faced with a highly complicated and challenging decision, Heidi felt all kinds of pressure. She was facing what ended up being the largest obstacle to date in her career immediately upon taking over the family business.

Faced with an extremely impactful decision as a woman in an industry primarily dominated by men, Heidi explained how she overcame the largest obstacle of her career immediately after taking the reins of the generational family business. She ensured that she was well-prepared to be in a decision-making role by beginning to work for the company from a young age to be familiar with the ins and outs of the business. She started at the company’s bottom, answering the phones and familiarising herself with the business and the industry. Then, as she slowly worked herself into a position to be comfortable running the company, she was well-equipped with the requisite tools to make the correct decision in what, at the time, was a make-or-break moment for the company.

As a woman, Heidi felt as if she had something to prove, and not only did she make a splash by keeping the business open and re-inventing the way they functioned, she solidified herself compared to the males that preceded her, which was her goal from the start. She did this by not only making the difficult and correct decision of keeping their doors open during a tough transition in the industry but manoeuvring in a way that allowed the company to flourish like never before, by making the difficult decision to re-invent the company’s operations and move their suppliers from Canada, where they had been located since the company opened their doors, to China. From this, Lubertex was able to not only stay alive but flourish under the leadership of Heidi, the first woman to take control of the company since its inception.

In this re-imagination of the business, Heidi noted that acquiring a paying customer would no longer be possible with the high prices of her Canadian suppliers. In



order to be able to achieve competitive pricing and allow for her customers to be still willing to pay for her product, she noted that she had no other choice if she wanted to keep the business alive than to opt towards China's suppliers. An essential part of this step is identifying any obstacles or roadblocks that may hinder the selling of a business's product. Undoubtedly, keeping manufacturers of Lubertex in Canada was no longer an option as they would have to raise their prices to consumers to remain profitable. So, in order to continue acquiring paying customers, Heidi decided that she would move her suppliers to China, and allow her family business to continue to grow and acquire customers.

She successfully turned the situation into a positive one. Not only was she successful in overcoming the obstacle, but her company flourished as a result and has been thriving ever since. In a world where women in business are out-represented mainly by men in leadership roles, having the opportunity to hear uplifting success stories of female entrepreneurs is few and far between.

## Competency and Growth

A product can be the most beneficial and useful item in the store. Still, if the target customers constantly select the product beside it, much information gathering and re-thinking must be done, whether it be with regards to the presentation of the product or how it differs from its already-established competition. Something as trivial as packaging or presentation in a store could be the difference between a billion-dollar business and one that has to close its doors permanently.

While it can be seen as a tedious step, it is in fact underappreciated due to the amount of money it can save new ventures throughout the developing product, which is something they undoubtedly try to minimise.

When reviewing the potential designs for the product, it is paramount to take into account how the target customer would find each change, reinforcing our knowledge that every decision made must take into account how the target consumer would be impacted. If different departments are under opposing assumptions of the final product's design, many problems can arise, but having a model built by members of the venture ensures that everyone's perspective was taken into account while also having something physical to refer back to when making other decisions while the product is being made.

## Lessons from Heidi

Heidi re-affirmed the importance of putting the customer first. Heidi mentions several times throughout the interview how important her relationships with people from the Montreal community are, as well as her relationships with suppliers and customers. This allows her to provide her customers with the best final product.

The obstacles she and her company had to overcome to get to where she is today were all driven by her motivation to succeed and her passion for her family business. No matter what is in your way, one can succeed just like Heidi if one understands the industry and what it takes to be a successful entrepreneur. She was the first woman in her family to take over the business in an industry largely dominated by men. She worked from the bottom up to be able to keep the businesses' doors open and thrive when faced with a make-or-break decision.

Among her many factors of success, shifting her venture from operating solely in Montreal to expanding its manufacturers to function out of China was successful in both making use of non-financial resources and overcoming the largest obstacle of Heidi's career. As the first woman to take control of the family company in an industry largely dominated by men, Heidi took advantage of her resources. She made the big decision to move her suppliers overseas, which allowed the company to keep its doors open and flourish in the process.

## Conclusion

Under Heidi's leadership, Lubertex International is a successful firm with a focus on customers. An entrepreneur must have a successful product; entrepreneurs are not randomly born with some entrepreneurship gene. Impactful lessons from Heidi include: (i) an individual does not start a venture – a team does; (ii) an entrepreneur's main asset is the ability to have strong communication and salesmanship; and (iii) entrepreneurs are moulded and developed through experience. As the Canadian clothing industry shifted to China, Heidi pivoted such that her firm shifted its focus from fashion to bed linens for hotels.



Ebere Ume Kalu, Agatha N. Okeke, Rosemary Ifeoma Nwokike  
and Emmanuel Chinedu Eleje

## 6 Evolution, Innovation and Sustainable Entrepreneurship in Africa's Fashion Industry

**Abstract:** Fashion has long been used as a strong identifier for people of different origins. Most peoples' historical and cultural evolution can rarely be discussed in full without a consideration for the way they dress and make the clothes they wear. Creating and designing wears and associated articles of fashion have evolved into multi-billion dollar enterprises across the globe and Africa has not been left out of this evolutionary trend in the global fashion industry. Thus, in considering the experience of the African industry from the precolonial to the colonial and up to the present age, the searchlight is focused not just on the historicity of the industry but also on the evolution, innovation and technology of the African fashion industry from an entrepreneurial perspective. The discourse presented in this chapter covers fashion in the precolonial, colonial and post-colonial era, fashion as influenced by religion and culture, Afrocentrism and indigenisation and the fashion space in Africa, African fashion industry and sustainable development goals as well as the way forward for the industry in Africa. The value-addition of this contribution will be to generate deep insights into how the evolution, innovation and technology of the African fashion industry have aided entrepreneurial drives and aided achievement of sustainable development goals over the years. The thoughts presented in this study would produce beneficial considerations for various stakeholders including entrepreneurship scholars, practitioners, economic agents and policymakers.

**Keywords:** fashion, Africa, sustainability

### Introduction

Africa, often referred to as a dark continent, is rich in cultural values and the cradle of civilisation. A case in point is the Egyptian pyramid of Giza, one of the seven wonders of the ancient world and the most famous and discussed structure in history, constructed around 2500 BC (Alekhya, Chaitanya & Chandramouli, 2021).

---

**Ebere Ume Kalu, Emmanuel Chinedu Eleje**, Department of Banking and Finance, University of Nigeria, Enugu Campus

**Agatha N. Okeke**, Registry Department, University of Nigeria, Enugu Campus

**Rosemary Ifeoma Nwokike**, Personnel Services (Human Resource Management), University of Nigeria, Enugu Campus

History, evolution, innovation and entrepreneurship as they relate to African fashion undoubtedly represent an area of interest to policymakers and industry practitioners, a broad spectrum of economic agents and the society at large. Weaving, knitting, dyeing, designing, shoemaking, bag-making and other fashion-related activities have come to be recognised as not just African fashion accessories but major occupations for Africans.

Today, the fashion industry has evolved into specialist professions like fashion/designing, makeover artistry, beauty salon professionals, hair styling professions etc. It is pertinent to note that international trade, globalisation and westernisation impacted African fashion industry to a great extent. Globalisation increased global connectivity, integration and interdependence in the economic, social, technological, cultural, political and ecological sphere, accentuated through the use of television, mobile phones, satellite and internet facilities (Fashionomics, 2016). Movement of people and goods across borders need not be done physically. The world became a global village and fashion, with a multi-billion dollar industry creating jobs for designers, models, beauticians, makeover artists, event organisers/planners, etc. (WIPO, 2011). In the evolution and transitional state of African fashion, men and women now take leading positions, unlike in the pre-colonial days when fashion was seen as an area only for women in Africa (Jennings, 2011). This has obviously enlarged the fashion space and the narratives have changed. Distance is no longer a barrier and orders that used to be delivered in months now take days or hours.

With all these changes come the examination on what the future holds for the African fashion industry. Some designers are championing Afrocentrism in the fashion industry while others are largely conscious of business models that work with little or no attention on the Afro-centric nature of their labels (Balintulo, 2019).

In summary, this chapter is geared towards appraising the growth and evolution of the African fashion industry from the prism of entrepreneurship with close consideration on the impact of international trade, globalisation and Westernisation. The drive for Afrocentrism and indigenisation of the industry in concepts, designs and style are also considered. The discussion shall capture African fashion industry in the pre-colonial era, the colonial and post-colonial periods. Historically, the pre-colonial era dates before 1861. The colonial period dates between 1861 and 1960 while the post-colonial period covers the period after 1960 when Nigeria had her independence (Ugwukah, 2021). Generally, the nineteenth century marked colonial activities in most African countries (Ajayi, 1989).

While this discussion appears scholarly, it is a deliberate attempt at creating awareness about the entrepreneurial, innovation and technology side to African fashion. This is for the imperative of repositioning the industry as a major player in driving the Africa of the next century. Also, it is an effort at changing the narrative from African Fashion as a picture of people with a piece of cloth around their waists with slight covering for the upper part of their bodies to a global brand that is influencing the fashion senses of other continents of the world. Also, this study will situate the

evolving African fashion industry as a vanguard for the actualisation of key sustainable development goals (SDG) by showing the nexus between the models of African fashion industry and set SDGs of the United Nations.

## Fashion Industry and Entrepreneurship in Africa – Precolonial and Colonial Era

### Precolonial Era

Africa enjoyed relative peace, and economic buoyancy until the nineteenth century when it became a place of scrambling for Western imperialists, who, motivated by national pride, scouted African countries for cheap raw materials and control and expansion of their market (Ocheni & Nwankwo, 2012). Language, culture and creative arts were the identity code of Africa. Creative arts were expressed in music, dance and fashion. Prior to colonisation in Africa, women engaged in weaving, hand crocheting and knitting of textile material patterned along the line of African rich cultural heritage. Igala textile industry contributed to the socio-economic, cultural and political development of the Igala people in the precolonial era (Naankiel, Danladi & Rufai, 2016). Designing served as a tool for orchestrating the culture of different communities in the African society. Clothing became one of the tools used to reflect artistic designs inspired by various cultural values of the diverse African villages. African fashion was unique because it was tied to its tropical weather condition (African Fashion: History & Future, n.d.). Dressing in Africa did not just involve the covering of the body. It was an expression of creativity as well as a conscious effort at survival. Innovation and freedom shaped their fashion sense, as can be seen in Figures 6.1–6.7.

The earliest forms of clothing in Africa were bark cloth, furs, skins and hides. The women wore wraps around their waists or breasts with the rest of the body adorned with decoration marks and colour pigments, “Uli”; beads were worn round their waists (*jigida*) and jewellery worn on their necks, wrists and ankles.

Women’s headgear was fashioned from seashells, bones, ostrich eggshell pieces and feathers (Njoroge, Nyamache & Tarus, 2012). All these ornamentals added up to a rich and embellished costume used especially for ceremonial purposes and to indicate significant moments, tribe and ritual passages. African women’s style of dressing was strongly significant in the precolonial era. The beauty, age and status of women were judged by their clothing and accessories (African Fashion: History & Future, n.d.).

Men dressed in loin cloths or aprons. Males in Igboland, in southeast Nigeria, wrap cloth that passed between the legs over a waist belt called *Iwa Ogodo*. Many of these customs are now non-existent although some African communities like the Karo people of Ethiopia, the Xhosa people of South Africa, the Yoruba tribe of Nigeria and a host of others still carry on with these customs to date (Akinbileje, 2014). Aside from



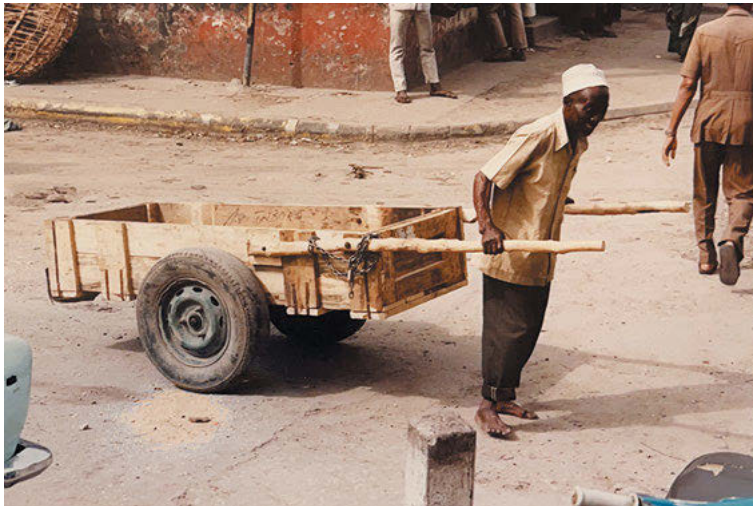
**Figure 6.1:** Pre-colonial styles in Kenya (photo: Léo-Paul Dana).



**Figure 6.2:** Dressed to shop at the market in Aneho, Togo (photo: Léo-Paul Dana).



**Figure 6.3:** Dressed to sell (photo: Léo-Paul Dana).



**Figure 6.4:** Porter at Mombasa, Kenya (photo: Léo-Paul Dana).



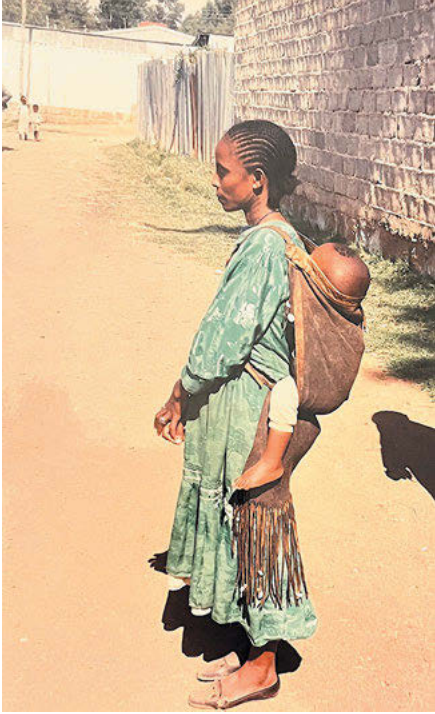


**Figure 6.5:** Preparing dinner (photo: Léo-Paul Dana).

consideration of the weather, culture and custom are the most significant influences on the type of cloth worn by Africans. The Yoruba culture and custom in Southwest Nigeria has rich and elaborate fashion which is evident in their festivities or social events like weddings, birthdays, burial ceremonies, thanksgiving services and other kinds of ceremonies.

Furthermore, African chiefs and titled men are distinguished by their way of dressing. Prior to the fifteenth century, many African societies dedicated their time to arts and crafts, knitting, weaving and carving, etc. The fashion industry includes textile production, designing, modelling, sewing and trading on hand-knitted or crocheted clothing materials, hair plaiting/ weaving and more.

Historically, trade in Africa during the precolonial era was sporadic and irregular, hence one of the dominant concerns of the then African traders was to overcome hunger and famine (van Zwabenberg & King, 1975). They engaged in hunting or agricultural production. They also produced cloths, iron or copper implements, pottery, jewellery, weapons for hunting or warfare. Trade routes were established, allowing people to trade by bartering in the form of cowries, beads, cattle or iron coins (Prince-



**Figure 6.6:** Mother and child in Addis Ababa, Ethiopia (photo: Léo-Paul Dana).



**Figure 6.7:** At railroad station, Johannesburg (photo: Léo-Paul Dana).

Iroha, 2016). Trans-Atlantic trade (which started in the fourteenth century and lasted for 400 years) and Trans-Sahara trade effectively left Africa culturally bereft and brought about the adulteration of the African fashion industry (Adeleke, 2015). With the movement of traders along the trade routes, Africans were exposed to European contact. The interaction, for instance, between the Nupe and Timbuktu traders resulted in the Yorubas adopting the “Buba” attire (Fakunle, 2022).

## Colonial Era

The quest by the Europeans to seek new markets and cheap raw materials during their industrial revolution gave rise to massive colonisation of the African continent. Colonisation dealt a huge blow to African fashion because Africans were forced to imitate the European way of dressing and disregard theirs (Ocheni & Nwankwo, 2012). The colonial masters considered the African style of clothing as bestial and unfit to be worn around (African Fashion International, n.d.). African fashion during the colonial era was further downgraded by Christianity. Africans imbibed Christian tenets which emphasised covering of the body as a more civilised and decent way of dressing (Aris, 2007). The textile industry suffered a great deal during this period because local textile industries were manually operated and not able to match the unexpected competition from Europe that was better mechanised (Naankiel, Danladi & Rufai, 2016). Africa, formerly with many players in the textile industry, suddenly lost most of them as a result of Western colonisation.

In 1945, Nigeria had the largest textile industry with more than 180 textile mills, while Kenya had 75 textile and clothing establishments (Naankiel et al 2016). Although textiles and knitting mills were capital intensive ventures, and African governments supported them with protectionist trade policies, many crumbled in the 1980s and 1990s when African economies liberalised, opening up to foreign trade (Ajayi, 2017). As a result, cheap garments from Asia and second-hand clothes from the West flooded African markets. Local industries struggled to compete, with no success. By 2013, Kenya had only 15 main textile mills in operation, as opposed to 52 in the 1980s. Nigeria had 25 in 2019 (<https://qz.com>).

This made foreign materials readily available at cheaper prices. Laws and policies were made in favour of the Europeans with free flowing rights of bringing items of trade into the colonised country while carting away raw materials at very cheap rate to their country. Evidently, there was a shift from the undiluted form of cultural designs and styles the African fashion was known for during the precolonial era to more colourful wears such as pleated skirts, blouses, trousers, ball gowns, boots and hats (Oladejo, 2022). Colonisation enforced a massive change in the daily wear in African cities. It heightened the spread of western culture and lifestyle throughout colonised African states. Westernisation however, connotes the absorption of Western culture and custom, that is, integrating the American and European industries, technology, lifestyle, etc. into

the native culture (Scott, 2007). This being the case, western fashion infiltrated African markets so much so that all aspects of the creative industry were affected. Notably, during the colonial era, men were looked upon as being strong and those that should embark on more serious occupations than fashion. To that end, women were mostly involved with fashion, styles and the textile industry. Prominently, the Igala women took to weaving, dying of clothes and the like. Also, since women then were predominantly teachers, Christianity penetrated via the establishment of schools. School operators were mandated to use western uniforms in schools. Western style was also adopted for attending church services, marriage ceremonies and other festivals.

## Post-Colonial Era

This brought to mind the experience of a thirty-two-year-old Gambian economist Marie Ba who used to refresh her wardrobe by patronising British fashion retailer ASOS but now updates her closet with some tailored wax print African dresses through Ghana's KIKI Clothing platform. She felt so happy with her newly found designer because by buying from KIKI she supports African products and looks quite unique in their products. She was also intrigued that her clothes were delivered by DHL from Accra to her door in Gambia's largest city, Serekunda, within five days (McBrain, 2021). This is modern technology playing out in a world compressed by the e-fashion market. Just as the medical industry has experts in every part of the body, today's fashion has specialists in footwear, headgear, eyewear, etc. As published by Euromonitor, Sub-Saharan Africa's clothing and footwear market is worth \$31bn. Ironically, fashion companies are fulfilling increasing orders from the African Diaspora, particularly in Europe and America, while orders for Ankara gowns and African print dresses are on high demand among non-African customers (McBrain, 2021). This has led to the establishment of African-based e-fashion platforms. As African clothes, footwear, bags and materials are being exported, African culture is also being exported and readily accepted by the western world. Designers today can build an online "shop" with digital tools provided by Afrikrea. This enables them to set prices and communicate directly with customers. The world visibility of African designs is high as Afrikrea has facilitated sales since the company's inception in 2016. Notably, their biggest market is the United States, followed by France and the rest of the European Union. The wider African e-commerce landscape is fast forwarded by sales in fashion. Statista projects an annual growth rate of 14.2% between 2020 and 2024.

Fashion is not just clothing as it cuts across all other facets of beautification by men and women, and is considered a conveyor of status, statement, affiliations, values, ideals and perceptions. Incidentally, the struggle today among world countries is supremacy in fashion trends and this predicts the extent of the influence a country has in the global clothing industry (<https://african.business>). The world today is obsessed with image, and being the top influencers of fashion trends also ensures that countries increase their ex-

ports of clothing and textiles across the world, taking advantage of areas of competitiveness and materials readily available to them (<http://www.tradezimbabwe.com>).

Interestingly, African fashion is taking a reverse turn whereby western fashion is being Africanised. Print materials are used to design cooperate wears. Africa, previously an exporter of raw material, now utilises raw materials to produce unique designs. In 2017, Louis Vuitton partnered with the Basotho tribe in making clothing made from their traditional blanket garments which retail for as much as R33,000.00 in Europe and abroad. This translates to Louis Vuitton successfully turning a R1000 blanket into a R33,000 high end luxury fashion trend for men (<http://www.tradezimbabwe.com>).

## **Influence of Religion and Cultural Orientation on African Fashion Industry and Entrepreneurship**

Fashion is constantly changing, but such changes are still within societal contexts: styles come and go, revolving around the norms and values of the community. Sometimes an old style or design finds its way back into the current generation. Baggy trousers won in the 1980s rose like the phoenix not long ago and resonated among young people. Dreadlocks, a hair style that was used as an instrument of protest among reggae artists and by native priests to emphasise their lack of interest in worldly beauty, has returned today. Young men adore dreadlocks so much that they spend huge sums of money and time to grow their hair and get it locked. People in Africa seem to have started wearing clothing around 180,000 years ago, soon after *Homo sapiens* evolved, about the time the first body lice evolved, with lice needing clothing to live in (Carr, 2017).

After the introduction of animal-skin clothing, people learned to make clothes out of the bark from trees such as fig. They learnt to peel off the bark of trees, pound it on rocks until every juice was squeezed out, before sewing it together. As time went on people began using the raffia palm to make cloth. Knowledge continued to expand; new technologies led to the production of linen clothing. The flax plant was the major raw material for the linen cloth. Egyptians soon built workshops that produced quality linen that was sold to people in other places. This historical reference also acknowledges the entrance of cotton clothing; people in west and central Africa learnt weaving, with this knowledge putting their abundant cotton into commercial use.

Fashion was not just a dull cover for the skin. Aesthetics was an integral part of the clothing art. Indigo dye, made from the indigo plant, is still being used in the fashion industry today. The indigo is the blue in denim jeans. Since Africa had no indigo plant, the dye was imported from India (Carr, 2017). Another beautifying practice was tie-dying. Tie-dying was used by many African cloth makers to draw patterns on their products. There was the need to make this job easier, so cloth makers had a division

of labour of sorts: the men did the pounding, spinning and weaving while women did the fabric work. Meanwhile, in northeast Africa, particularly in Egypt, there were several styles for women. Influenced by the Middle Eastern cultures, it was common to see Jelabuja worn in the Gulf States: the djellaba worn in northwest Africa, the boubou, the dashiki and the Senegalese Kaftan. To add to the beauty, women in Nigeria wore head ties (Rukweve (2022)). South Africa, with an estimated population of more than 57 million people from countless backgrounds, ethnicities and religions, has an immense cultural diversity that is expressed through the vast array of topics ranging from cuisine, music and languages to celebrations. Fashion, connecting closely with one's daily life, also plays a crucial role in the identification of South Africa's culture and people, as it does everywhere else in the world. Each piece of clothing people choose to put on can be simply because it is in their reach, or as it is used as an expression of style as well as political and religious beliefs and perspectives in life. No matter how or why it was chosen, every single piece of clothing contains a long history.

There is no doubt that religion and culture influence dress codes. No matter how sophisticated a country is, no matter how liberal the culture and the laws are, people dress to reflect their belief systems.

Fashion designers survey the prevalent belief systems to know what designs will fetch them patronage in their area. In some countries including Nigeria, a number of factors comes into play. Religion influences the dress code of both Muslims and non-Muslims alike. Nigeria's southeast, south-south and north-central areas are predominantly Christian. The Christian faith does not regulate adherents' dress code outside the church premises. Therefore, the religion's (Church) clothes are relatively different from the people's regular wear. Southwest Nigeria is quite liberal, with Christians, Muslims and traditional worshipers who co-exist harmoniously, which is shown in the variety of clothing available as each group expresses themselves without much ado.

In recent years, there has been a boom in the development of fashion shops, clothing boutiques, in Accra, Ghana. There has been more recognition for the development of art through the creation of fashion in countries such as Kenya, Morocco, Nigeria and South Africa (Ochuko (2022)). While there is a global disconnect between the western world and their interpretation of African fashion through the use of tribal patterns, many designers have risen and made an impact on the high-end fashion industry by putting a twist on their traditional African garments. New designers are now trying to expand their entrepreneurial footprint and enlighten the world about the versatility of African fashion.

Johannesburg has built up a fashion district in its inner city that has made a name for itself globally. Aba, an industrial city in Nigeria's southeast region, is a hub of the fashion industry in West Africa that has made a serious global impact through its sophisticated and durable clothes.

Also, Africans are synonymous with culture; the "the Yoruba people's life is wrapped in religion" Fakunle (2022). This assertion is not only peculiar to the Yor-

uba. Africans, generally, value religion. The link between religion and fashion is very strong. The essence of every religious practice is restriction. Religion restricts adherents from all acts which the leaders of that religion consider inappropriate and which in their opinion could impede the adherent's relationship with God. Fashion or clothes is an important aspect of religion. The traditional African religion used cloth to hide certain sacred sites. The use of white cloth by female worshippers to signify purity and innocence was rampant among the Igbo people. The use of red cloth to shield certain or all parts of the shrine was also a common practice among the Igbo and Yoruba peoples of Nigeria. Other costumes include designated caps, feathers, chalk, horsetail etc. Generally, the production of certain cloth and items of clothing has been influenced by religions of western extraction and those that exist locally (Fakunle, 2022)

Beyond religion, one of the mainstays of African culture is fashion. There are many rites imbedded in African culture, such as of passage, birth, puberty, marriage and death (Fakunle, 2022). Other celebrations include coronations, anniversaries, masquerade balls and dances. An expectant mother is supported by her husband to get befitting clothes for herself and her baby. Today, hospitals also promote the fashion industry by insisting that expectant mothers must come with baby clothes, wrappers and shoals during labour. After birth, the newborn baby continues to promote the fashion industry as they are prepared for dedication, consecration or naming. Whichever one this is, the baby's special day will excite the world of fashion as the baby, the mother, the father and other relatives will most likely get new clothes; no loving parents would want to present their baby to God in old clothes no matter how poor they might be.

Furthermore, marriage rites or weddings have, for hundreds of years, promoted the fashion industry in Africa. Today, weddings are more or less fashion shows. Some weddings have as many as five uniform groups: the bridal train (aso ebi); men in suits; committees of friends; the bride's family members; and the groom's family members. This does not include the little bride, the little groom, the chief bridesmaid and the best man.

The celebrants themselves (especially the bride) could have three different sets of clothes for their wedding day. Some cultures also insist that the mother of the bride is clothed in different attires at different stages of the marriage rites. Thus, a wedding (traditional, Christian or Islamic) is a fashion carnival of sorts in Africa. Close associates of the celebrants even with no special roles at the wedding still frown at wearing old clothes to the event. They prefer to wear brand new clothes in line with the colours chosen by the couple. Kings, when crowned and in remembrance of the day they were crowned, celebrate their crowns with large-scale events. The coronation, a celebration among the different peoples of Africa, sees the king and his family dress in unique designs to suit the occasion. Traditional rulers from other kingdoms who are invited also take the opportunity to visit their tailors and designers to acquire new pieces of clothing. Other such celebrations are anniversaries and festivals (New Yam,

Christmas, Idel Kabir, New Year's Day, etc.). These festivals often see the populace add to their wardrobes.

Last but not least are memorial rites. In Igboland, for instance, the deceased individual goes into the grave dressed in good clothing material. Mourners and friends adorn relatives of the deceased with print materials (abada, ankara). The picture of an influential person at a mother or father's funeral will amaze a non-native. The chief mourners and others are furnished with many items of clothing, with many tied to their waists, chests, shoulders and around their necks. Even in mourning, the fashion industry in Africa has a reason to be jubilant.

Africans have continued to evolve, with some cultural inhibitions removed over time. The clothing patterns of old are giving way to new ones in an attempt to reduce gender profiling and to ensure safety. Designers who want to remain relevant must update themselves.

Furthermore, African fashion has become, undoubtedly, an instrument of unification. To start with, the marks of distinction popularly called "tribal marks" are disappearing. Not many people born 30 years ago have them. The caps, the trousers, the wrappers, the head ties, the shirts, the skirts and the earrings were all once distinguishable. Today, these tribalised dress codes are occasional dresses. They are no longer dominant. It is difficult to differentiate a Ghanaian from a Nigerian. Many citizens of Benin Republic are in Nigeria without their neighbours knowing that they are not Nigerian citizens, except if they revealed this. This is one huge success story for the African fashion industry. Change changes itself and the African fashion industry will continue to change what it changed into. This has also changed the entrepreneurial orientation in the African fashion industry, making it more globalised in its uniqueness and style.

## **Fashion Industry in Relation to Afrocentrism and Indigenisation**

Since the mid-twentieth century, there have been cultural and political movements mainly comprised of African American enthusiasts who regard themselves and all other blacks as syncretic Africans and believe that their worldview should positively reflect traditional African values (Anderson, 2012). The activist Molefi Asante in conjunction with some African American scholars championed this cause by formulating the terms Afrocentrism, Africology and Afrocentricity in the 1980s (<https://www.britannica.com>). They believe among other things that people of African descent should trace back their values/ culture which was adulterated or completely erased by slavery and colonisation; that African culture and history began in ancient Egypt which is the place



of birth of civilisation; that African culture is more informed, circular, cooperative, intuitive and closely knitted with the spiritual world of gods and ghosts than the European culture, which is opposite (Adeleke, 2015). This renewed attention to African culture will be psychologically beneficial to African Americans by reminding them of their culture and values which have been erased by Europeans (Chukwuokolo, 2009). In order to inculcate their beliefs to other African Americans, they promote the preservation of their past expressed in language, cuisine, music, dance, arts and clothing. Other messengers of Afrocentrism include Jamaican activist Marcus Garvey and WEB Du Bois, the founder of National Association for the Advancement of Coloured People in 1919. Leopold Senghor, Elijah Muhammad and Malcolm X formed the Negritude in 1930 to foster need for a black homeland and superiority of black culture and genetics over others. In 1966, Maulana Karenga founded Kwanzaa. The list of activists of Afrocentrism is quite long and this contributed to its speedy legitimacy in the United States in the 1960s with the institution of the Civil Rights Movement, the multicultural movement and the influx of a large number of non-whites into the United States (Chukwuokolo, 2009). Although this movement has been greatly criticised and their arguments refuted by Lefkowitz (1996) in her book *Not Out of Africa: How Afrocentrism Became an Excuse to Teach Myth as History* (1996), it is still maintained by activists that the movement is relevant for African Americans in order to value and preserve their culture. The Afrocentric perspective reflects African history and applies it to all creative, social and political activities (<https://www.britannica.com>).

From the research conducted by the Lenzing Group across nine countries, over 80% of respondents expressed a strong inclination towards sustainable fashion and purchasing clothing made from sustainable materials. Home-grown industries focus on producing and sourcing fashion materials locally which is eco-friendly and sustainable. It is expedient that Africa adopts indigenisation as well as home-grown industries for a more holistic Afrocentrism. A reflection of this ideology can be seen from the dominance of African designs in various fashion shows across the world. There is nothing wrong with copying technology. Many technologically developed countries of the world at some point in their history copied. However, the crux of the matter lies in applying the idea gained and adapting it to local needs. Moreso, the African brand is gaining global appeal even though non-Africans are beginning to embrace it.

The fashion industry today has championed this move whereby Ankara materials are used to design beautiful office clothes for both men and women. On the other hand, the Africanised designs are not just used by Africans as African ideas have been sold to the west, courtesy of Africans in Diaspora. Indigenisation and home-grown industries have steered the fashion industry in Africa towards looking inwards to use sustainable materials within Africa for their productions (<https://qz.com>).

## Conclusion: African Fashion And Sustainability

Fashion in Africa and the relative enterprises have over the years been influenced by religion and culture but have lately been driven by the need to promote local content within business models that guarantee survival and resourcefulness.

Looking at the African fashion industry from the prism of the UN SDG (2020), three areas of interest are worth noting.

### 1) SDG 17:10 and 17:1

17.10 Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organisation, including through the conclusion of negotiations under its Doha Development Agenda

17.11 Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020

The African fashion industry is currently focused on making fashion non-discriminatory in outlook while also promoting its trade across the globe. It is growing into a multi-billion dollar industry that is enhancing the export profile of many African countries..

### 2) SDG 8:1–3; 5 and 9

8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries

8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors

8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalisation and growth of micro-, small- and medium-sized enterprises, including through access to financial services

8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products

The expanding view of the African fashion industry has accentuated the growth rate of African economies, increased job opportunities, and aided diversification, technology and innovation, creativity and entrepreneurial activities. Micro-, small and medium-scale enterprises which represents the main stay of the African industrial activities have been incentivised.

### 3) SDG 9.2, 9.4 and 9b

9.2 Promote inclusive and sustainable industrialisation and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries

9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities

9.b Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities

The burgeoning status of the African fashion industry undoubtedly places it as a pathway to diversification for most African countries whose economies have depended on primary goods such as oil, coal and gold, including agricultural products. Evolution in the fashion industry has aided innovation, industrial development and diversification as well as enhanced gross domestic product. All these benefits are consistent with a good portion of the SDG 9 as presented above, making the industry a vehicle for sustainable growth and development.

This thought is shared by Turner (2022) who pointed out three key value additions of the expanding African fashion industry to include the encouragement of entrepreneurship, stimulation of the local economy and creation of a sustainable business model. The encouragement of entrepreneurship and stimulation of local economy implies the increasing of domestic production, increased gross domestic product, job creation, increase of exportable goods and services, expansion into new market and small businesses, etc. Serving as a sustainable business model makes reference to the encouragement of economic development by the industry, creating a value chain from the provision of raw materials to weavers who handle the fabrics, down to the merchants who trades the finished product. Also, sustainability of the fashion industry derives from the local retention of profit and enhanced investments for the communities, including the eco-friendly nature of the activities of the industry. Of course, a prosperous and diversified African economy alone does not satisfy all aspects of sustainability; environmental concerns must also be addressed and this can be a topic for future investigation.

## References

- Adeleke, T. (2015). *Africa and Afrocentric historicism: A critique. Advances in historical studies*. Vol. 4. <http://www.scirp.org/journal/ahs>
- African Business. <https://african.business>
- African Fashion: History & Future-U.Mi-1. (n.d.). <https://www.umi1.co.uk/blogs/fashion-style/african-fashion-history-and-future>
- African Fashion International. (n.d.). <https://africanfashioninternational.com>
- Ajayi, A.T. (2017). Industrial advancement and policies in Nigeria: A case of the colonial textile scheme of the colonial Textile Scheme of 1945–1950. *European Journal of Political Science Studies*, 1(1).
- Ajayi, J.F.A. (Ed.). (1989). *General history of Africa. VI Africa in the nineteenth century until the 1880s*. Heinemann Publishers.
- Akinbileje, T.Y. (2014). Symbolic values of clothing and textiles art in traditional and contemporary Africa. *International Journal of Development and Sustainability*, 3(4).
- Alekhya, B., Chaitanya, J.N., & Chandramouli, K. (2021). A study on pyramids in Egypt. *International Journal for Modern Trends in Science and Technology*, 7(7), 267–273.
- Anderson, R. (2012). Molefikete Asate: The Afrocentric idea and the cultural turn in inter-cultural communication studies. *International Journal of Intercultural Relations*, 36, 760–769
- Aris, G. (2007). The power and politics of dress in Africa. Undergraduate humanities forum 2006–7: Travel.1. <https://repository.upenn.edu/uhf-2007/1>
- Arpit, S. (2020). *Homegrown brands gain prominence with consciousness and sustainability as key focuses*. <https://www.indiaretailing.com>
- Balintulo, E.B.B. (2019). An exploration of the motivations for using modernized Afro-Centric fashion designs to establish personal brands (master's thesis, Vega School). The Independent Institute of Education, Cape Town.
- Carr, K.E. (2017). African clothing – early history. Quatr.us Study Guides (May 18, 2017).
- Chukwuokolo, J.C. (2009). Afrocentrism or Eurocentrism: the dilemma. *African Journals Online*.
- Evolution of Fashion in Africa. <https://africanfashioninternational.com>
- Fakunle, O. (2022). A study of the Lagos people and their conception of dress in the pre-colonial Times. <https://researchgate.net/publication/357958409>.
- Fashionomics. (2016). Investing in the creative industries: African Development Bank Group.
- Gray, M., & Coates, J. (2008). *From “indigenization” to cultural relevance*. Ashgate.
- Jennings, H. (2011). *New African fashion*. Prestel.
- Lefkowitz, M. (1996). *Not out of Africa: How “Afrocentrism” became an excuse to teach myth as history*. Basic Books.
- McBain, W. (October 1, 2021). *Africa: Trade and investment*. Shutterstock.com
- Naankiel, P.W. Danladi, A., & Rufai, B. (2016). Colonialism and the Igala textile industry 1900 – 1960. *Lafia Journal of Africa and Heritage Studies (LJAHS)*, 1.
- Njoroge, R., Nyamache, T., & Tarus, I. (2012). *Fashion and beauty: A historical perspective*. Lambert Academic Publishing.
- Ocheni, S., & Nwankwo, B.C. (2012). Analysis of colonialism and its impact in Africa. *Cross-Cultural Communication*, 8(3), 46–54.
- Oladejo, M.T. (2022). A history of textiles and fashion in the twentieth century Yoruba world. <https://researchgate.net/publication/357900354>.
- Prince-Iroha, H. (2016). Critically evaluate the potentials of pre-colonial African trade. BamangaTukur Institute for Trade and Development. (Course: ITD770.1) History of African Trade.

- Rukweve, O. (2022, January 9). Cultural changes that have revolutionised fashion in Africa. *The Guardian*. <https://guardian.ng/life/style/cultural-changes-thathave-verstutationalized>.
- Scott, M.M. (2007). Westernization in sub-Saharan Africa: Facing loss of culture, knowledge and environment.
- Solomon, R. (June 14, 2020). <https://guardian.ng/life/fashion-and-religion-any-significant-connection/>
- Turner, B. (2022, February 21). A Malawian fashion designer's colourful dreams. <https://www.bbc.com/news/world-africa-21527449>
- Ugwukah, A.C. (2021). A historical appraisal of development in the Nigerian society from pre-Colonial to post-colonial periods. *Journal of Sustainable Development*, 14(4).
- UN SDG. (2020). <https://sdgs.un.org/goals>
- Van Zwanenberg, R.M.A., & King, A. (1975). *African trade in the nineteenth and twentieth centuries. An economic history of Kenya and Uganda 1800 – 1970*.
- World Intellectual Property Organization. (WIPO). (2011). The African Fashion Design.

Nilam Adhyapak and Bhagirathi Panda

# 7 Impact of COVID-19 on Apparel Enterprises in India: An Analysis of Sustainability

**Abstract:** In the Indian economy, the economic repercussions of COVID-19 are visible in the informal apparel enterprises in the form of employment and livelihood losses, reduction in savings and increased debts. As they are more susceptible to economic hardships and income losses during times of crisis, understanding of sustainable practices by the informal economy becomes critical. The present study attempts to understand the impact of the crisis on the entrepreneurs and workers engaged in apparel manufacturing, focusing explicitly on the COVID-19-led environmental, economic and social sustainability practices adopted by the enterprises. It is revealed that the three pillars of sustainability are positively associated with overcoming COVID-19 led disruptions. In that sense, the “informal sector” should be considered as an asset that needs to be harnessed further to promote sustainability. A more cohesive approach that brings into its fold measures to strengthen community relations, incorporate sustainable ways of production, employ economical sustainable practices to the maximum limit and develop families as strong social institutions to achieve sustainable goals is the present need.

**Keywords:** informal sector, apparel manufacturing sector, COVID-19, sustainable development, Indian economy

## Introduction

Over the last few decades, many of the world’s developing nations, including India, have witnessed their informal sector occupying a prominent position in their development practice. It is no surprise that approximately 90% of India’s workforce earns their livelihood from the informal sector (National Institution for Transforming India [NITI Aayog], 2018). Compared to the formal sector, employment distribution is more visible in the informal sector, as out of the total employment share of 465 million workers, 422 million are employed by the informal sector alone (Murthy, 2019). The sector’s share of the GDP and workforce comes to around 50 per cent (Kalyani, 2016) and 86.8 per cent (Murthy, 2019) respectively. Dev and Sengupta (2020) point out that

---

**Nilam Adhyapak**, Research Scholar, Department of Economics, North-Eastern Hill University, Shillong-793022, Meghalaya, India, e-mail: adhyapaknilam@gmail.com

**Bhagirathi Panda**, Department of Economics, North-Eastern Hill University, Shillong-793022, Meghalaya, India, e-mail: bhagirathi2@yahoo.co.in

the employment share of both the manufacturing and service sectors within the informal sector accounts for about 84 per cent. Unni and Rani (2003) noted that although the formal manufacturing sector generates the maximum share of value addition, it constitutes only 20 per cent of employment; the informal manufacturing sector generates the higher share of employment at around 80 per cent.

Thus, in an informal sector-dominated economy, the disruptions in the economic activities and livelihoods of the workforce due to COVID-19 have been quite profound. In the face of COVID-19, a plethora of literature has reported the unprecedented consequences of income and employment loss on the SMEs, start-ups and the informal sector (Vyas, 2020; Roever & Rogan, 2020; Sangwan et al., 2021; Mohanty, 2019; Salamzadeh & Dana, 2020). As cited from The Centre for Monitoring Indian Economy, an article by The Hindu states that around three-quarters of the 122 million workers who became unemployed in April 2020 belonged to the informal sector (The Hindu Data Team, 2020). Also, estimated income losses came to around 4 lakh crores among the informal sector workers, only two months after the first lockdown in March 2020 (Thomas, 2020).

Within the unorganised sector in general, the apparel sector occupies a significant position in the manufacturing sector. Indrakumar (2013) points out that for developing countries like India, 15 % of the exports are from the apparel segment. In general, the apparel and textile industry occupies a prominent share of the manufacturing sector as it contributes around five per cent of India's GDP (India Brand Equity Foundation, 2022). The informal sector enterprises within the apparel sector generate the maximum share of value-added and employment (Mezzadri, 2008). The sector constitutes one of the largest employment-generating sectors in the country and has paved the way to employ a large proportion of informal sector workers especially for women, semi-skilled and even unskilled labourers, accounting for about 88 per cent of total apparel employment in 2010–11 (India Brand Equity Foundation, 2022; Khan, 2020; Roy, 2009).

The apparel industry in India is concentrated primarily around 20 clusters in the country, namely Delhi, Ludhiana and Jaipur in northern India, Kolkata in eastern India, Mumbai in western India, and Chennai, Bangalore, and Tirupur in southern India (Indrakumar, 2013). However, in North–East India, the importance of apparel manufacturing can be seen from the fact that for states like Arunachal Pradesh, Meghalaya and Tripura, the manufacturing of apparel's share to the total Urban Informal Manufacturing Sector (UIMS) is around 42.4 per cent, 41 per cent and 21.4 per cent respectively (NSSO, 2015–16). For Assam, the sector constituted the highest share at 18 per cent (NSSO, 2010–11) and 30 per cent (NSSO, 2015–2016) respectively in the total UIMS.

With the advent of COVID-19, the heavy toll on the livelihood and earnings of people engaged in the informal apparel sector caused by the pandemic outbreak is indubitable. As referenced from studies (Magidi, 2022; Masocha & Fatoki, 2018), while problems of job loss and financial hardships were inevitable, the importance of a shift towards sustainability measures within the enterprises has gained quite an im-

portance. On that background, the chapter, in general, brings into focus the unprecedented ramifications of COVID-19 on the livelihoods of the informal apparel workers and particularly new perspectives on sustainability measures employed within the enterprises to combat the crisis better.

## Review of Literature

The study divides the literature thematically into two sections: firstly, we discuss the impact of COVID-19 on the informal apparel manufacturing enterprise in terms of loss of income and employment. Secondly, a brief exploration on the conceptual framework of sustainability explicitly focusing on environmental, social and economic sustainability and how it can be linked up with the development practices of the informal sector enterprises is undertaken.

### Impact of COVID-19

The apparel industry was among the hardest hit sectors by COVID-19 (ILO, 2020). In fact, studies argue that the garment manufacturing sector has borne one of the highest income losses (ILO, 2020). Mirdha (2020) discusses how there have been significant disruptions in apparel firms' supply and demand channels, causing disruptions in cash flow arrangements. The greater brunt of the crisis was endured by the workers, who, despite completing the orders, were not paid their due wages. An ILO (2020) study puts forward the argument that the severity of the lockdown is related to the decline in consumer demand. The leading explanation for the massive impact on garment enterprises is related to the fact that there was a significant fall in consumer demand primarily due to uncertainty among consumers on whether to make further purchases, along with the closedown of shops and halting down of different modes of transportation.

Drawing on a study by Self Employed Women's Association (SEWA), it was reported that women in the informal sector have found it increasingly difficult to get employment due to the financial crisis and less accessibility to markets. Additionally, in a study conducted across 12 states in India, 78 per cent of women reported a reduction in their savings (Sen et al., 2020). In a study conducted globally in 12 cities by WEIGO, there were higher rates of borrowing and liquidation of assets observed among the informal workers (Roever & Rogan, 2020). One of the long-standing problems and most significant challenges is how efficiently better credit support can be provided to these workers in times of crisis. The pandemic has shown how lack of access to financial services has made workers increasingly dependent on informal sources like moneylenders to meet their financial needs while simultaneously making



massive cuts in their consumption expenditure (Dev & Sengupta, 2020). However, on the positive side, the pandemic also showed how challenges were transformed into opportunities when the garment workers resorted to mass production of clothing masks in view of the growing demand (Khan, 2020).

## Sustainability in Informal Apparel Enterprises

The theory of “sustainable development” is built upon three concepts: economic, social and environmental sustainability (Kahn, 1995). Although sustainable development appertains mostly to environmental sustainability, a broad understanding of sustainability requires encompassing both economic and social factors too (*Textile Today*, 2019).

Sustainability, as a concept, should be understood as the capacity to facilitate development by taking account of both economic output and societal necessities (Magidi, 2022). Both the sustainable development dimensions of economic and social sustainability focus on aspiring for development by aiming for efficiency in economic output, gaining an edge by improvising market survival techniques, all in all, by considering societal aspirations and needs (Masocha & Fatoki, 2018). An idea behind environmental sustainability is that wastes generated should not exceed the absorbing capacity of the earth; thus, humans should strive to protect the natural capital (Annaldewar et al., 2021; Goodland, 2002) and engage in a sustainable way of production (Asif, 2017).

The social sustainability approach depends on the optimal use of resources along with their allocation and fair distribution (Kahn, 1995). Social sustainability, as a practice, has recently come to light in the developed and developing regions of the world (Dempsey et al., 2011). It strives to sustain social capital, that is, by bringing communities to engage and work together, thus, building networks of relationships and getting more access to institutions at large (Stanley, 2003). Advocating community participation to sharing common ideals to ensure they mutually benefit is seen as a practice to achieve social sustainability (Goodland, 2002). Thus, development should ensure that people’s aspirations and needs are met by considering the social and cultural aspects (Benaim & Raftis, 2008). On the other side, economic sustainability implies the sustainable use of economic goods by ensuring that future needs are met efficiently (Kahn, 1995; Lobo et al., 2015). It takes shape when enterprises can withstand economic disturbances by creating favourable conditions in the form of reduction of their operating costs and implementing investment plans to improve production levels, to name a few (Aldaadi, 2021). Furthermore, environmental sustainability eventuates when business practices stress on reuse and recycling of resources. The goal is to negate the negative environmental impacts by incorporating eco-friendly forms of technology in the production process (Asif, 2017).

Groschl (2021) argues that there has been a vast number of studies on sustainability pertaining to the formal sector; however, discourses on sustainability practices in the informal sector encompassing the heterogeneous nature of activities have not been much discussed. In a study by Magidi (2022), the informal sector has been shown as a vehicle to promote social sustainability through fostering social cohesion and building social capital. This has collectively brought communities together and built networks based on trust and belongingness to address and overcome challenges. Thus, for being more susceptible to economic hardships and income losses during crises, understanding such sustainable practices by the informal economy becomes critical.

Despite the ongoing business competition, there are instances where informal sector actors have pooled money together to help each other out during an economic crisis (Magidi, 2022). Curtis (2003) noted that self-sustaining local communities like that of the informal sector could play a prominent role in achieving economic sustainability. Due to the nature of work and their ability to quickly adhere to changes in the market, the informal economy can drive the way towards reaching a sustainable future (Ruzek, 2015). In the works of Uzo and Shittu (2019), social responsibility practices among the informal enterprises have been positively linked to sustainable development. In the Indian economy liberalisation brought favourable opportunities for developing sustainable self-employment, but the prevailing education system caused a major setback in facilitating innovative entrepreneurship (Dana, 2000).

For industries such as that of apparel enterprises, business operations need to ensure synergy between economic, social and environmental sustainability (*Textile Today*, 2019). However, during COVID-19, sustaining financial stability became more of a priority for business operations, leading to a setback in sustainable practices in the apparel sector (Aldaadi, 2021; Sharpe et al., 2022). Moreover, the disruptions in demand and supply chains, reduction in household expenses and reduced wages affected the workers' lives in varied ways, which were exacerbated to a greater extent due to the absence of social safety nets (Annaldewar et al., 2021; Trautims et al., 2020). Ricchetti and Palma (2020) suggest that the post-COVID-19 lockdown has created a landscape or, more so, a wake-up call to prioritise a switch towards sustainability to avoid severe long-term consequences in the apparel market.

A pilot survey undertaken by us during the aftermath of the first phase of the lockdown (January-February 2021) showed how the unprecedented disruptions in the business operations of informal apparel manufacturing enterprises led to immense loss of employment and income. However, some enterprises were able to cope with the crisis better by functioning in an environmentally, socially and economically sustainable manner, which leads us to infer that analysing it for larger sample units will give us a holistic understanding of how COVID-19 had driven sustainability in these small enterprises to palliate their way to an early recovery. In that line of discussion, one of the aspects to reflect upon is the COVID-19-led sustainability practices adopted by the enterprises. Thus, the present study attempts to examine and explore the activ-

ities of the informal apparel manufacturing enterprises with respect to the three pillars of sustainability during a period of economic turmoil and uncertainty of COVID-19. The empirical findings on quantitative and qualitative data will shed light on how contextualising sustainability becomes imperative during crises like COVID-19.

One of the essential research gaps the study aims to address is that the majority of the prevailing literature documenting the intensity of the COVID-19 crisis had centred on the major apparel clusters of the country, such as Tirupur, Indore and Ludhiana (Mehta & Kaur, 2021; Mishra & Singh, 2020; Mahajan & Bains, 2020; Krishnan, 2020). Although studies have documented the severity of the crisis in the biggest apparel manufacturing hubs of the world in Myanmar and Bangladesh (Sen et al., 2020; Chakraborty & Biswas, 2020; Kabir et al., 2020), there is not a single study in North-East India that relates to the impact of COVID-19 on the apparel sector. Also, within the apparel sector, the literature is replete with studies that have focused on measures and importance of incorporating sustainability on the production processes in the post-Covid world (Annaldevar et al., 2021; Casteneda et al., 2021; Sharpe et al., 2022); however, there is a dearth of literature on the sustainability practices adopted, especially among the small businesses amid the pandemic.

As against this background, two research questions have been addressed by the chapter: i) is there variability in the impact of COVID-19 on informal apparel manufacturing enterprises, and how have sustainable practices played a role in minimising its impact on business operations?; ii) what are the environmental, social and economic sustainability practices adopted by informal apparel manufacturing enterprises during the COVID-19 crisis? Both research questions will give insight into whether sustainable approaches have positively paved the way for informal apparel manufacturing enterprises to attenuate the negative consequences of COVID-19.

The study also proposes two hypotheses as follows:

- (i) During economic turmoil like the COVID-19 crisis, social sustainability becomes more critical for the existence and continuity of informal apparel manufacturing enterprises; and
- (ii) Economic and environmental sustainability practices in terms of coping strategies are seen as the vital plan of action among the informal apparel manufacturing enterprises during the COVID-19 crisis.

In addition to the Introduction and Review of literature in Sections 1 and 2 respectively, the chapter is structured into the following: Section 3 lays out the description of study area; Section 4 discusses the data sources and methodology adopted for analysis of the data. Section 5 integrates the important findings that emerged from the study within the framework of sustainability. Finally, Section 6 provides the conclusion.

## Description of Study Area

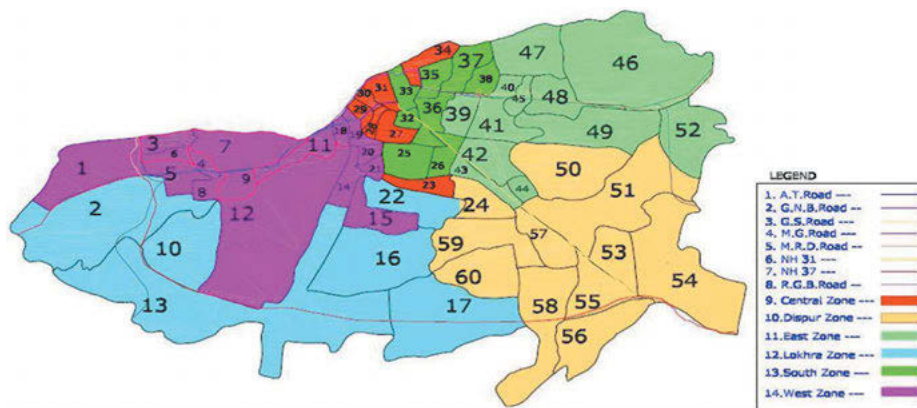
Our study area is located in Guwahati city of Assam, in the north-east of India. Assam is known to be the largest, comparatively developed and easily accessible state in this area. The state is divided into 35 districts and Guwahati, falling under the Kamrup Metropolitan district. Being Assam's largest city, Guwahati is a fast-growing city. In addition to serving as a dominant centre of retail, commercial and industrial activities, the city also acts as a node to connect the other neighbouring north-eastern states of Tripura, Mizoram, Nagaland, Manipur, Meghalaya and Arunachal Pradesh.

During the last few decades, Guwahati has witnessed a wide range of informal sector activities, mostly occupied by the migrant workforce from all over the country. The importance of the informal sector can be stated from the fact that around 90 per cent of the city's total employment comprised of the informal sector during the period of 2001–2011 (Das, 2016).

## Data and Methodology

### Data Source

Guwahati is chosen as the area for primary data collection. The final survey was conducted during the period of April 2021–November 2021. From each of the six zones as demarcated by the Guwahati Municipal Corporation, the population units which comprised of all the informal apparel manufacturing enterprises were identified by employing the street counting and snowball sampling (Groenland & Dana, 2020) method (Figure 7.1).



**Figure 7.1:** Zones demarcation of Guwahati Municipal Corporation.  
Source: Guwahati Municipal Corporation.

Accordingly, the sampling frame was constructed by following three criteria:

- (a) All the informal apparel manufacturing enterprises with less than 10 workers.
- (b) Unincorporated manufacturing enterprises in the textiles sector not including the (i) government/ public sector enterprises (ii) cooperatives and (iii) those enterprises which are registered under sections 2m(i) and 2m(ii) of the Factories Act, 1948 or bidi and cigar manufacturing enterprises registered under Bidi and Cigar Workers (Condition of Employment) Act, 1966.
- (c) Informal apparel manufacturing enterprises that are at least in five years of operation or more.

After the sampling frame was constructed which comprised of 1,200 enterprises, the proportionate sampling method was employed to choose the sample size from each of the zones relative to the entire population units (Table 7.1). For the study, 500 enterprises were chosen as final sample units.

**Table 7.1:** Proportionate sampling technique.

Zones	No. of enterprises	Proportion to total	No. of sample units for zone	Actual no. of sample units for the study
Dispur zone	385	0.321	160.42	160
Lokhra zone	54	0.045	22.50	22
East zone	270	0.225	112.50	113
Central zone	202	0.168	84.17	84
South zone	112	0.093	46.67	47
West zone	177	0.148	73.75	74
	1200		500	

Source: field data.

## Methodology

The study undertakes a mixed method research approach using both semi-structured interviews and a structured questionnaire (Harris & Brown, 2010). For the quantitative analysis of the data, a logistic regression has been used to analyse the disproportionate impact of the pandemic on informal apparel manufacturing enterprises. The main purpose of the use of a logistic regression model is to understand how the impact of the crisis is disproportionate among the enterprises based on various factors and investigate whether sustainability practices play a role in combating the crisis. To determine the dependent variable, the variability of yearly income distribution between the pre-COVID-19 (January 2019-December 2019) period and during COVID-19 period (Janu-

**Table 7.2:** Index for determining the dependent variable.

Indicators	Description
Enterprises reporting less than 60 per cent decrease in income	Small impact (coded as 0)
Enterprises reporting 60 per cent or more decrease in income	Large impact (coded as 1)

Source: Field data.

ary 2020-December 2020) is calculated.<sup>1</sup> The indicators for the dependent variable are then determined as percentage change in the annual income levels (Table 7.2).

The logistic regression model is given in the form (Arimah, 2001):

$$\text{Log} \frac{P}{1-P} = a_0 + B_i X_i$$

Solving for P,

$$\frac{P}{1-P} = e^{a_0 + B_i X_i}$$

$$P = (1-P) e^{a_0 + B_i X_i}$$

$$P + P e^{a_0 + B_i X_i} = e^{a_0 + B_i X_i}$$

$$P(1 + e^{a_0 + B_i X_i}) = e^{a_0 + B_i X_i}$$

$$P = \frac{e^{a_0 + B_i X_i}}{1 + e^{a_0 + B_i X_i}}$$

$$P = \frac{1}{1 + e^{a_0 + B_i X_i}} \quad (1)$$

Equation (1) denotes the cumulative logistic probability function, where

P = Probability of a large impact due to COVID-19

$a_0$  = Intercept

$B_i$  = Parameters to be estimated in the model

$X_i$  = Regress and values

Additionally, the study also employs the qualitative analysis methodology in order to have an in-depth understanding of the social, environmental context of the challenges encompassing the enterprises, which is often overlooked by the quantitative analysis (Dana & Dana, 2005). Following the social distancing measures, face to face interviews were conducted with the respondents regarding the challenges and issues faced amid the crisis. After appropriate coding of the recorded responses, certain themes were identified as shown in Table 7.3.

<sup>1</sup> The calculations are based on the primary survey.

**Table 7.3:** Summary of the themes identified.

Major themes	Sub-themes
Coping up strategies	Engagement in alternative opportunities Linkages with formal sector
Problems encountered	Financial hurdles Low consumer demand
Source of credit	Borrowing from formal/ informal sources Self -help groups
Productive use of time during lockdown	Use of digital media Self-engagement

Source: field data.

Finally at the end, for a detailed analysis on the envisaged support mechanisms, the study adopts a Likert scale analysis to measure the entrepreneurs' responses.

## Findings and Discussion

### Regression Results: Excerpts from Quantitative Analysis

For the logistic regression model, the predictor variables chosen to affect the dependent variable (large impact) are: entrepreneur's gender (GNDR), whether any kind of financial aid was received (FINA), the type of establishment (ESTB), total workers working in the enterprise during the period (TWRK),<sup>2</sup> type of ownership of the enterprise (OWNE), whether the entrepreneur had any savings (SAVE) and whether the entrepreneur had an alternative income source (ALTI). The main focus here is to analyse whether the type of ownership of the enterprise (OWNE) has a significant impact in explaining the likelihood of enterprises enduring a large impact. It is envisaged that enterprises which are not family based will have a higher likelihood of being impacted by a large extent. Table 7.4 presents the description of the predictors.

Moving ahead, the results show that the model doesn't suffer from multicollinearity problem, since the tolerance value is found to be greater than 0.02 and VIF less than 10 (see Table 7.7. in the appendix). Also, the model is considered to be a good fit from the model fit statistics shown in Table 7.5.

<sup>2</sup> It must be noted that the endogeneity problem due to workers going back to their native villages during the COVID-19 period causing manufacturing disruptions has been controlled in the regression by considering only those enterprises where in both the pre-COVID-19 and during COVID-19 period workers have remained the same.

**Table 7.4:** Description of the predictors.

ALTI (Alternative source of income)	(Dummy) Yes=1, No=0
FINA (Financial aid received)	(Dummy) Yes=1, No=0
GNDR (Gender of the entrepreneur)	(Dummy) Male=1, Female=0
TWRK (Total number of workers)	(Continuous) total workers during Covid-19 year
SAVE (Savings of the entrepreneur)	(Dummy) Yes=1, No=0
ESTB (Type of establishment)	(Dummy) Permanent=1, Temporary=0
OWNE (Type of ownership)	(Dummy) Family owned enterprise=1, otherwise=0

**Table 7.5:** Model fit statistics.

Log likelihood	388.553
X2	28.288*
(df)	7
Nagelkerke R square	0.102
Overall predicted accuracy	82%

\*Significant at 1 per cent level of significance

Note: Hosmer-Lemeshow test [ $\chi^2=4.427$

(non-significant) ( $p > 0.05$ )] shows that the model is a good fit

The results of the regression model are shown in Table 7.6. The regression equation is written as:

$$\text{Ln (odds large impact)} = -0.335 + 0.565\text{SAVE} + 1.135\text{FINA} + 0.027\text{TWRK} + 0.898\text{OWNE} - 0.132\text{ESTB} + 0.234\text{GNDR} + 0.484\text{ALTI}$$

**Table 7.6:** Results of the logit regression model.

	B	S.E.	Wald	df	Sig.	Exp(B)
SAVE(1)	.565	.278	4.136	1	0.042*	1.760
FINA(1)	1.135	.329	11.918	1	0.001**	3.112
TWRK	.027	.101	.070	1	0.792	1.027
OWNE(1)	.898	.335	7.187	1	0.007**	2.454
ESTB(1)	-.132	.288	.211	1	0.646	.876
GNDR(1)	.234	.287	.666	1	0.415	1.264
ALTI(1)	.487	.267	3.322	1	0.068	1.628
Constant	-.335	.487	.472	1	0.492	.715

P<0.01\*\*

P<0.05\*

Here, the last category (coded 1) has been taken as the reference category for the categorical variables. The findings indicate that SAVE (B=0.565) and FINA (B=1.135) are positive and significant in explaining the likelihood of enterprises enduring a large impact. This implies that entrepreneurs with no accumulated savings and enterprises

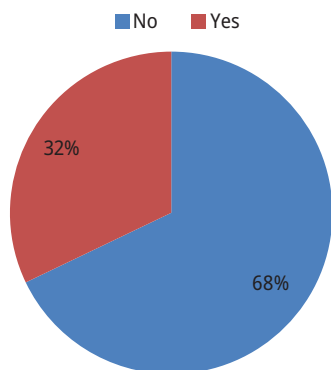


which did not receive any financial aid are 1.76 times and 3.112 times more likely to be affected by a large extent respectively. However, our main variable of interest is the type of ownership (OWNE). The odds ratio of 2.45 reveals that enterprises which are not family based are 2.45 times more likely to be impacted to a large extent. The above findings go in accordance with what literature has suggested, that families can act as strong social institutions and agents to meet their social needs (UNICEF, 2018). It can be concluded that the pandemic highlighted the importance of family as a vital institution in coping with the crisis better in the informal sector world.

## Challenges and Issues Faced During and After the Lockdown: Excerpts from the Qualitative Analysis

At the time of writing, the ongoing crisis has shown how the labour market is in a state of flux due to the uncertainties of demand and supply fluctuations. In the following section, the study attempts to produce a qualitative analysis of the data to understand how in their own small ways the enterprises played a seminal role in promoting community cohesion, skills exchange and building sustainable practices.

**Coping up strategies:** due to lack of income protection, several respondents resorted to other forms of employment which ranged from street vending and driving rickshaws to delivering fast food goods (Figure 7.2). Since the labour market is composed of both migrant and local workers, some went to their village to engage in farming. Due to the rise in demand for protective masks, there were many who used this opportunity as a coping strategy to overcome the crisis. The enterprises were engaged in manufacturing a wide variety of masks such as masks made from traditional Assamese *Gamocha*<sup>3</sup> to surgical masks. It was sold between the range of Rs 10 and Rs 15 per piece depending on the thickness of the layering.



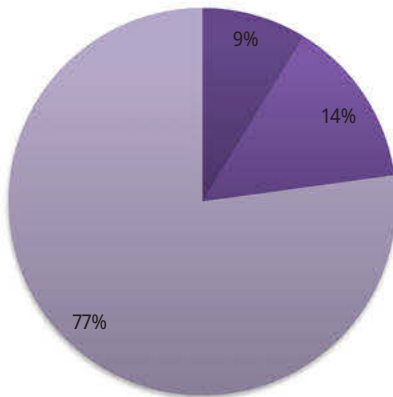
**Figure 7.2:** Whether respondents looked for other alternative opportunities.  
Source: field data.

<sup>3</sup> Traditional cloth material generally used as a towel.

**Problems encountered:** the fact that many of them were planning to close down their units because of non-payment of bills shows the precarious nature of their employment. More than 50 per cent of respondents also complained that their units were infested by rodents during the lockdown, so they had to spend extra from their savings to undertake repairs. Their worries were exacerbated by the fact that after the lockdown the customers sometimes forced them to charge less for the orders and, with the limited orders they got, they were compelled to abide by it in the fear of not losing customers. Added to that, due to low consumer demand, most of them were earning by taking part time orders from other shops. For men, who were single bread winners of the family, doing part time work was more of a compulsion than a choice since the earnings were not enough to support their families.

**Source of credit:** getting access to financial sources was quite a challenge for most of the respondents. It was observed that around 58.8 per cent of respondents had received some kind of financial help and, among them, 8.7 per cent took help from government institutions and 14.1 per cent got help from private institutions (Figure 7.3). However, 77.2 per cent mostly resorted to informal sources of borrowing from family and friends. This also includes the women who got credit from self-help groups such as SEWA and other *Mahila*<sup>4</sup> committees operating near their homes.

■ Govt. institutions   ■ Private institutions   ■ Family and friends



**Figure 7.3:** Source of financial aid.  
Source: field data.

**Productive use of time:** during lockdown, some women respondents revealed that they utilised their time in designing their own garments from home. One of the respondents, Minoti Devi from *Lichubari* area, started her own YouTube channel where

<sup>4</sup> Women.

she taught sewing and cutting techniques for making intricate designs. Several others have used the leftover raw clothing materials to make decorative masks and bags out of it. The economic uncertainties have also pushed some of the enterprises to adjust to the new normal by promoting their products through the use of social media and providing options for digital payment methods.

The following are some snippets of the conversations with the workers taken during the course of the field work. Working in a small cramped up unit, one of the respondents said, “After the lockdown, we get no orders but we keep the shop open in the hope to get some money to feed the family. Our house rent hasn’t been reduced either. We are planning to go back to our village. I tried selling vegetables on the streets in the evenings but was harassed by the policemen, since I didn’t have any designated workplace. My husband works in the furniture store, but lately he hasn’t got any work either. My son was enrolled in a private school before the COVID-19 crisis but due to shortage of money; we shifted him to a Govt. School” (Rashida Begum, 26).

For another respondent, who owns her own tailoring unit, the extra source of money she was getting was by selling fruits in the market area. She also had set up a small kitchen near her house where she and her friends cooked and delivered food to those in quarantine: “The only fund support I received was from the women self-help groups operating nearby my house” (Mamtaz Begum, 45).

The problems echo several others working in this industry although the intensity may differ. For another respondent the brunt of the crisis has left her family in distress: “I have still not paid my rent dues along with the money I have borrowed from my friends. The only orders I got during the lockdown was to make 2000 masks for a Jorhat Tea company, where the raw materials were sent to us and the masks were made from my home” (Aklima Fatima, 30).

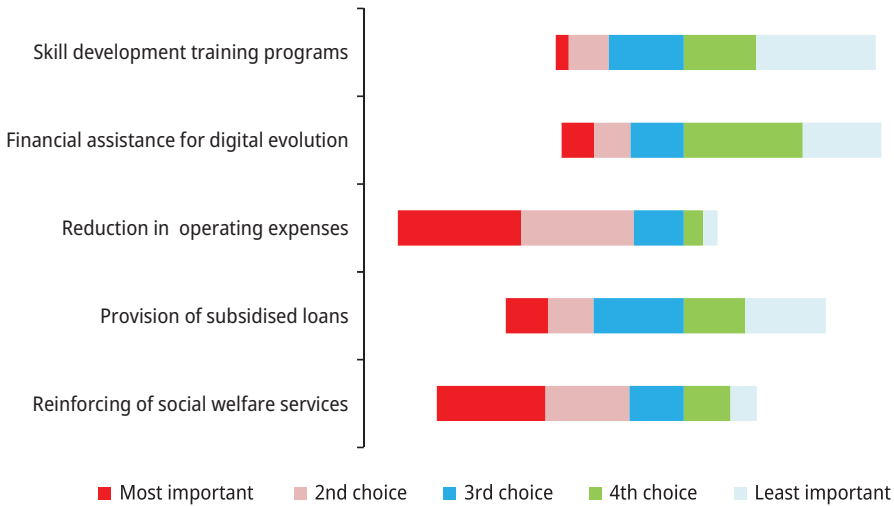
The following important excerpts have been enumerated from the given analysis. Firstly, it is clear that the economic uncertainties that have emerged from the crisis have unfortunately brought their production operations to a halt.

Secondly, there is no doubt that access to online communication networks has always been limited for informal enterprises; however, our findings suggest that the pandemic has impelled these enterprises to adapt to the new normal by incorporating digital resources. This shift to a digital transformation will be a welcoming move to ensure economic and social sustainability. The dependence on digital platforms, such as social networking sites, as a need to fulfil their objectives can create better entrepreneurial participation to reach a wider audience.

These findings corroborate with the hypothesis that economic and environmental sustainability practices in terms of coping strategies are seen as the crucial plan of action among informal apparel manufacturing enterprises during the COVID-19 crisis. Additionally, our results from both the quantitative and qualitative analysis support the hypothesis that during economic uncertainties like the COVID-19 crisis, social sustainability becomes more critical for the existence and continuity of informal apparel manufacturing enterprises.

## Entrepreneurs' Response to Support Mechanisms Required during COVID- 19

Given the fact that the economic repercussions of the pandemic are continuing, the following section attempts to investigate the kind of support mechanisms envisaged by entrepreneurs in times of distress. The purpose of this analysis is to understand the barriers to the growth of their enterprises during COVID-19 and, in that context, the support required during crises from the subjective perspective and experiences of the entrepreneurs. The results from the findings are measured on a 5-point Likert scale ranging from most important to least important (Figure 7.4).



**Figure 7.4:** Kind of support mechanisms required during the crisis.  
Source: field data.

The findings indicate that the highest priority has been given to support for the reduction in enterprises' operating expenses and the reinforcing of social welfare services. For the former, 39 per cent and 35 per cent of respondents have opined it to be the most important and second most important choice, respectively. For the latter, 34 per cent of respondents have considered strengthening social welfare measures to be of utmost importance. Let us look into the other support mechanisms, such as the necessity for subsidized loans. Although 13 per cent have opined it to be most important, a higher percentage of respondents (25 per cent) have placed it as least important. In the case of training programs for skill development, only a small percentage of respondents (4 per cent) have prioritised it highly; around 37 per cent have regarded it to be least important. Furthermore, the majority of respondents have not consid-

ered support in the form of financial assistance for digital transformation as the most important: around 25 per cent have considered it the least important.

The important takeaways from the above findings are that support channels in the form of provision of social safety nets and policy support measures to reduce operating costs have been regarded highly as compared to public assistance programs for digital evolution and skill development. For the latter, respondents have put forward their opinion that taking loans creates a constant burden and pressure for them to repay back on time. Moreover, they believe skill-based training in their own enterprise adds more productivity to the workers rather than getting engaged in training programs that other institutions offer. Also, although a leap towards digital transformation is of prime importance during these times, respondents have opined that financial support for it may not be necessary to combat the crisis compared to the rest of the support mechanisms.

## Conclusion

This chapter reflected on the perceived impact of COVID-19 on informal apparel enterprises contextualising with respect to the adoption of sustainability practices. The analysis gave valuable insights into how informal apparel manufacturing enterprises strategised themselves in their small ways by employing different sustainable measures to alleviate their hardships to some extent. Building on the findings from a mixed method research approach, the chapter concludes that sustainable practices have become essential in the functioning of these informal apparel manufacturing enterprises with the onset of the crisis.

At a junction when discussions on the informal sector's unrealised capability to exhibit sustainable development have gained ground, one also needs to consider how sustainable the path to recovery is thereafter, mainly how better sustainability practices can be attained. The excerpts of conversations with the informal workers showed that COVID-19 had escalated the challenges of the apparel workers. The findings also indicated that the need to reinforce social safety nets and policies to address higher operating costs of enterprises occupies a higher priority than other support mechanisms. This makes us ponder whether the informal sector continues to be at the apathy of the government schemes.

It is essential to understand that social safety nets are one kind of arrangement of social sustainability in terms of taking care of children's educational needs by sponsoring their education and providing affordable housing, amongst others. We can see the importance of the social safety dimension when it comes to the growth and continuity of apparel enterprises. Taking this into consideration, the chapter concludes that the state support mechanisms to provide social security protection to informal workers in times of crisis are lacking on many fronts. Therefore, a pivot towards a more robust and inclusive social security program must be introduced, such as through income support in the form of direct cash transfers to people who have closed their enterprises or are on the verge of closing down due to the inability to pay

rent and electricity bills. Also, affordable housing should be made available for those who have seen a significant drop in their savings and decided to return to their villages as they cannot manage household expenses. There is also the need for fee waivers for parents struggling to meet school expenses for their children.

Furthermore, the results from the study propose that the three pillars of sustainability are positively associated with overcoming COVID-led disruptions. In that sense, the informal sector, predominantly understood as a barrier to growth and development, should be instead considered as an asset that needs to be harnessed further. The participation of leading stakeholders and support from the policymakers is crucial in this regard. A more cohesive approach that brings into its fold measures to strengthen community relations, incorporate sustainable ways of production, employ economical sustainable practices to the maximum limit and develop families as strong social institutions to achieve sustainable goals is the present need.

The chapter hopes to shed light on the positive contributions of sustainable practices undertaken among informal apparel manufacturing enterprises. It opens avenues for future advances in research and academic discourses related to COVID-19-led sustainability practices at the forefront. With this in mind, the need to further explore the informal sector's potential towards reaching sustainable development goals will be a welcoming change.

## Appendix

**Table 7.7:** Tolerance and VIF between the independent variables.

Variables	Tolerance	VIF
SAVE	.861	1.161
FINA	.869	1.150
TWORK	.761	1.313
OWNE	.972	1.029
ESTB	.882	1.133
GNDR	.888	1.127
ALTI	.963	1.038

## References

- Aldaadi, S.E.H. (2021). Impact of economic sustainability in apparel factories on economic challenges in Saudi Arabia. *Open Journal of Social Sciences*, 9(7), 257–272.
- Annaldewar, B.N., Jadhav, N.C., & Jadhav, A.C. (2021). Impact of COVID-19 on sustainability in textile & clothing sectors. In *COVID-19: Environmental Sustainability and Sustainable Development Goals* (pp. 93–116). Springer Singapore.
- Arimah, B.C. (2001). Nature and determinants of the linkages between informal and formal sector enterprises in Nigeria. *African Development Review*, 13(1), 114–144. <https://doi.org/10.1111/1467-8268.00033>
- Asif, A.K.M.A.H. (2017). An overview of sustainability on apparel manufacturing industry in Bangladesh. *Science Journal of Energy Engineering*, 5(1), 1–12.
- Benaim, C.A., & Raftis, L. (2008). *The social dimension of sustainable development: Guidance and application* (doctoral dissertation). Blekinge Institute of Technology, Karlskrona, Sweden.
- Castañeda-Navarrete, J., Hauge, J., & López-Gómez, C. (2021). COVID-19's impacts on global value chains, as seen in the apparel industry. *Development Policy Review*, 39(6), 953–970.
- Chakraborty, S., & Biswas, M.C. (2020). Impact of COVID-19 on the textile, apparel and fashion manufacturing industry supply chain: case study on a ready-made garment manufacturing industry. *Journal of Supply Chain Management, Logistics and Procurement*, 3(2), 181–199. <https://hstalks.com/article/6059/impact-of-covid-19-on-the-textile-apparel-and-fashion-business>
- Curtis, F. (2003). Eco-localism and sustainability. *Ecol. Econ*, 46, 83–102.
- Dana, L. P. (2000). Creating entrepreneurs in India. *Journal of Small Business Management*, 38(1), 86–91.
- Dana, L.P., & Dana, T.E. (2005). Expanding the scope of methodologies used in entrepreneurship research. *International Journal of Entrepreneurship & Small Business*, 2(1), 79–88.
- Das, N. (2016). *Employment Generation in the Urban Informal Sector of Assam: A Case Study of Guwahati city*. (Doctoral dissertation, Guwahati University, Assam). <https://shodhganga.inflibnet.ac.in/handle/10603/197188>.
- Dempsey, N., Bramley, G., Power, S., & C. Brown. (2011). The social dimension of sustainable development: Defining urban social sustainability. *Sustainable Development*, 19(5), 289–300.
- Dev, S.M., & Sengupta, R. (2020). *Covid-19: Impact on the Indian economy* (Working Paper 2020-013). Indira Gandhi Institute of Development Research. <http://www.igidr.ac.in/pdf/publication/WP-2020-013.pdf>
- Goodland, R. (2002). Sustainability: Human, social, economic and environmental. *Encyclopaedia of Global Environmental Change*, 5, 174–196.
- Groenland, E., & Dana, L.-P. (2020). *Qualitative methodologies & data collection Methods: Toward Increased Rigour in Management Research*. World Scientific.
- Groschl, S. (2021, October). *What does sustainability look like in informal economies?* <https://knowledge.essec.edu/en/sustainability/what-does-sustainability-look-informal-economies.html>
- Guwahati Municipal Corporation. (2021). *GMC zone ward map*. [https://ptax.gmcassam.in:8443/GMCPortal/propertyTax/GMC\\_Zone\\_WardMap.jsp](https://ptax.gmcassam.in:8443/GMCPortal/propertyTax/GMC_Zone_WardMap.jsp)
- Harris, L.R., & Brown, G.T. (2010). Mixing interview and questionnaire methods: Practical problems in aligning data. *Practical Assessment, Research, and Evaluation*, 15(1), 1–19.
- India Brand Equity Foundation. (2022, May). *Apparel and garment industry and exports*. <https://www.ibef.org/exports/apparel-industry-india>
- Indrakumar. (2013). Employment intensity of output: An analysis of non-agriculture sectors apparel sector. *IAMR Report No. 12/2013*. [http://iamrindia.gov.in/writereaddata/UploadFile/reportapparel\\_1750.pdf](http://iamrindia.gov.in/writereaddata/UploadFile/reportapparel_1750.pdf)
- International Labour Office. (2020, November). *Gendered impacts of COVID-19 on the garment sector*. [https://www.ilo.org/asia/publications/WCMS\\_760374/lang-en/index.htm](https://www.ilo.org/asia/publications/WCMS_760374/lang-en/index.htm)
- Kabir, H., Maple, M., & Usher, K. (2020). The impact of COVID-19 on Bangladeshi readymade garment (RMG) workers. *Journal of Public Health*, 43(1), 47–52.

- Kahn, M. (1995, March). *Concepts, definitions, and key issues in sustainable development: the outlook for the future*. In Proceedings of the 1995 International Sustainable Development Research Conference (pp. 2–13).
- Kalyani, M. (2016). Indian informal sector: An analysis. *International Journal of Managerial Studies and Research*, 4(1), 78–85. <https://www.arcjournals.org/international-journal-of-managerial-studies-and-research/volume-4-issue-1/9>
- Khan, A.T. (2020, August). *Textile and clothing industry severely hit by Covid-19*. University Practice Connect, Azim Premji University. <https://practiceconnect.azimpremjuniiversity.edu.in/textile-and-clothing-industry-severely-hit-by-covid-19/>
- Krishnan, A. (2020, December). *Understanding the agency of female migrant workers in the time of COVID-19: The case of Tirupur garment cluster* (master's thesis). Erasmus University, Rotterdam. <http://hdl.handle.net/2105/55453>
- Lobo, M.J., Pietriga, E., & Appert, C. (2015, April). An evaluation of interactive map comparison techniques. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems* (pp. 3573–3582).
- Magidi, M. (2022). The role of the informal economy in promoting urban sustainability: Evidence from a small Zimbabwean town. *Development Southern Africa*, 39(2), 209–223.
- Mahajan, S., & Bains, S. (2020). Impact of Lockdown due to COVID-19 on apparel and knitwear industries of Ludhiana. *Journal of Community Mobilization and Sustainable Development*, 15(2), 347–351.
- Masocha, R., & Fatoki, O. (2018). The impact of coercive pressures on sustainability practices of small businesses in South Africa. *Sustainability*, 10(3032). <https://doi.org/10.3390/su1009303>
- Mehta, S., & Kaur, M. (2021). COVID-19 and Ludhiana's woolen knitwear industry: Way forward. *Research Journal of Textile and Apparel*, 25(3), 209–225. <https://doi.org/10.1108/RJTA-07-2020-0082>
- Mezzadri, A. (2008). The rise of neo-liberal globalisation and the 'new old' social regulation of labour: A case of Delhi garment sector. *The Indian Journal of Labour Economics*, 51(4), 603–615.
- Mirdha, R.U. (2020, July 14). Orders are finally trickling in, but garment factories are still reaching out for the axe. *The Daily Star*. <https://www.thedailystar.net/business/news/orders-are-finally-trickling-garment-factories-are-still-reaching-out-the-axe-1930117>
- Mishra, S.B., & Singh, S.R. (2020). Covid-19: Post lockdown challenges and opportunities for readymade garments sector in Indore City. *Shodh Sanchar Bulletin*, 10(38), 55–62.
- Mohanty, P. (2019, July 15). Labour reforms: no one knows the size of India's informal workforce, not even the govt. *Business Today*. <https://www.businesstoday.in/jobs/story/labour-law-reforms-no-one-knows-actual-size-india-informal-workforce-not-even-govt-214490-2019-07-15>
- Murthy, S.R. (2019, November 14). *Measuring informal economy in India: Indian experience*. Seventh IMF Statistical Forum. <https://www.imf.org/-/media/Files/Conferences/2019/7th-statistics-forum/session-ii-murthy.ashx>
- NITI Ayog. (2018, December 19). *Strategy for new India @75*. <http://www.niti.gov.in/the-strategy-for-new-india>
- NSSO. (2016). *Economic characteristics of unincorporated non-agricultural enterprises (excluding construction) in India*. Round 73<sup>rd</sup> (July 2015–June 2016), Report No. 582 (73/2.34/2). MOSPI, Govt. of India.
- NSSO. (2010). *Economic characteristics of unincorporated non-agricultural enterprises (Excluding Construction) in India*. Round 67th (July 2010–June 2011). MOSPI, Government of India.
- Ricchetti, M., & Palma, R. (2020, October). *Will COVID-19 accelerate the transition to a sustainable fashion industry?* <https://www.unido.org/stories/will-covid-19-accelerate-transition-sustainable-fashion-industry>
- Roever, S., & Rogan, M. (2020, November). *Informal workers see a long road to recovery ahead – unless governments act*. Women in Informal Employment: Globalizing and Organizing. <https://opendocs.ids.ac.uk/opendocs/handle/20.500.12413/16634>
- Roy, S. (2009). Garments industry in India: Lessons from two clusters. *Working Paper No: 2009/01*. Institute for Studies in Industrial Development. [https://mpr.ub.uni-muenchen.de/23469/1/MPPRA\\_paper\\_23469.pdf](https://mpr.ub.uni-muenchen.de/23469/1/MPPRA_paper_23469.pdf)
- Ruzek, W. (2015). The informal economy as a catalyst for sustainability. *Sustainability*, 7(1), 23–34.



- Salamzadeh, A., & Dana, L.P. (2020). The coronavirus (COVID-19) pandemic: challenges among Iranian startups. *Journal of Small Business & Entrepreneurship*, 33(5), 489–512.
- Sangwan, S., Nayak, N.C., Sangwan, V., & Pradhan, A.K. (2021). Covid-19 pandemic: Challenges and ways forward for the Indian microfinance institutions. *Journal of Public Affairs*, 21(4), 1–4. <https://doi.org/10.1002/pa.2667>
- Sen, S., Antara, N., Sen, S., & Chowdhury, S. (2020). The unprecedented pandemic ‘COVID-19’ effect on the apparel workers by shivering the apparel supply chain. *Journal of Textile and Apparel, Technology and Management*, 11(3), 1–20. <http://dx.doi.org/10.2139/ssrn.3598542>
- Sharpe, S., Veem, K., Kallio, K., & Martinez-Fernandez, M.C. (2022). *Opportunities for a Just Transition to environmental sustainability and COVID-19 recovery in the textile and garment sector in Asia* (Working Paper No. 54). ILO.
- Stanley, D. (2003). What do we know about social cohesion: The research perspective of the Federal government’s social cohesion research network. *Canadian Journal of Sociology*, 28(1), 5–17.
- Textile Today. (2019, January). *Bangladesh textile and apparel industry needs to focus more on economic sustainability*. <https://www.textiletoday.com.bd/bangladesh-textile-and-apparel-industry-needs-to-focus-more-on-economic-sustainability/>
- The Hindu Data Team. (2020, May 7). Data | An estimated 12.2 crore Indians lost their jobs during the coronavirus lockdown in April: CMIE. *The Hindu*. <https://www.thehindu.com/data/data-over-12-crore-indians-lost-their-jobs-during-the-coronavirus-lockdown-in-april/article61660110.ece>
- Thomas, J.J. (2020, June 4). India’s poor may have lost Rs 4 lakh crore in the coronavirus lockdown. *Scroll. In*. <https://scroll.in/article/963284/indias-poor-may-have-lost-rs-4-lakh-crore-in-the-coronavirus-lockdown>
- Trautrim, A., Schleper, M.C., Kahir, M.S., & Gold, S. (2020). Survival at the expense of the weakest? Managing modern slavery risks in supply chains during COVID-19. *Journal of risk research*, 23(7-8), 1067–1072.
- UNICEF (2018, May). *Could families be the key to achieving the SDGs?* <https://www.unicef-irc.org/article/1815-could-families-be-the-key-to-achieving-the-sdgs.html>
- Unni, J., & Rani, U. (2003). Changing structure of workforce in unorganised manufacturing. *Indian Journal of Labour Economics*, 46(4), 983–997. PDF: [https://www.researchgate.net/publication/292998224\\_Changing\\_structure\\_of\\_workforce\\_in\\_unorganised\\_manufacturing](https://www.researchgate.net/publication/292998224_Changing_structure_of_workforce_in_unorganised_manufacturing)
- Uzo, U., & Shittu, O. (2019). Corporate social responsibility in developing and emerging markets. In *Institutions, actors and sustainable development* (pp. 191–205). Cambridge: Cambridge University Press.
- Vyas, M. (2020, May). *The jobs bloodbath of April 2020*. The Centre for Monitoring Indian Economy. <https://www.cmie.com/kommon/bin/sr.php?kall=warticle&dt=2020-05-05percent2008:22:21&msec=776>

Manish Mishra, Rohit Kushwaha and Nimit Gupta

## 8 Investigating Social and Environmental Impacts of the Indian Clothing Sector

**Abstract:** The clothing sector is one of the oldest trades, having import and export practices from all corners of the world. Clothing is one of the most prominent economic activities in the globally competitive world. It has been innovating to satisfy the growing demands of customers. The buying preference in the clothing industry has been ever-changing, uneven and hyper-individual. Increasing demand in its consumption has exponentially increased production. Consumers demand affordable clothes and find quick disposal convenient, leading to increased harmful waste generation. The inferior composition of material processing leads to enhanced soil contaminations and excessive wastage of water, resulting in massive environmental and social degradation, which is often beyond repair. Natural fabrics are now increasing in demand to address the health and environmental concerns of many of the current consumers. Thus, sustainability is becoming the primary concern for some fashion brands, both in terms of projecting the right image and modifying the manufacturing processes to address these rising awareness and concerns. The present chapter explores the environmental and social impacts of the Indian clothing sector through a theoretical investigation from past research insights.

**Keywords:** clothing, sustainability, environmental, fashion

### Introduction

Go green is the new mantra that is finding space among the fashion cravers. Worldwide campaigns for the environment lead by young leaders like Greta Thunberg have attracted the attention of youngsters. The same demographic group experiments with fashion the most. Thus, new-look and the environment have become a natural mix. The consumer is now monitoring ecological issues in many purchase decisions. Today, individuals have begun searching for “Green Items” all over the place. For materialistic

---

**Manish Mishra**, Research Scholar, Amity University, Lucknow, Uttar Pradesh, India,  
e-mail: manish.mishra7@student.amity.edu

**Rohit Kushwaha**, Amity Business School, Amity University Uttar Pradesh, Lucknow Campus, India,  
e-mail: rkushwaha@lko.amity.edu

**Nimit Gupta**, School of Management and Liberal Studies, The NorthCap University, Gurugram, India,  
e-mail: nimitgupta1981@rediffmail.com

things, customers' choices are rooted in solace, style, stylish allure and so forth, yet presently more on eco-cordiality.

The clothing industry needs a definition that includes sustainability as its parameter. A cloth before reaching the end consumer runs through various processes. The stages often include: planning, gathering raw material, spinning, weaving, dyeing or printing, cutting, stitching and packing the final product (Esteve et al., 2017). The process employs hard labour and technology through factories. A design-centric fashion-prone product that eludes attire with short shelf-life has arisen as a strong environmental and social concern. Negative impacts are born through wastage and other contaminations from the manufacturing of textiles (Muthu, 2014).

## Scenario of the Indian Clothing Industry

The clothing industry in India is diverse, as is India (Dana, 2000). The product range and segmentation range from traditional handlooms of silk and handcraft products to ultra-fine machine knitted fabrics. The Indian clothing industry has a strong value chain, from yarn to apparel. The mix of labour-intensive and capital-intensive manufacturing was well-balanced. However, it is now leaning toward capital due to the technologically advanced and capital-intensive manufacturing process, which has increased spinning, weaving and processing. The domestic textile industry generates \$140 billion in revenue, of which \$40 billion comes from exports (Majumdar et al., 2020). This growth has been significantly aided by an increase in the middle-income group population and improved purchasing power of lower-middle-income group households. India produces a lot of raw materials. Irrigable crops such as cotton, jute, wool and silk are abundant. It is a significant competitive advantage for the Indian clothing industry.

Furthermore, India has a plentiful supply of labour, giving the Indian clothing industry a competitive advantage. The policy framework for India's clothing sector is to promote growth and development, such as 100% foreign direct investment in the Indian clothing sector. The benefits and advantages of the new textile policy of 2020 are increasing investment in the Indian clothing sector (Jain & Mishra, 2020).

## Environmental Impact of the Clothing Sector

Cotton, jute and man-made fibres are examples of natural fibres. Petrochemical fibres such as Lycra, elastic and polyester are examples of synthetic fibres. Synthetic fibres are simple to use, care for and withstand high demand (Laitala et al., 2018). The negative impact of synthetic fibres is also significant, as they are difficult to recycle and cause pollution during the manufacturing process. It can take decades for fibres to decompose.

Cotton production has a significant impact because it is a widely used raw material in the clothing industry. Cotton is a water-intensive crop that uses much water. According to recent reports, cotton production in India alone consumes 25% of the world's insecticides and 10% of the world's pesticides. It has risen in response to the increased demand for cotton clothing (Madhav et al., 2018). As a result, the demand for insecticides and pesticides is increasing, negatively impacting the environment. Water scarcity is increasing as a result of conventional cotton farming (Muthu, 2015).

The clothing and textile industries consume a lot of non-renewable resources. This is wreaking havoc on the environment. Petrochemicals such as rayon, polyester and nylon are harmful to the environment. Rayon, for example, is made from wood pulp. It is a lengthy chemical process that results in deforestation and air pollution. Furthermore, other fabrics, such as viscose, contain harmful chemicals that endanger factory workers (Hossain et al., 2018).

Harmful discharges from textile plants are polluting the air. According to environmental studies, air pollution from the clothing industry is the second-highest industrial air pollutant. The machinery used in the clothing industry includes boilers, thermopacs and oil generators, all of which contribute significantly to releasing hazardous gases into the atmosphere.

The amount of water used in the textile manufacturing process is enormous. It is a different use of water because cotton cropping absorbs it as well.

The clothing industry should, ideally, not require packages for transportation safety. For transporting products from factories to retail stores, batch packaging is essential. The unnecessary use of packaging can be avoided (Zamani, 2014).

## Temporary Employment

In today's globalised world, the clothing industry is like a jigsaw puzzle. Short-term employment is created as developed-country demand rises. It creates a small window of opportunity for developing countries to have an unlimited labour supply. The agony is that these workers face serious health consequences solely as a result of their employment. Increased temperatures and production accidents and an unorganised, unaware, unhealthy environment and long working hours add to labourers' toll. Child labour and worker exploitation have been reported in some countries as a result of prosperous clothing industries (Zamani, 2014).

## Women in the Labour Force

The number of female labourers in this area has increased from an average number to an enormous number. Female workers are subject to unequal treatment, including lower pay and limited opportunities for career growth, while male workers enjoy better benefits and higher positions (Resta & Dotti, 2015).

## Labourers' Rights

According to the Indian Factories Act of 1948 and also the Shops and Establishment Act, labourers should not work more than 48 hours per week. Given the importance of sticking to the conveyance plan, laborers discovered it to be seriously problematic for long periods throughout the season. When there is a high abroad fare order, labourers, including child laborers, will generally work for 36 hours at a stretch in fitting units (Freise & Seuring, 2015).

## Well-being and Safety

Workshops in developing countries often have fewer strict guidelines than those in developed countries. When working conditions are poor, workers' health suffers from health risks such as spinal pain, varicose veins, asthma, premature delivery, corrosiveness, and eye fatigue, as well as various wounds (Freise & Seuring, 2015).

## Relevant Studies

Choudhury (2014) used the life cycle assessment approach to investigate the environmental impacts of the textile industry. Bhar (2016) investigated the environmental impact of the Indian textile industry. Due to rising consumer demand, production is accelerating. This research aims to address and quantify the adverse effects of the Indian textile industry on the environment and consumer health. There has been a negative impact reported both inside and outside the workplace. Manufacturing industries have high levels of water contamination and noise pollution. The hazardous products emitted by the textile industry contribute to acid rain and global warming.

Kane (2001) investigated the dangers of the spinning industry. According to the study, cotton dust and noise pollution are hazardous to labourers. The industry is both physically and environmentally hazardous. Accidents, workplace fires, and other physical harm to employees working in the clothing industry are examples of physical haz-

ards. The study recommended some steps to reduce environmental and physical risks in the clothing industry. According to the findings of this study, producers must adhere to strict rules and guidelines when carrying out their manufacturing processes. Workers must be trained to avoid physical accidents on the job. Maintaining humidity and using respirators at work can help to reduce the risk of adverse effects.

Kant (2011) discussed the environmental effects of textile dyeing. Any surface would benefit from concealment. Regardless of how unique its constitution is, it will undoubtedly be a mistake as a business surface if it is inadmissibly concealed. The creation and application of designed tones for surface shading have thus become a massive industry today. The presence of sulphur, naphthol, tank tones, nitrates, acidic destructive, cleaning agents, proteins chromium blends and significant metals such as copper, arsenic, lead, cadmium, mercury, nickel and cobalt, as well as explicit aide manufactured mixtures, can be toxic. Other dangers are exacerbated by the cloth manufacturing process, which dissolves solutions in water such as formaldehyde-based shading fixing, chlorinated stain removers, carbon-based hydro conditioners, etc.

Kozlowski et al. (2012) discussed the ecological and social impacts of the design industry. The clothing industry has been placed in the spotlight as a significant ally of overall natural and social issues. A life-cycle assessment is a standard tool for investigating the characteristics of all stages of a product's life.

This chapter provides a framework for the planned business by combining life-cycle and accomplice examinations. The paper depicts how the identification of partners and their tendencies, obligations and obligations can cause the unexpected development and utilisation of appropriate courses of action and ventures to respond to natural and social concerns within the context of corporate responsibility to society. Objectives are: (i) to understand the scenario of the Indian textile industry; (ii) to explore the environmental impacts of the Indian clothing industry; (iii) to find out the social impacts of the Indian clothing industry; and (iv) to suggest recommendations for ethical clothing.

## Findings

Secondary data sourced from various authentic information centres exhibit the argument in this chapter. The environmental and social impacts of the clothing and textile industry are the mainframe explanations of the chapter. These impacts are studied based on previous research to gain insights. The objectives will be to examine the various hypotheses formulated. The result obtained will be discussed further based on previous research insights and theoretical evidence. This study will finally extend recommendations for ethical fashion.

India's clothing and textile industry uses petrochemicals and instant production cycles to meet the increasing demand for clothing and fashion (Eryuruk, 2012). Multiple studies claim that the clothing industry's manufacturing process wastes water,

causes air pollution, causes workplace conflicts and accidents and promotes volatile employment opportunities (Claudio, 2007). There is no other way to offset the negative environmental effects of the clothing industry than through ethical fashion and sustainability (Shishoo, 2012).

The clothing and textile industries hurt the social environment in a variety of ways. As previously stated, child labour is encouraged due to the rising demand for clothing and textiles. Workers claimed to have been exploited to increase production. It is worth noting that the number of female workers is growing, but with unstandardised rules and regulations. In India's clothing and textile industries, there is a significant wage disparity between men and women.

Furthermore, workplaces are more hazardous to one's health due to chemicals and high temperatures (Maia et al., 2013). Several industries reported workplace sexual harassment. As a result, the social environment in India is negatively related to the clothing and textile industry.

## Recommendations and Conclusion

This chapter concludes that the clothing and textile industry's conventional practices in India today adversely impact the ecology of the planet as well as Indian society. Adverse impacts include air pollution, water pollution, noise pollution, global warming triggering acid rain, worker's exploitation and child labour. It recommends control through a shift in the approach to sustainable practices in the clothing industry.

Sustainable fashion approaches include collaborative efforts to address the clothing industry's adverse impacts. The sustainable clothing industry satisfies consumer demand by considering the social and natural environment. Consumers are recommended to alter their demand patterns as per environment and health standards.

## References

- Bhar, C. (2016). Indian textile industry and its impact on the environment and health: A review. *International Journal of Information Systems in the Service Sector (IJISSS)*, 8(4), 33–46.
- Choudhury, A.K.R. (2014). Environmental Impacts of the textile industry and its assessment through life cycle assessment. In *Roadmap to Sustainable Textiles and Clothing* (pp. 1–39). Springer.
- Claudio, L. (2007). *Waste couture: Environmental impact of the clothing industry*. National Institute of Environmental Health Sciences.
- Dana, L.-P. (2000). Creating entrepreneurs in India. *Journal of Small Business Management*, 38(1), 86–91.
- Eryuruk, S.H. (2012). Greening of the textile and clothing industry. *Fibres & Textiles in Eastern Europe*, 95(6A), 22–27.
- Esteve-Turrillas, F.A., & de La Guardia, M. (2017). Environmental impact of recover cotton in textile industry. In *Resources, Conservation and Recycling*, vol. 116 (pp. 107–115). Elsevier.

- Freise, M., & Seuring, S. (2015). Social and environmental risk management in supply chains: A survey in the clothing industry. *Logistics Research*, 8(1), 2.
- Hossain, L., et al. (2018). Evaluation of present and future wastewater impacts of textile dyeing industries in Bangladesh. In *Environmental Development*, vol. 26 (pp. 23–33). Elsevier.
- Jain, S., & Mishra, S. (2020). Luxury fashion consumption in sharing economy: A study of Indian millennials. *Journal of Global Fashion Marketing*, 11(2), 171–189.
- Kane, C.D. (2001). *Environmental and health hazards in spinning industry and their control*. NISCAIR-CSIR.
- Kant, R. (2011). *Textile dyeing industry an environmental hazard*. Scientific research publishing.
- Kozłowski, A., et al. (2012). Environmental impacts in the fashion industry: A life-cycle and stakeholder framework. *Journal of Corporate Citizenship* (45), 17–36.
- Laitala, K., et al. (2018). Does use matter? Comparison of environmental impacts of clothing based on fiber type. *Sustainability*, 10(7), 2524.
- Madhav, S., et al. (2018). A review of textile industry: Wet processing, environmental impacts, and effluent treatment methods. *Environmental Quality Management*, 27(3), 31–41.
- Maia, L.C., et al. (2013). Sustainable work environment with lean production in textile and clothing industry. *International Journal of Industrial Engineering and Management*, 4(3), 183–190.
- Majumdar, A., et al. (2020). COVID-19 debunks the myth of socially sustainable supply chain: A case of the clothing industry in south Asian countries. In *Sustainable Production and Consumption*, vol. 24 (pp. 150–155).
- Muthu, S.S. (2014). *Roadmap to sustainable textiles and clothing: Environmental and social aspects of textiles and clothing supply chain*. Springer.
- Muthu, S.S. (2015). *Handbook of Life Cycle Assessment (LCA) of textiles and clothing*. Woodhead Publishing.
- Resta, B., & Dotti, S. (2015) Environmental impact assessment methods for textiles and clothing. In *Handbook of Life Cycle Assessment (LCA) of textiles and clothing* (pp. 149–191). Elsevier.
- Shishoo, R. (2012). *The global textile and clothing industry: Technological advances and future challenges*. Elsevier.
- Zamani, B. (2014). Towards understanding sustainable textile waste management: Environmental impacts and social indicators. Chalmers Tekniska Hogskola.





Jan Vang and Léo-Paul Dana

## 9 Sustainability Themes in the Garment Industry: Insights from a Workshop in Bangladesh

**Abstract:** This chapter summarises themes discussed at a workshop in Bangladesh and discusses problems identified in the garment industry and makes recommendations. The workshop illustrated that with the right framing, triple helix collaboration might be a positive step forward.

**Keywords:** triple helix, Rana Plaza, Southern Denmark University, sustainability, fashion

“The garment industry will not exist forever. Already the European Union is considering introducing quotas. The garment industry is one of the biggest industrial sinners with a primarily linear business model, exploitation of water and resources, and a product not really in need.” These were the words of a top manager in Bangladesh’s garment industry during a workshop organised by a research group of the University of Southern Denmark and Ahsanullah University of Science and Technology in Bangladesh during December 2022. The workshop had approximately 80 participants from companies, government, industry associations, NGOs and universities in Bangladesh and Denmark.

This chapter reports some of the insights that the workshop identified as major problems. The reason for zooming in on the findings from the workshop is that often academic papers are out of sync with what is happening in the real world. In this chapter focus is therefore on relevant instead of academic rigour. This does not imply that the research is atheoretical. On the contrary, the workshop was organised around the concept of triple helix with the aim of getting the participants to co-create or co-identify problems in need of applied collaborative (i.e., triple helix) research; we have research problems that individual partners cannot solve in isolation. Typically, this entails zooming in on so-called wicked problems. Wicked problems are characterised by not being solvable without enactment (i.e., multiple feedback loops reveal unpredictable reactions to interventions, change etc.) and they require the involvement of numerous knowledge bases.

---

Jan Vang, Southern Denmark University

Léo-Paul Dana, Dalhousie University, ICD Business School Paris and Lappeenranta University of Technology

## Background for the Workshop

Since the Rana Plaza accident of 2013, during which 1,129 workers died and several thousands were injured, a research group at Southern Denmark University has been involved in several externally funded research projects mostly in Myanmar and in Bangladesh; the focus is on social sustainability, captured by occupational safety and health. The first project was started in 2006, applying participatory action research in factories in Bangladesh. Researchers worked closely together with factory employees – including manual workers – to introduce the engineering management tool Lean, with the aim of improving productivity and quality as well as occupational safety and health (OSH). A similar project was undertaken in Myanmar, where social dialogue challenges were included. This project was followed by another on social auditing in Bangladesh, where experts zoomed in on how platformification of social auditing represented by the HIGG-index (developed by SLCP) could contribute to solving central auditing related problems such as audit fatigue among suppliers.

## Focus on Leather

In parallel with the above, researchers are running a project similar to the first mentioned above, but with a focus on the leather industry, more specifically on tanneries as well as a pilot triple helix industry project. Researchers have also been involved in training labour inspectors from Bangladesh, Myanmar and Vietnam in work environment and OSH issues and also their leaders in how to manage labour inspections. As they have progressed they have realised that it is not useful to maintain a focus on social sustainability alone; there is a need to integrate it with climate/environmental sustainability, and also to develop more bottom-up co-creation processes with actors from different “silos” to devise research relevant for both industry and academia. The triple helix concept provided – despite much criticism of it – a useful framework for bringing various stakeholder on board a future oriented workshop.

## Structure of the Workshop

It was found that Bangladeshi stakeholders are in general dedicated to finding creative solutions. The main challenge is that they are unfamiliar with collaboration between industry, government and university. They have difficulties visualising what it means. As a participant explained: “This triple helix is new to me. It looks exciting but I am uncertain about what it is.”

Introducing the triple helix concept in Bangladesh is a difficult task since the gains from solving problems are often smaller than the potential negative sanctions if

it goes wrong. As a number of participants explained before the design of the workshop: in Bangladesh triple helix collaboration is rare. Government officials do not like to participate. If they participate in a triple helix activity and it becomes a success the boss will take the credit and if it fails then the blame will land on the shoulders of the actual participant. And since the promotion system is based on corruption and network instead of merit it is better to refrain from participating. The industry likewise does not like to collaborate with the government. The government is part of the problem, not part of the solution. It is a further development of the colonial control state; a state characterised by red tape and corruption. Universities are primarily “old school” and focus on teaching with only limited research; research is neither applied nor problem-driven.

There were huge tasks associated with getting the triple helix participants engaged in the workshop; however, it was possible to get numerous stakeholders from industry, NGOs, business associations and universities – but only limitedly to motivate the invited government officials – to participate. Researchers paid much attention to getting involved partners to be able to visualise the potentials of triple helix collaboration. Initially, it was ensured that the concept was considered legitimate by getting involvement by leading government (DG in the labour inspectorate), industry associations (BGMEA, BEF top leaders), embassies, etc. This was followed by a short section visualising the conceptual outcome of the workshop (i.e., establishment of a task force which would further develop the ideas and apply for funding for realising them). This was supplemented by a longer talk illustrating a successful triple helix in Bangladesh as well as establishing a common understanding and language for speaking about the triple helix. This was supplemented by several presentations by researchers involved in triple helix activities in Bangladesh and also talks from Bangladeshi alumni students, who illustrated the relevancy of using their educations for engaging in triple helix activities. These served as inspirational talks supporting the participants’ ability to visualize the value of triple helix. After the talks, the participants spent more than one full day on group work activities where they were requested to use various tools to identify the problems that they felt were in urgent need of research attention and had both a social and climate/environmental component (and were relevant for businesses too). The participants worked with thinking hats, root cause-analysis and other tools.

## Outcome of the Workshop

The participants worked hard and extremely creatively for identifying problems in need of more attention to ensure a sustainable future for the global garment industry. In total, the workshop had five working groups and each group had the opportunity

to come up with one problem only, thus the identified problems are not comprehensive, but more an indicator of the problems in urgent need of attention.

The first group decided to zoom in on small companies using all their management resources for the daily fight for survival. This was motivated by these companies having “no resources for development of their business”. Moreover, they argued that small companies constitute the backbone of Bangladesh economy and face considerable problems with a sustainable development of the economy and environment, and that large firms provide support to local community but not to the small companies. It should be noted that Bangladesh has seven impressive green garment factories but they are only seven out of approximately 5,000 companies.

The second group focused on the leather industry in Bangladesh (it is a part of the fashion industry since the industry produces leather used in the garment industry and also produces fashionable shoes e.g., the brand Clark). The industry has recently been moved from Dhaka city to Sawar outside Dhaka due to the environmental genocide the industry was responsible for. After the industry moved to Sawar the situation has improved but not much. Employees are still exposed to chemicals without protective equipment and the chemicals are due to a poor affluent treatment plant discharged directly into the surrounding river. The biggest chemical problem stems from the use of chromium. The central effluent treat plant is malfunctioning and not designed to remove chromium from effluent. This group thus took up a very hands-on problem and asked how the treatment plant could be made to function and thereby reduce the local social (e.g., community problems) and climate/ environmental problems. The underlying idea is that if the companies get an LWA certification they can gain better prices for their hides and thus invest more in environmental upgrading, but without a well-functioning treatment plant this is not possible.

The third group focused on the circular economy dimensions which are seldomly seriously addressed in the global garment industry. More specifically, they discussed reuse of plastic and reduction of pre-consumption waste – two huge sustainability problems related to the garment industry. They requested a solution to how collected plastic bottles could be reused. Currently, the factories have the technical solution but since the plastic bottles were collected by the children involving child labour and possibly also forced labour they could not use the bottles. The group asked for a solution to the child labour problem associated with the bottle collection. Moreover, the group paid attention to how pre-consumption waste could be reduced. Currently, they explained that pre-consumption waste is a problem on all sustainability dimensions. Energy and raw material are wasted on unused materials, the unused materials “pollute” since they are often shipped to Spain and then returned to Bangladesh for productive uses and the distribution of the waste is often controlled by what was referred to as mafia groups. The large companies could organise their way out of the problem but the smaller companies needed a business model that could work despite their limited economy of waste-scale.

The fourth group zoomed in on the link between competencies, leadership and sustainability among the garment suppliers. The group paid special attention to the lack of skills and education among the workforce in the garment industry in Bangladesh due to leadership incapability among line management and uncertainties in organisational environment (e.g., insufficient power supply, high turnover among the workforce). They explained that management therefore prioritises organisational short-term goals and misses opportunity to invest in long-term goals such as employees' training and education to strengthen both social and economic sustainable solutions.

The fifth and last group paid attention to getting a collaborative spirit established between the triple helix actors in the Bangladeshi garment industry. To illustrate and operationalise the problem, they zoomed in on the waste management problems. They explained that waste managers in the garment industry need to speak up/ voice their challenges instead of hiding their problems from audits/ research/ government. In other words, there is a need to collaborate around solutions instead of hiding problems under the carpet. Moreover, they explained that waste management is usually addressed only from an environmental perspective while social sustainability is often ignored. The waste management challenge incorporates the tensions between social and environmental sustainability issues and allows for an increased knowledge about handling chemicals in an environmentally sustainable way in the industry as well as the social/health perspective of how to reduce the vulnerability of the communities exposed to the chemical waste thrown in the surrounding rivers/soil used by the communities.

The workshop established a working group for each challenge identified. The group should ensure that the stakeholders continue collaborating on finding funding for solving the challenge and maintain a focus on the problem.

## Conclusions from the Workshop

Although there are many barriers to both getting triple helixes to “fly” in Bangladesh’s garment industry and to get the industry transformed into a sustainable industry, the workshop shows that there are hopes. The workshop illustrated that with the right framing triple helix collaboration could function. The five different problems illustrated that the industry is ready to address demanding sustainability questions. If we differentiate between different degrees of sustainability ranging from reducing waste (doing less harm) over being sustainable (also known as the Brundtland Report definitions) to becoming regenerative, the solutions only cover the “doing less harm” aspect. This may be considered a natural starting point for initiating transitions. The verdict is still open.



Birhanu Shanko Dura and Berihun Bizuneh

# 10 The Impact of Foreign Direct Investment on Sustainable Economic Growth: A Focus on the Textile and Apparel Industries in Ethiopia

**Abstract:** There is considerable disagreement regarding FDI and economic growth. Some studies have indicated the positive impact of FDI on economic growth, while others say it has retarding effects. The third group argues that the effect of FDI depends on the country's absorptive capacity. This article studies the impact of FDI on sustainable economic growth in Ethiopia. Primary data was collected by interviewing 26 managers in six industrial parks. The data on sectoral (textiles and apparel) and total FDI inflows were collected from secondary sources. Regression held on EViews 12 and descriptive statistics were employed for data analysis. The result revealed a positive and stronger relationship between sectoral FDI and GDP as compared to total FDI and GDP. This implies that the sectoral FDI inflows are promising for supporting the country's economic development. However, sustainable economic growth depends on domestic enterprises' participation.

**Keywords:** foreign direct investment, sustainable economic growth, Ethiopia, textile and apparel

## Introduction

The impact of the volatility of foreign direct investment (FDI) on sustainable economic growth, particularly in countries merely relying on FDI, has gained research interest. A growing number of foreign direct investments has been flowing into Ethiopia as a result of its export-promoting policy (EIC, 2017) that offers support to companies exporting priority items such as textiles and leather (Staritz & Whitfield, 2017). The inter-

---

**Acknowledgments:** This work was supported by the higher education and TVET program Ethiopia-phase 3, under grant KFW project number 51235 and BMZ number 201166305. We appreciate Associate Professor Abera Kechi's (Ph.D.) efforts in obtaining this grant.

---

**Birhanu Shanko Dura**, lecturer in the areas of economics and quality management systems, Ethiopian Institute of Textile and Fashion Technology, Bahir Dar University, Bahir Dar, Ethiopia, e-mail: birhanushanko@gmail.com

**Berihun Bizuneh**, Ethiopian Institute of Textile and Fashion Technology, Bahir Dar University, Bahir Dar, Ethiopia, e-mail: berihun2001@gmail.com



est and commitment of the government of Ethiopia in attracting foreign apparel businesses appear promising.

Ethiopia's textile and apparel sector has witnessed a surge in export-led growth and ranks amongst countries like China and Bangladesh in terms of industrial output and sourcing destination. High-volume garments are sourced from Ethiopia by apparel buyers (USITC, 2018; Achim et al., 2015). According to Achim et al. (2015)'s survey, Bangladesh was predicted to be at the top of the list of future sourcing destinations, while Ethiopia was seventh on the list. Large international companies are also drawn to Ethiopia because of comparative advantages such as low labour costs, cheap and affordable energy, proximity to important markets and duty-free and quota-free access to EU and US markets for Ethiopian manufacturers under the Everything But Arms (EBA) and African Growth and Opportunity Act (AGOA) programmes, respectively. The government of Ethiopia hopes to attain textile exports worth US\$30 billion by 2025 and increase the GDP of the country, household income, foreign currency and employment in the country by establishing industrial parks (IPs) for investors throughout the country (Khurana, 2018). However, the recent trend of FDI inflows to Africa is falling. East Africa, which was the fastest-growing region in Africa, received only US\$7.8 billion in FDI in 2019, a 9% decline from 2018. Ethiopia received US\$2.5 billion FDI in 2019, a 24% and 39% drop from 2018 and 2016 respectively. The FDI inflows to Ethiopia were extremely hit by political tension and the global pandemic (UNCTAD, 2020).

Thus, the vision faced a realistic challenge, a fall in FDI that has a direct impact on economic contraction. Ethiopia has accomplished little in terms of structural economic change, despite the industrial policy, government engagement and impressive economic growth in recent times. Companies claimed to provide better working conditions, accelerate industrialisation and contribute to economic growth, but they created another dimension of challenges to the market by abandoning the country due to political instability, keeping unpaid huge debt (Staritz & Whitfield, 2017) borrowed from Development Bank of Ethiopia (DBE).

Unless the attraction of investment is balanced by developing the existing and new domestic capacity, merely focusing on FDI is not a viable way to create competitive industries and maintain sustainable economic growth (Gebreyesus, 2013). The drop in economic growth in recent times has led us to question whether it is related to the volatility of FDI or the monopolistic nature of FDI.

Using empirical evidence, this paper discusses the impacts of merely relying on FDI for sustainable economic development. The remainder of the paper is organised as follows. Section 2 presents the literature review of previous studies. Section 3 outlines the method of data collection and analysis. Section 4 presents the main results and discussions. Section 5 concludes and provides suggestions.

## Literature Review

Ethiopia's industrial development strategy (IDS), which was introduced in 2002, aimed at creating a conducive environment for industrial development by providing several supporting services to investors engaged in light labour-intensive textile and apparel sectors, aspiring to increase export and employment (Weldesilassie et al., 2017; Yost & Shields, 2017). Among the various policy instruments, developing countries are mostly implementing FDI to realise their development plan. As Staritz and Whitfield (2017) pointed out, following the first development plan, which only encouraged local apparel investment and resulted in modest exports, the Ethiopian government broadened the scope of its development policy in the second and third phases. The government has been building several IPs that aimed to attract large textile and apparel foreign investors, lift exports and facilitate linkages between domestic and foreign firms to enable learning and competence building among local firms.

There is a promising contribution from the sector to economic growth. The contribution of the textile and apparel industry to GDP was around US\$1 million (1.35%) until the mid-2000s, US\$12 million (1.9%) in 2010, US\$117 million (2.6%) in 2014 and around US\$93 million in 2018 (Staritz et al., 2016; Yost and Shields, 2017). However, Staritz et al. (2016) and Staritz and Whitfield (2017) argue that compared to the agricultural share to the aggregate growth, the contribution of manufacturing, specifically the textile and apparel sector, was insignificant and unnoticeable in the international apparel export market. In fact, in the long run, the sector can provide sustainable economic development if appropriate policies and institutions are established (Dumludag, 2009; Keane, & te Velde, 2008).

FDI is considered to be an integral component of an open and competitive international economic system and a significant growth mechanism (Polat & Payashoğlu, 2016; Kenneth et al., 2019; Kurtishi-Kastrati, 2013). Along with the advantages linked to FDI, developing countries, emerging economies and countries in transition have liberalised their FDI system and pursued the best policies to attract investment (OECD, 2002; Anandakumar, 2012). Despite the growing interest in FDI inflows, there is considerable disagreement regarding FDI and sustainable economic growth. While some studies have indicated the positive impact of FDI on economic growth (Aghion & Howitt, 1990; Magnus & Ari, 2001; Romer, 1986; 1990), other studies reported otherwise (Fan, 2002). The third group of studies argues that the effect of FDI on a host country's economy depends on the country's absorptive capacity in terms of its human capacity, level of development and financial development (Alfaro et al., 2004; Beugelsdijk et al., 2008; Borensztein et al., 1998; Lensink & Hermes, 2004; Masron et al., 2012; Ucal et al., 2010).

As per the pro-FDI theorist (Lipsey, 2002), sustained economic growth requires the productivity of labour and capital. In this category, positive externalities and spillover effects are essential to develop and maintain a competitive advantage in the global economy. Whereas the anti-FDI group (Bornschier & Chase-Dunn, 1985; Fan,

2002; Denisia, 2010) state that FDI will retard the economic growth, Rand and Tarp (2002) observed that FDI inflows are quite volatile, which supports this theory. They found no general link between FDI and output in their analysis. Researchers Falki (2009) and Levine and Carkovic (2002) studied the relationship between FDI and economic growth of Pakistan and 72 countries, respectively. Their studies showed that the exogenous component of FDI doesn't have a strong beneficial impact on economic growth. Albuquerque (2003) argues that FDI is less volatile compared to other financial investments. However, volatility in other factors affects FDI. Kiyota and Urata (2004) reported that large volatility in real exchange rates discourages FDI, while the depreciation of the host country's currency attracts it. Jensen (2008) found that democratic regimes favour FDI due to reduced political risks. The lower the level of the political risk, the higher the FDI inflows (Meyer & Habanabakize, 2018). Lensink and Merrissey (2006) found that volatility has a negative effect on economic growth. On the other hand, lower and more variable growth rates in uncertain economies might be less attractive for foreign investors.

As stated by Dunning (2014), FDI takes place in the framework of oligopolistic firm structures. Based on Hymer (1960), foreign firms are seen as having an advantage over local ones. The theory of internationalization characterizes foreign firms as seeking to mitigate transaction costs (Coase, 1937), tackle market risk and uncertainty, exert control and bargaining power, maximize profits, and ensure favourable transfer pricing (Buckley and Casson, 1976; Hymer, 1960). Kojima (1973) argues that FDI can be beneficial to both partners if FDI originates from a "comparatively disadvantaged" marginal industry at home. The host country can acquire a comparative advantage in the same industry, whereas the foreign firm can produce goods at a lower cost than at home and import and export the goods back to home and third countries markets respectively.

FDI crowds out domestic investments (Borensztein et al., 1998) by creating a monopolistic (Vissi, 1995) economic environment, either by increasing the demand for money and in turn impacting interest rates (Dang & Tran, 2020) or investing huge currency which increases the overall money flow (Perez et al., 2012) of the host country. The increase in capital flow inflates the price of inputs for domestic investors. As a result of this effect, domestic investors are forced to borrow money from financial institutions at high interest rates. These companies are crowded out if they are unable to repay their debts or compete. However, FDI can be quite heterogeneous (Head & Ries, 2003) as well, and it may vary with the mode of entry (Svensson, 1998) into the foreign market. Foreign investors may enter a market with different modes of FDI, compatible with their balances of costs and benefits. Based on the study of Alfaro et al. (2010), foreign investors can also "crowd in" domestic firms. In their work, they considered a small open economy characterised by two layers of industries both at the microeconomic and macroeconomic level and found that FDI has a positive impact in all three conditions: keeping constant the presence of FDI, increasing the

share of FDI and when goods produced by domestic firms and multinational companies (MNCs) are substitutes rather than complements.

Despite the argument, FDI inevitably improves the integration of the host country into the global economy and fosters growth (Ucal et al., 2010). FDI is seen as a key driver of economic growth and development (Alfaro et al., 2010). However, the overly credulous approach to the benefits of FDI is an indication of the host country's vulnerability instead of its resilience to both the volatile and monopolistic nature of FDI (Hausmann & Fernandez-Arias, 2000). Countries borrow money through FDI. However, public debt is a risk when total FDI inflows are higher. Rather than always pursuing too much FDI, countries need to focus on building coherent legal frameworks, investment protections, an appropriate investment environment (Wang, 2009) and the functioning of businesses to advance in economic growth through the export market (Albuquerque, 2003).

FDI can back the host country's enterprise development through linkages with suppliers. This is possible when the hosting country put joint-venture requirements into place or promoted linkages with domestic firms to support domestic industrial build-up (Kenneth et al., 2019). This kind of investment policy helps to maximize positive spillovers and human capital from the activities of foreign affiliates (UNCTAD, 2018). However, when domestic enterprises have neither bargaining power nor government assistance, MNCs may choose to form a fully owned firm (Karabay, 2010).

For local firms, the simplest means to learn from the global production networks and global value chains (GVCs), and create national companies, which can participate in the outflow investment and export, is learning by doing with foreign firms. Based on the work of Keane and Velde (2008) to realise and sustain learning by doing and knowledge spillovers, the hosting country's government has the responsibility to set policies that build sustainable links between local and foreign firms. In such a learning process, the hosting country can increase the skill level of the labour, which helps to improve the productivity and standard of the manufacturing processes. These contribute to the country's manufacturing competitiveness as well as the development of a long-term economy.

MNCs help to increase industrial efficiency and improve resource allocation in host countries and influence the local suppliers of intermediate products to become more efficient with delivery speed, quality and reliability of the products to meet the high standards of the overseas companies (Lipsey & Sjöholm, 2010). However, when MNCs possess and control new technologies, then it becomes challenging to imitate for the local firms (Alfaro et al., 2004; Wang, 2009) and contributes to unemployment in the host country. In developing countries such as Ethiopia, the competition from foreign firms may not allow the existing and new domestic firms to put pressure on and enter the market respectively due to intensive capital from the other side. As mentioned by Geda and Meskel (2009), the negative effects may also arise in a factor market where foreign investors increase demand for scarce resources such as skilled labor and domestic credit, and hence raise production costs for local firms.

The experience of FDI varies from country to country (Karabay, 2010). Countries like India, Indonesia, Korea, Turkey, Thailand, Singapore, Ireland, Japan and Taiwan are known for their pro-FDI policy, with certain restrictions, and the linkage with domestic firm requirements has been strictly imposed. These restrictions allowed them to accumulate technological capabilities more rapidly; however, Germany, UK and France imposed performance requirements. The Special Economic Zones (SEZs) of China helped the creation of linkages between firms in the SEZs and others. In each stage, there is learning to adapt technology and give a chance to local investors to participate in the system through different techniques and supportive institutions.

Ethiopia mainly targeted the attraction of foreign firms by constructing IPs in different regions of the country, presenting fiscal and market incentives following the lesson learned from the first growth and transformation plan (Weldesilassie et al., 2017). The IPs are used as a strategic tool to catch up and sustain development through export growth, human capital development and technological learning.

Market incentives, such as preferential market access, play a central role in the global apparel trade. Among the broad range of possible incentives, financial and fiscal incentives are the ones most frequently employed. Developing countries often prefer fiscal instruments, such as tax holidays, concessionary tax rates, accelerated depreciation allowances, export incentives, duty drawbacks and exemptions, whereas developed countries mainly use financial incentives, including cash grants and interest-free or subsidized loans (Altenburg et al., 2020). This study has highlighted (Table 10.1) some incentive schemes in five countries: Bangladesh, China, India, Kenya and Ethiopia in special industrial and economic zones; however, the participation of local firms under AGOA and EBA packages is limited due to various reasons outlined by the work of Gebre-Egzlabher (2007). Based on USITC's (2018) report, Ethiopia's apparel export to the U.S. reached US\$37.0 million in 2016 compared to US\$1.9 million in 2010. The country's total AGOA utilisation rate is 96.0% next to Kenya which is 98.0% (ITC, 2018).

**Table 10.1:** Incentive schemes of Bangladesh, China, India, Kenya and Ethiopia [authors' compilation].

	<b>Bangladesh</b>	<b>China</b>	<b>India</b>	<b>Kenya</b>	<b>Ethiopia</b>
Infrastructure and OSS services	Yes	Yes	Yes		Yes
Tax Exemption for the first two years 100%	Yes	Yes	Yes		Yes
Borrowings			Yes		Yes
Duty-free import of materials	Yes		Yes		Yes
Duty-free import and export of raw materials and finished goods	Yes		Yes		Yes
Relief from double taxation	Yes		Yes		Yes

**Table 10.1** (continued)

	Bangladesh	China	India	Kenya	Ethiopia
Exemption from dividend tax	Yes		Yes	Yes	
GSP facility available	Yes				
Accelerated depreciation on machinery or plant allowed	Yes				
Remittance of royalty, technical, and consultancy fees allowed	Yes			Yes	Yes
The price for m2 of land is \$1.25 to \$2.20, while the price of shed per m2 is \$1.60 to \$ 2.75.	Yes				Similar
Corporate tax of <15%		Yes	Yes	Yes	Yes
100% exemption of customs duties and other taxes on imports to capital goods					Yes
Spare parts up to 15% total import capital goods, exempted, from payment of customs duties					Yes
60–80 years of land lease right at a promotional rate					Yes
Up to five years personal income tax exemption for expatriate employees of industrial parks					

Much empirical evidence on the relationship between FDI and economic growth is generic, and the results are mixed. Questioning that the mixed results might be aroused from using total FDI, Wang (2009) studied the heterogeneous effects of sectoral FDI inflows on the host country's economic growth considering 10 Asian economies. The results showed that FDI in different sectors had different impacts on the host country's economic growth. Wang et al. (2010) also found that the impact of FDI inflows on Chinese exports was stronger for the traditional labour-intensive goods such as textiles and clothing than for capital and technology-intensive goods. Among manufacturing industries, Masron et al. (2012) reported that industries with high FDI inflows tend to enjoy positive spillover effects.

Foreign investors compare the economic policy uncertainty of the hosting country with the home country before making FDI investment decisions in a particular country (Canh et al., 2020). In the case of Ethiopia, this paper tries to demonstrate the impact of FDI's volatility on sustainable economic growth, and how the economy was merely dependent on foreign investors, considering political instability.

## Methodology

This chapter reviewed relevant literature and analysed empirical evidence on industrialization, policy and strategy documents, proclamations, and annual reports to understand the impact of FDI inflows on economic sustainability focusing on a specific manufacturing sector (textile and apparel) in Ethiopia.

The data were collected from both primary and secondary sources. The primary data were collected using interviews with the Ethiopian investment commission's one-stop-service coordinator director (EICOSSCD), IPs one-stop-service support centre (IPOSSSC) and textile and apparel companies in the IPs. The secondary sources are the national bank of Ethiopia (NBE), the world bank (WB), the international monetary fund (IMF), the United Nations conference on trade and development (UNCTAD) and the Ethiopian textile industry development institute (ETIDI).

Accordingly, among the 26 IPs, field surveys were conducted with a total of 26 face-to-face interviews (two with EICOSSCDs, six with IPOSSSC coordinators and 18 with companies' managers) based on their operational status. Among the existing IPs, six Ips (Addis Ababa Bole Lemi I, Adama, Hawassa, Kombolcha, Mekele and Eastern Ips) were selected using purposive sampling on the basis of their active role in the economy and operational circumstances. EICOSSCDs and IPOSSSC coordinators were interviewed about investment policies and key performance indicators (export performances, firm linkages, employment), and the interview with the company managers focused on firm ownership, export destination, raw material sources and employment.

Tables and figures are used to describe the status of the IPs, firm's ownership, firm's country-specific ownership, market orientation, export destination and textile and apparel trade value. Annual import-export trade values of 14 sets of textile and apparel items were aggregated over the period 1998 to 2018, both for the world and the markets. Then, the annual import-export of all commodity trade values for the same period was aggregated. Finally, the annual trade value of textile and apparel share as a percentage (Figure 10.3) was calculated, for import-export trades both for the USA and world market. The annual import-export trade values of 14 sets of textile and apparel items were used to investigate the trade balance (Figure 10.4) between import and export trade of textile and apparel goods for the period of 19 years between 2000 to 2018, for the world market.

To examine the correlation (Table 10.6) between FDI inflows and economic growth and measure the impact of FDI volatility on GDP (Table 10.7), an autoregressive conditional heteroscedasticity (ARCH) model was performed for a dataset between 2000 to 2019 both for total and sectoral FDI inflows and their corresponding import and export.

## Textile and Apparel Sector's Ownership in Ethiopia

Ethiopia has 221 textile and apparel companies, with 118 locally-owned and 103 foreign-owned companies, respectively (Table 10.2). Among the 103 foreign firms, 63 (61%) textile and apparel firms operating in the IPs originate from 15 countries. Chinese firms take the leading number of FDIs, followed by Indian, Turkish and Italian firms. Despite an integrated value chain approach and industrialisation targets, there is no single operational domestic firm in the IPs whether as a supplier or any other form of activities (Table 10.3). Unless there is learning in each stage to adapt technology and management skills, and build market chains, when large international companies renounce the IPs (such as AYKA Addis Textile Sc), the resource becomes unworkable, resulting in a sustainability dilemma. To mitigate such a risk, the hosting countries should encourage the establishment of local firms in the IPs and set policies that build sustainable links between the local and foreign firms (Keane & Velde, 2008).

**Table 10.2:** Active textile and apparel firm ownership.

Ownership	Total firms	Business type		Inside IPs	Sectors			
		Private	Share		Textile	Apparel	Integrated	Other
Ethio-china	2	2			1		1	
Pakistan	3	3			1	1	1	
Chinese	48	48		33	24	21	3	
Hong Kong	2	2		2		2		
India	13	13		9	2	10	1	
Bangladesh	2	1	1	1		1	1	
South Korea	4	4		3		4		
Taiwan	2	2		2		2		
Indonesia	2	2		2		2		
Sri Lanka	2	2		2		2		
Israel	1	1				1		
Turkey	9	9		1	3	3	3	
Italy	4	4		1	1	3		
Netherlands	2	2		2		2		
Belgium	1	1		1		1		
France	1	1		1		1		
Britain	1	1		1		1		
USA	2	2		2		2		
Canada	1	1						1
Peru	1	1				1		
Foreign Total	103	102	1	63	32	60	10	1
Ethiopian Total	118	115	3		26	72	15	5
<b>Total</b>	<b>221</b>	<b>217</b>	<b>4</b>	<b>63</b>	<b>58</b>	<b>132</b>	<b>25</b>	<b>6</b>



Among the 63 companies operating in the IPs, the textile and apparel sector had a share of 44.44% and 47.62%, respectively. However, from a total of 221 firms in the country, the share of textiles, apparel, integrated textiles and others is 26.24%, 59.73%, 11.31% and 2.72% respectively. This shows that the apparel sector is more dominant than the textile sector, which can result in raw material shortage. This is consistent with the problem reported by the work of Bedane and Egziabher (2019). Almost all businesses are privately owned, which does not bode well for the spillover effect. However, domestic firms must also be proactive to learn from foreign firms through different techniques instead of relying on government efforts.

## Industry Parks

There are 26 IPs in Ethiopia; 11 private and 15 Public. However, most IPs were not fully operational and are dominated by privately-owned foreign companies. As of now, the function of government institutions in facilitating, enhancing and measuring the linkage between foreign and domestic enterprises has been difficult to discern. Constructing IPs in different regions or places without reviewing existing performance appears to be a systematic technique for balancing and urbanising regional developments, which may or may not be appropriate from a business perspective.

## Market Destinations

The main market destinations (Table 10.5) for exporters from the IPs are the USA and EU. Figure 10.1 presents the total number of exports from the IPs to the partner countries. USA, Germany, Sudan, Italy, United Kingdom, Canada, Turkey, China and France are the top export destinations of Ethiopian apparel exports. From EU countries, Germany takes a large share of apparel exports. Compared to 2014/15 apparel exports to EU countries, the US market has taken the largest share of Ethiopian apparel exports. However, most exporters are foreign firms through their previous market connections. Unless the required competitive capability is acquired through linkage, it will be challenging to utilise AGOA and EBA opportunities for domestic firms.

## FDI Inflows

During the period from 2000 to 2019, the average evolution of FDI inflow as a percentage of GDP reached 2.94% (Figure 10.2). The net FDI inflows in 2016 was a record of 5.6 as a percentage of GDP. However, it has dropped since then, down to 2.6% in 2019.

**Table 10.3:** Active firm ownership by country in the industry parks.

Industry park	Ownership															
	China	India	South Korea	Taiwan	Netherlands	Ethiopia	Italy	USA	Hong Kong	Sri Lanka	Indonesia	Belgium	Turkey	France	Bangladesh	Britain
Bole Lemi I	2	4	3	1												
Hawassa	4	3		1				1	2	2	2	1	1	1		1
Kombolcha	2						1	1								
Mekele		2														1
Adama	1															
Eastern zone	24				2											
<b>Total</b>	<b>33</b>	<b>9</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>

**Table 10.4:** List of industry parks.

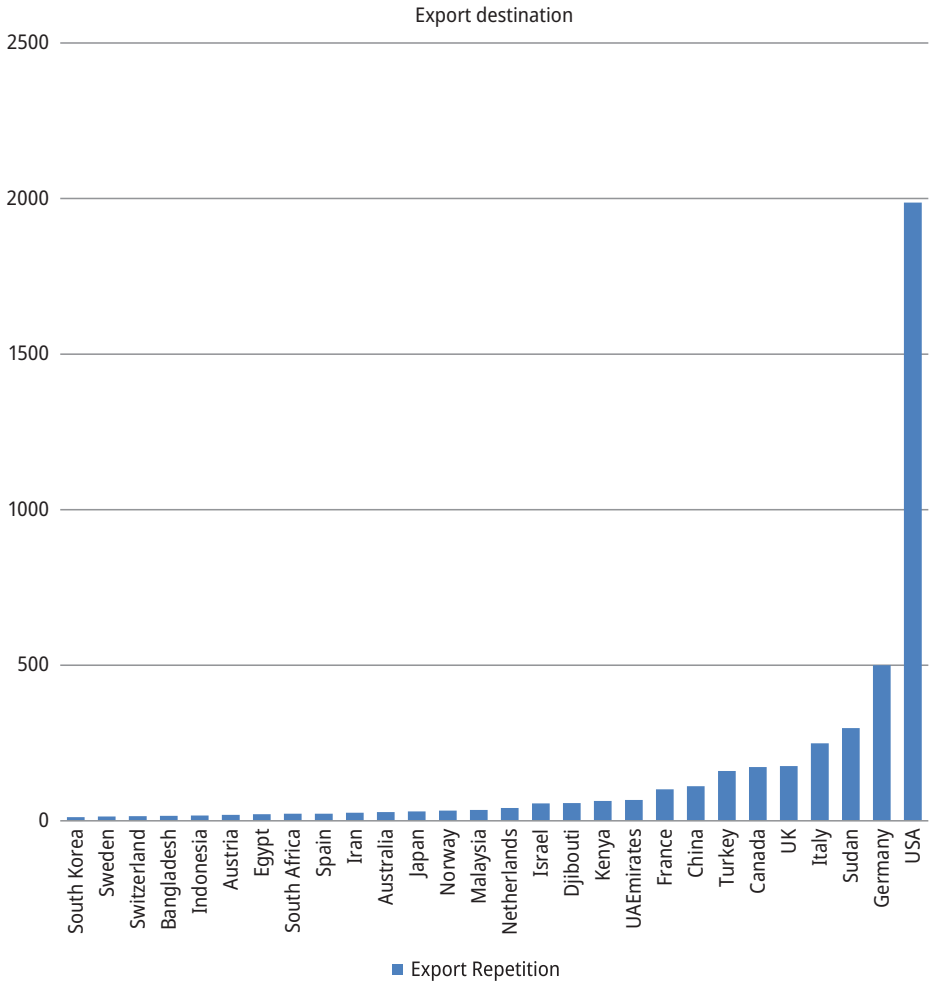
S/No.	Industry Park	Ownership	Status	Cluster	Location
1	Bole Lemi I	Public	Operational	Apparel, Textiles, Leather and leather products	Center
2	Bole Lemi II	Private	Under Construction	Apparel, Textiles, Leather and leather products	Center
3	Kilinto	Public	Under Construction	Pharmaceutical	Center
4	Hawassa	Public	Operational	Textile and garment	South
5	Dire Dawa	Public	Ready	Mixed	East
6	CCECC Dire Dawa	Private	Under construction	Mixed	East
7	Kombolcha	Public	Operational	Textile and Apparel Leather and leather products	North
8	Mekele	Public	Operational	Textile and Apparel	North
9	Adama	Public	Operational	Textile and Apparel	Southeast
10	Jimma	Private	Ready	Agro-processing	West
11	Bahir Dar	Public	Ready	Textile and Apparel	North
12	George Shoe	Private	Operational	Leather and leather products	Southeast
13	Eastern zone	Private	Operational	Mixed	Southeast
14	Huajian	Private	Operational	Apparel, Textiles, Leather and leather products	Southeast
15	Debre-Birhan	Public	Operational	Textile, Garment and Agro-processing	North
16	Arerti	Public	Under construction	Building material, home appliances, and furniture	Northeast
17	CCECC Arerti	Private	Operational	Construction material and home appliance	Northeast
18	Ayesha	Private	–	–	East
19	Vogue	Private	Operational	Textile and garment	North
20	DBL Group	Private	Operational	Textile and garment	North
21	Velocity	Private	Operational	Textile and garment	North
22	Airline & logistics park	Public	Planning stage	Transportation	Center
23	Addis industrial village	Public			Center

**Table 10.4** (continued)

S/No.	Industry Park	Ownership	Status	Cluster	Location
24	Bure	Public	Ready	Agro-processing	North
25	Bulbula	Public	Under construction	Agro-processing	Southwest
26	Yirgalem	Public	Ready	Agro-processing	South

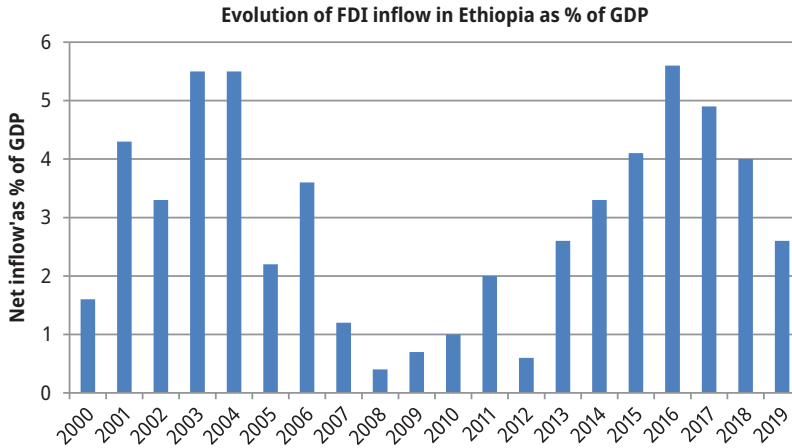
**Table 10.5:** Market destination of firms operating in IPs.

Industry Park	Number of companies	Market destination	Type of privilege
Adama	1	USA and Australia	AGOA
		Hong Kong	EBA
		Europe	
Bole Lemi	9	USA, Canada	AGOA
	9	EU /Germany, France, Italy, Poland Romania	EBA
	8	ASIA /China, Sri Lanka, India, Singapore	COMESA
	3	Kenya, Djibouti, South Africa	
	1	United Arab Emirates	
	1	Pakistan	
	1	Malaysia	
	1	Taiwan	
Eastern	5	USA	AGOA
	2	EU	EBA
	1	Brazil	COMESA
	6	Kenya, Tanzania, Uganda, Sudan, Zambia	
	1	Turkey	
	1	Saudi Arabia	
	2	China, Sri-Lanka	
	17	Local	
Kombolcha	2	USA	AGOA
	2	EU	EBA
	1	East ASIA	
Hawassa	17	USA, Canada	AGOA
	9	EU	EBA
	3	ASIA	COMESA
	2	Egypt, Kenya	
	2	Malaysia	
Mekele		USA	AGOA
		EU	EBA



**Figure 10.1:** Export destination by volume (Source: unpublished data from EIC).

Different reasons can be stated, with the main reason being the volatility behaviour of the FDI. FDI inflows are mainly affected by uncertainty (Paul & Feliciano-Cestero, 2021). This argument can be backed by the data in Figures 10.2 and 10.5. The drop in FDI inflows and aggregate economy in 2008 might be connected to the post-impact of the 2005 election and world financial crisis, as it damaged the world economies, whereas, the drop in FDI inflows and aggregate economy in 2017, 2018 and 2019 were due to internal and external political pressures (UNCTAD, 2020). If the investment was comprehensive with local investors, the GDP should have been remained elastic.



**Figure 10.2:** Net FDI inflow as a % of GDP.

## Import-export Trade

Figures 10.3 and 10.4 demonstrate the import-export trade and trade balance of the textile and apparel manufacturing sectors in Ethiopia since 1998. Within these 20 years, there is a wide deficit. As can be seen in Figure 10.4, the percentage of USA export trade is higher than the world export trade, which is consistent with the market destination described in Figure 10.1. The preferential market access to the USA has played the main role in the success of the export. The Ethiopian domestic market and manufacturing industries are identified by high imports of apparel and textiles (Figure 10.3), both for domestic and export use respectively.

## The Relationship Between FDI and Sustainable Economic Growth

Figure 10.5 shows the GDP growth by sector following FDI inflows. The industry sector that consists of manufacturing took the priority of FDI as it is expected to provide export opportunities and generate foreign currency. After 2002 the agricultural absolute growth is declining whereas the industry absolute growth is increasing drastically, which is backed mainly by the manufacturing sector, such as the textile and apparel industries. The average growth rate between 2000 and 2019 shows 8.8% per annum. This achievement was reached through the construction of big infrastructures, service facilities and incentives.

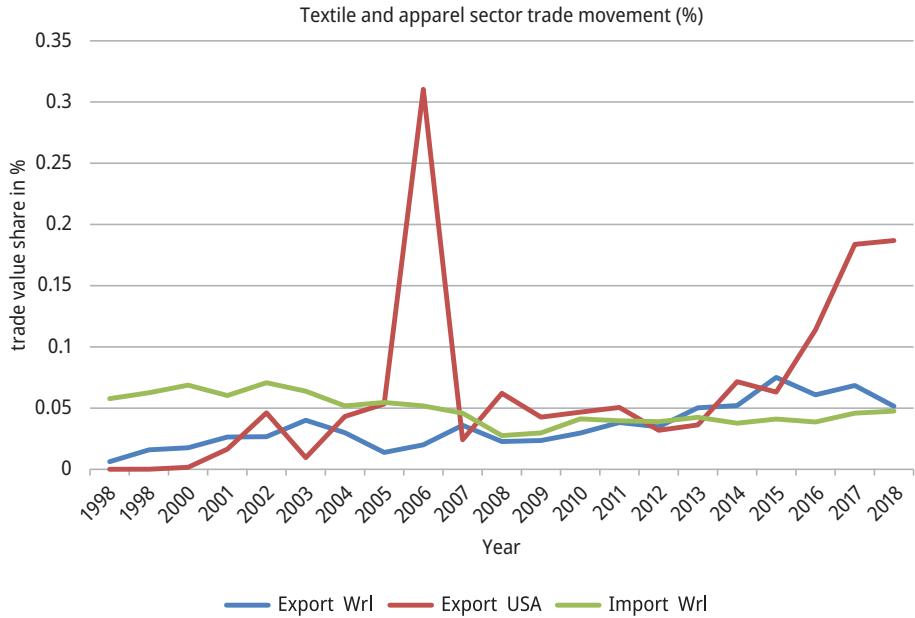


Figure 10.3: Textile and apparel import export trade.

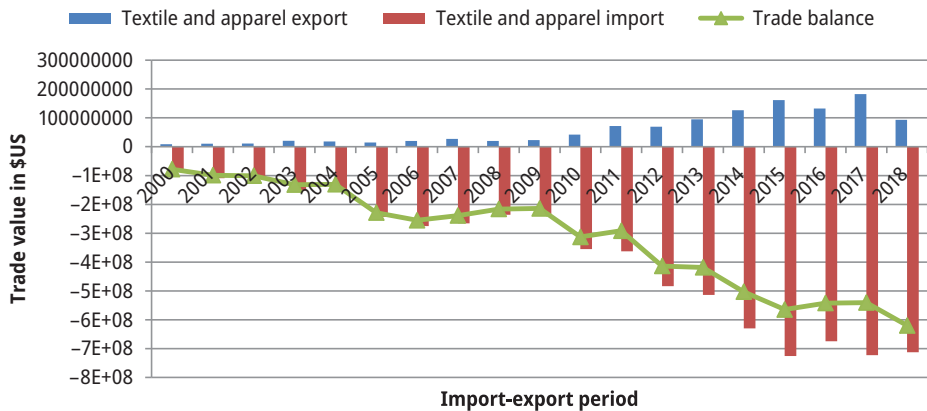
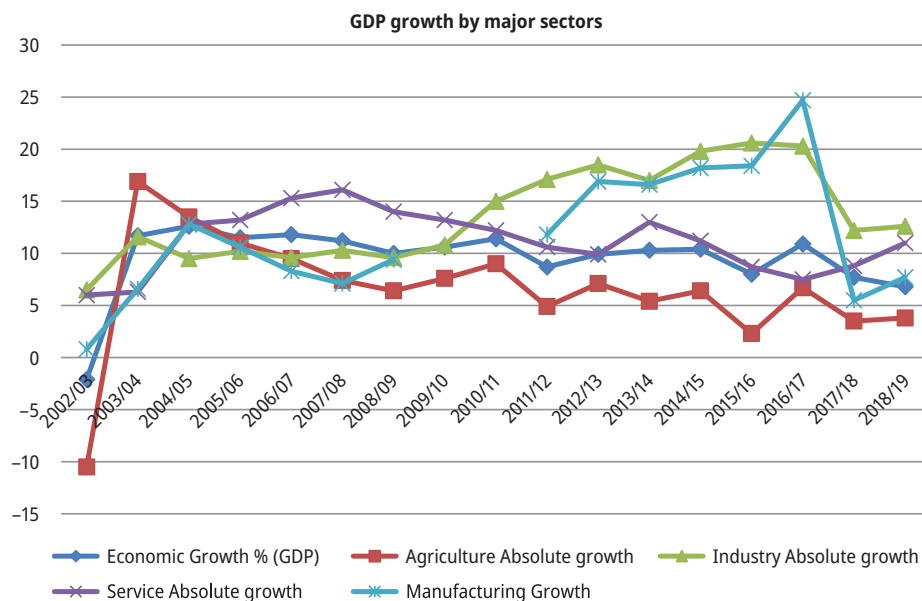


Figure 10.4: Textile and apparel trade balance.

The strength of correlation between GDP and both total FDI and sectoral FDI were found significant at  $p = 0.01$  (Table 10.6). Compared to the effect seen in the total FDI inflows, the strength of correlation between sectoral FDI and export was found to be higher than that of sectoral FDI and imports. This is consistent with the findings of Wang et al. (2010), where the impact of inward FDI on Chinese exports was found to be stronger for labour-intensive goods such as textile and garment than for capital-



**Figure 10.5:** GDP growth by major sectors.

intensive goods. However, the strength of correlation between sectoral FDI and export was comparably lower than that of Malaysia (Masron et al., 2012).

**Table 10.6:** Correlations (trade value in \$US).

	GDP	FDI inflows	Total EXPORT	Sectoral EXPORT	Sectoral FDIS	Total IMPORT	Sectoral IMPORTS
GDP	1.000000						
FDI inflows	0.897285	1.000000					
Total EXPORT	0.879486	0.734160	1.000000				
Sectoral EXPORT	0.902161	0.868332	0.923644	1.000000			
Sectoral FDI	0.897285	1.000000	0.734160	0.868332	1.000000		
Total IMPORT	0.944190	0.789303	0.936239	0.913767	0.789303	1.000000	
Sectoral IMPORT	0.965040	0.861671	0.935745	0.941365	0.861671	0.968756	1.000000

## The Effect of Total FDI Inflows on Economic Growth

The total yearly FDI inflows (\$US) were correlated with the total imports (\$US) and exports (\$US). The result shows that total FDI inflow is positively correlated with total imports as well as total exports, with a slightly higher strength in the former relationship. This is consistent with time-series data presented in Figures 10.2 and 10.4. The



type of firms operating in Ethiopia may explain the higher strength of the FDI-import trade correlation. As shown in Table 10.2, most firms are invested in the apparel industry, undertaking a cut-make-trim production that requires massive raw materials, specifically fabric. Basically, both domestic and foreign firms import fabric from abroad; however, most international corporations use their textile producers or worldwide supplier networks to import all of their inputs. Imports of textiles may have increased as a result of this. These findings align with those of Kurtishi-Kastrati (2013).

The objective is to develop a well-integrated industry and avoid import dependency. Hence, the government also focuses on identifying and building the capacity of existing textile mills and attracting new investors.

Moreover, the autoregressive conditional heteroscedasticity was performed to test the impact of total FDI inflows on GDP growth. The result, with an R squared value of 0.77, showed a significant positive effect (Table 10.7).

**Table 10.7:** Regression coefficients.

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	1.49E+10	3.27E+09	4.565192	0.0000
FDI	18.96643	2.314913	8.193148	0.0000
Variance Equation				
C	1.29E+20	2.81E+20	0.457910	0.6470
RESID(-1)^2	-0.451478	0.721764	-0.625520	0.5316
GARCH(-1)	0.618703	1.822061	0.339562	0.7342
R-squared	0.772613	Mean dependent var		3.80E+10
Adjusted R-squared	0.759980	S.D. dependent var		2.90E+10
S.E. of regression	1.42E+10	Akaike info criterion		49.86756
Sum squared resid	3.63E+21	Schwarz criterion		50.11649
Log likelihood	-493.6756	Hannan-Quinn criter.		49.91615
Durbin-Watson stat	0.661380			

## The Effect of Sectoral FDI Inflows on Economic Growth

The result of autoregressive conditional heteroscedasticity, with an R squared value of 0.76, shows that there is a strong significance and positive relationship between the specific sector's FDI inflows and GDP (Table 10.8), which is consistent with the justification of Fauzel & Keesoonah, (2017). Hence, indirectly, the volatility of FDI has a strong impact on sustainable economic growth.

**Table 10.8:** Regression coefficients for sectoral level.

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	1.52E+10	3.63E+09	4.177350	0.0000
FDIS	750.8883	99.58376	7.540268	0.0000
<b>Variance Equation</b>				
C	1.33E+20	3.21E+20	0.412817	0.6797
RESID(-1)^2	-0.466215	0.693085	-0.672667	0.5012
GARCH(-1)	0.610110	1.895803	0.321821	0.7476
R-squared	0.764719	Mean dependent var		3.95E+10
Adjusted R-squared	0.750879	S.D. dependent var		2.89E+10
S.E. of regression	1.44E+10	Akaike info criterion		49.92324
Sum squared resid	3.53E+21	Schwarz criterion		50.17178
Log likelihood	-469.2708	Hannan-Quinn criter.		49.96531
Durbin-Watson stat	0.665651			

## Conclusions

The results of the correlation and simple regression (ARCH model) study revealed that total FDIs and GDP, as well as sectoral (textile and apparel) FDIs and GDP, have a positive and significant relationship. For the selected analysis periods, the data showed significant variations. The majority of the findings show that economic growth fluctuates during periods of political unrest, resulting in foreign corporations leaving the country.

Despite the growing number of industries, industrial areas, availability of preferential market access, FDI inflows and government focus on the sector, domestic participation remains a risk for sustainable development. The government's strategy is mainly focused on attracting foreign investors. However, without domestic firms' participation, the sustainability of the industrialisation process, technology transfer, modern management and spillover effect, as well as sustainable economic growth, will be questionable.

Directly or indirectly, the variation in sustainable economic growth arises from the impact of depending solely on FDI inflows. Hence, the country's IPs policy needs a mechanism to measure the economic achievements and periodical transition of experimental learning. Not only foreign investors but also domestic firms require investment protection, transparent policy and predictable regulations.

## References

- Achim, B., Benedikt, B., Saskia, H., Karl-Hendrik, M., Ben, M., & Bill, R. (2015). Sourcing in a volatile world: The East Africa opportunity. *Apparel, fashion & luxury group in McKinsey's retail practice: McKinsey and Company*. <https://www.mckinsey.com/industries/retail/our-insights/east-africa-the-next-hub-for-apparel-sourcing>
- Aghion, P., & Howitt, P. (1990). *A model of growth through creative destruction*. National Bureau of Economic Research, Working Paper No. 3223. doi:10.3386/w3223
- Albuquerque, R. (2003). The composition of international capital flows: Risk sharing through foreign direct investment. *Journal of International Economics*, 61(2), 353–383. doi:10.1016/S0022-1996(03)00013-8
- Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2010). Does foreign direct investment promote growth? Exploring the role of financial markets on linkages. *Journal of Development Economics*, 91(2), 242–256, doi:10.1016/j.jdeveco.2009.09.004
- Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2004). FDI and economic growth: The role of local financial markets. *Journal of International Economics*, 64(1), 89–112. doi:10.1016/S0022-1996(03)00081-3
- Altenburg, T., Xiao, C., Lütkenhorst, W., Staritz, C., & Whitefield, L. (2020). *Exporting out of China or out of Africa? Automation versus the relocation in the global clothing industry*. Discussion Paper No. 1/2020.
- Anandakumar, K. (2012). FDI inflows in India: a comparative analysis with special reference to services sector, telecommunications sector and computer hardware and software sector. *International Journal of Business and Globalisation*, 9(2), 186–194.
- Bedane, G., & Egziabher, A.G. (2019). Cotton production potential areas, production trends, research status, gaps and future directions of cotton improvement in Ethiopia. *Greener Journal of Agricultural Sciences*, 9(2), 163–170. doi:10.15580/GJAS.2019.2.040619064.
- Beugelsdijk, S., Smeets, R., & Zwinkels, R. (2008). The impact of horizontal and vertical FDI on host's country economic growth. *International Business Review*, 17(4), 452–472. doi:10.1016/j.ibusrev.2008.02.004
- Borensztein, E., De Gregorio, J., & Lee, J.W. (1998). How does foreign direct investment affect economic growth? *Journal of international Economics*, 45(1), 115–135. doi:10.1016/S0022-1996(97)00033-0
- Bornschier, V., & Chase-Dunn, C. (1985). *Transnational corporations and underdevelopment*. Praeger.

- Buckley, P.J., & Casson, M. (1976). A long-run theory of the multinational enterprise. In J.B. Peter & C. Mark, *The future of the multinational enterprise* (pp. 32–33). Palgrave Macmillan. doi:10.1007/978-1-349-02899-3\_2
- Canh, N.P., Binh, N.T., Thanh, S.D., & Schinckus, C. (2020). Determinants of foreign direct investment inflows: The role of economic policy uncertainty. *International Economics*. doi:10.1016/j.inteco.2019.11.012.
- Coase, R.H. (1937). The nature of the firm. In R.H. Coase, *The nature of the firm. Origins, evolution, and development*, Vol. 4 (pp. 33–47). Oxford University Press.
- Dang, T.T., & Tran, D.N. (2020). Impact of Monetary Policy on Private Investment: Evidence from Vietnam's Provincial Data. *Economies*, 8(3), 1–70.
- Denisia, V. (2010). Foreign direct investment theories: An overview of the main FDI theories. *European Journal of Interdisciplinary Studies* (no. 3), 53–59. <https://ssrn.com/abstract=1804514>
- Dumludag, D. (2009). An analysis of the determinants of foreign direct investment in turkey: The role of the institutional context. *Journal of Business Economics and Management*, 10(1), 15–30. doi:10.3846/1611-1699.2009.10.15-30
- Dunning, J.H. (2014). *The globalization of business: The challenge of the 1990s*. Routledge.
- EIC. (2017, August 14). *Ethiopian Investment Commission*. <http://www.investethiopia.gov.et/investment-opportunities/strategic-sectors/industry-zone-development>
- Falki, N. (2009). Impact of Foreign Direct Investment on Economic Growth in Pakistan. *International Review of Business Research Papers*, 5(5), 110–120.
- Fan, E.X. (2002). *Technological spillovers from foreign direct investment – A survey*. Economics and research department, Asian Development Bank, ERD, Working paper No. 33. <https://www.adb.org/sites/default/files/publication/28326/wp033.pdf>
- Fauzel, S., & Keesoonah, L. (2017). A dynamic investigation of foreign direct investment and sectoral growth in Mauritius. *African Journal of Economic and Sustainable Development*, 6(1), 32–51.
- Gebre-Egziabher, T. (2007). Impacts of Chinese imports and coping strategies of local producers: The case of small-scale footwear enterprises in Ethiopia. *The Journal of Modern African Studies*, 45(4), 647–679. doi:10.1017/S0022278X07002911
- Gebreeyesus, M. (2013). *Industrial policy and development in Ethiopia: Evolution and present experimentation*. WIDER Brookings Institution, Working Paper No. 2013/125. doi:<http://hdl.handle.net/10419/93684>.
- Geda, A., & Meskel, A.G. (2009). *Impact of China-Africa investment relations: Case Study of Ethiopia*.
- Hausmann, R., & Fernández-Arias, E. (2000). *Foreign direct investment: good cholesterol?* Inter-American Development Bank, IDB working paper No. 417. doi:10.2139/ssrn.1817215.
- Head, K., & Ries, J. (2003). Heterogeneity and the FDI versus export decision of Japanese manufacturers. *Journal of the Japanese and international economies*, 17(4), 448–467.
- Hymer, S.H. (1960). *The international operations of national firms, a study of direct foreign investment*. Department of Economics, Massachusetts Institute of Technology. <http://hdl.handle.net/1721.1/27375>.
- ITA. (2020). *International Trade Administration*. <https://www.trade.gov/knowledge-product/ethiopia-market-overview>.
- ITC. (2018). *Ethiopia: company perspectives, An ITC series on non-tariff measures*. International Trade Centre. [https://www.intracen.org/uploadedFiles/intracenorg/Content/Publications/Ethiopia%20NTM%20survey\\_Low-res.pdf](https://www.intracen.org/uploadedFiles/intracenorg/Content/Publications/Ethiopia%20NTM%20survey_Low-res.pdf).
- Jensen, N. (2008). Political risk, democratic institutions, and foreign direct investment. *Journal of Politics*, 70(4), 1040–1052. doi:10.1017/S0022381608081048
- Karabay, B. (2010). Foreign direct investment and host country policies: A rationale for using ownership restrictions. *Journal of Development Economics*, 93(2), 218–225. doi:10.1016/j.jdeveco.2009.11.003

- Keane, J., & te Velde, D.W. (2008). *The role of textile and clothing industries in growth and development strategies*. Overseas development institute. <https://odi.org/en/publications/the-role-of-clothing-and-textile-industries-in-growth-and-development-strategies/>
- Kenneth, A.T., Courtney, C., Alexa, L., Kylie, W., & Iheanyi, N.O. (2019). Foreign trade and economic growth in South Africa. *Asia-Pacific Journal of Accounting and Economics*, 1. doi:10.1080/16081625.2019.1567352
- Khurana, K. (2018). An overview of textile and apparel business advances in Ethiopia. *Research Journal of Textile and Apparel*, 22(3), 212–223. doi:10.1108/RJTA-01-2018–0003
- Kiyota, K., & Urata, S. (2004). Exchange rate, exchange rate volatility and foreign direct investment. *World Economy*, 27(10), 1501–1536. doi:10.1111/j.1467–9701.2004.00664.x
- Kojima, K. (1973). A Macroeconomic approach to foreign direct investment. *Hitotsubashi Journal of Economics*, 14(1), 1–21. <https://www.jstor.org/stable/4329560>
- Kurtishi-Kastrati, S. (2013). The effects of foreign direct investments for host country's economy. *European Journal of Interdisciplinary Studies*, 5(1), 26–38.
- Lensink, R., & Hermes, N. (2004). The short-term effects of foreign bank entry on domestic bank behaviour: Does economic development matter? *Journal of Banking & Finance*, 28(3), 553–568. doi:10.1016/S0378-4266(02)00393–X
- Lensink, R., & Morrissey, O. (2006). Foreign direct investment: flows, volatility and the impact on economic growth. *Review of international economics*, 14(3), 478–493. doi:10.1111/j.1467-9396.2006.00632.x
- Levine, R., & Carkovic, M. (2002). *Finance and growth: New evidence and policy analyses for Chile*. Central Bank of Chile, No. 157.
- Lipsey, R.E. (2002). *Home and host country effects of FDI*. National Bureau of Economic Research, NBER, Working paper No. 9293. doi:10.3386/w9293.
- Lipsey, R.E., & Sjöholm, F. (2010). *FDI and growth in East Asia: Lessons for Indonesia*. Research Institute of Industrial Economics, Working Paper Series 852. doi:10.2139/ssrn.1689558
- Magnus, B., & Ari, K. (2001). *FDI and human capital and education in developing countries*. OECD. <https://www.oecd.org/dev/2698464.pdf>
- Masron, T.A., Zulkafli, A.H., & Ibrahim, H. (2012). Spillover effects of FDI within manufacturing sector in Malaysia. In *Procedia-Social and Behavioral Sciences*, no. 58, pp. 1204–1211.
- Meyer, D.F., & Habanabakize, T. (2018). An analysis of the relationship between foreign direct investment (FDI), political risk and economic growth in South Africa. *Business and Economic Horizons*, 14(4), 777–788. doi:10.15208/beh.2018.54
- OECD. (2002). *Foreign direct investment for development: maximising benefits, minimising costs: Overview*. Organisation for Economic Co-operation and Development. <https://www.oecd.org/investment/investmentfordevelopment/1959815.pdf>
- Paul, J., & Feliciano–Cestero, M.M. (2021). Five decades of research on foreign direct investment by MNEs: An overview and research agenda. *Journal of Business Research*, 1–13. doi:10.1016/j.jbusres.2020.04.017
- Perez, M.F., Brada, J.C., & Drabek, Z. (2012). Illicit money flows as motives for FDI. *Journal of Comparative Economics*, 40(1), 108–126.
- Polat, B., & Payaslıoğlu, C. (2016). Exchange rate uncertainty and FDI inflows: The case of Turkey. *Asia-Pacific Journal of Accounting & Economics*, 23(1), 112–129. doi:10.1080/16081625.2015.1032312
- Rand, J., & Tarp, F. (2002). Business cycles in developing countries: Are they different? *World Development*, 30(12), 2071–2088. doi:10.1016/S0305–750X(02)00124–9
- Svensson, R. (1998). The choice of entry mode in foreign direct investment market structure and development level. *The Geography of Multinational Firms* (pp. 157–158).
- Romer, P.M. (1986). Increasing returns and long-run growth. *Journal of Political Economy*, 94(5), 1002–1037. doi:10.1086/261420
- Romer, P.M. (1990). Endogenous technological change. *Journal of Political Economy*, 98(5), Part 2, 71–102. doi:10.1086/261725

- Staritz, C., & Whitfield, L. (2017). *Made in Ethiopia: The emergence and evolution of the Ethiopian apparel export sector*. CAE Working Paper 2017: 3. Roskilde Universitet.
- Staritz, C., Plank, L., & Morris, M. (2016). *Global value chains, industrial policy, and sustainable development – Ethiopia's apparel export sector*. International Centre for Trade and Sustainable Development (ICTSD).
- Ucal, M., Ozcan, K.M., Bilgin, M.H., & Mungo, J. (2010). Relationship between financial crisis and foreign direct investment in developing countries using semiparametric regression approach. *Journal of Business Economics and Management*, 11(1), 20–33. doi:10.3846/jbem.2010.02
- UNCTAD. (2018). *World investment report 2018 Investment and new industrial policies*. United Nations Publications, United Nations conference on trade and development (UNCTAD).
- UNCTAD. (2020). *World investment report 2020; International production beyond the pandemic*. United Nations Publications, United Nations Conference on Trade and Development (UNCTAD).
- USITC. (2018). *U.S. trade and investment with sub-Saharan Africa: Recent developments*, United States International Trade Commission (USITC).
- Vissi, F. (1995). Foreign direct investment and competition. *Russian & East European Finance and Trade*, 31(3), 58–73.
- Wang, C., Buckley, P.J., Clegg, J., & Kafourous, M. (2010). The impact of inward foreign direct investment on the nature and intensity of Chinese manufacturing exports. In P.J. Buckley, *Foreign direct investment, China and the world economy* (pp. 270–283). Palgrave Macmillan. doi:10.1057/9780230248328\_12.
- Wang, M. (2009). Manufacturing FDI and economic growth: evidence from Asian economies. *Applied Economics*, 41(8), 991–1002. doi:10.1080/00036840601019059
- Weldesilassie, A.B., Gebreyesus, M., Abebe, G., & Aseffa, B. (2017). *Study on industrial park development: Issues, practices and lessons for Ethiopia*. Ethiopian Development Research Institute.
- Yost, M., & Shields, L. (2017). *Ethiopia's emerging apparel industry: Options for better business and women's empowerment in a frontier market*. PBSR. [http://www.bsr.org/reports/BSR\\_Ethiopia\\_Scoping\\_Study\\_HERproject.PDF](http://www.bsr.org/reports/BSR_Ethiopia_Scoping_Study_HERproject.PDF).



Anne-Kirstine Dyrvig

# 11 Sustainability in Contemporary Kink Fashion

**Abstract:** Authored by an expert in research methods and external validity, namely Dr. Anne-Kirstine Dyrvig, a swinger who earned a PhD in epidemiology, this chapter discusses kink fashion, worn in the sex-positive movement. The chapter concludes with recommendations for increased sustainability in kink fashion.

**Keywords:** Kink fashion, swinging, materials, sustainability, fashion

## Introduction

Kink fashion in itself is a niche that seems to be affected only to a limited extent by other trends in the world. Nevertheless, it is not exempt from the contemporary demands on sustainability and there is plenty of room for improvement.

In this chapter, kink fashion should be understood as distinct from any other type of fashion that may be sexy. As a rule of thumb, it can be said that a kinky outfit for use in e.g., a swingers' club is anything that is too sexy to wear in any other club or setting. The same definition will be used here. What will not be addressed in this chapter is fetish outfits such as outfits for BDSM purposes, full-body-latex outfits, costumes (i.e., nurse), etc.

Kinky outfits are characterised by being tightly fitted to the body and having easy access to genitalia (through strategically placed holes or zippers) so that it is mostly possible to conduct penetrative sex without removing the clothes. A typically used fabric is see-through nylon. Also, it is frequent to have breasts or genitalia showing through holes in the fabric.

Sometimes kinky outfits have certain features to them that are aimed at sexual pleasure or teasing, e.g., a string of pearls that touches the clitoris, so that the person wearing the clothes experiences slight physical stimulation from them.

Within the field of contemporary kink fashion, there are noteworthy differences between female and male fashion. This is seen particularly across country boundaries. It is noteworthy that the only two genders discussed here are male and female. That is due to the fact that they constitute the majority and consequently the main weight of the fashion trends. This is not to imply that other genders do not exist.

---

**Anne-Kirstine Dyrvig**, National Clinical Registries in Denmark, e-mail: akdyrvig@gmail.com



## Male Fashion

Generally, there are three types of male fashion within the kink community. The least amount of clothing is used in clubs that have underwear as dress code. In those, men wear boxers, mainly tightly fitting and black. For the more fashionably aware, an expensive brand is used or, in rare instances, tights with print.

In other kink cultures, male fashion is more flamboyant with wet look boxers, or trousers alongside net shirts normally in black colour. Finally, the remaining male dress code is business pants, long sleeved shirt with a collar (no T-shirts) and shoes that are not sneakers.

## Female Fashion

Correspondingly, at locations that require underwear, females are expected to wear lingerie and lace, sometimes with a kimono on top. In other cultures, women wear short, tight dresses that would be suitable for a dance club and high heels. Or finally, the swingers' fashion includes slutty outfits, i.e., dresses that are shorter than normal, more likely to be see-through or with strategically placed holes. High heels are mandatory in clubs where men wear business clothes and women wear slutty outfits. In a few clubs, the dress code for males and females is to be naked, and consequently perhaps the most sustainable?

Another aspect that denotes the field of kink fashion is that the general consumption culture is present in kink as well as in other aspects of consumption. Thus, in Western cultures such as Europe and in the USA, there is a tendency towards products aimed at one-time use, e.g., cheap, low-quality nylon stockings or outfits that will lose too much quality to be reused after being washed.

## Increasing Sustainability in Kink Fashion

Cases of lingerie are not addressed here. For other types of clothing, this section covers the choice of materials, production countries, shopping options and the so-called one-size-problem, which constitute the main challenges of sustainable production of kink fashion.

### Materials

Most kink fashion is produced in materials that allow stretching to accommodate the wish for tight-fit. Consequently, popular materials include plastic and are mixes be-

tween types of fabric. Plastic is mainly produced in China and leads to transportation that emits CO<sub>2</sub>. Furthermore, fabrics that consist of combinations of fibers reduce the ease of recycling.

## **Production**

Kink fashion is mass-produced, mainly in China. As stated above, this implies that the clothes need transportation, which is not sustainable.

## **Shopping Options**

The field of kink fashion is a niche, indicating that the availability of such clothes is limited. Furthermore, the use of kink fashion is subject to a certain amount of shame or shyness in terms of the sexual signals that are related to going to a kink shop or sex shop.

Consequently, much of the shopping happens online with no option to try on the clothes and check the fit beforehand. It is no surprise that this increases waste as many people will not get to return clothes that do not fit. Thus, clothes lie unused in a closet until disposed of. The kink fashion field is only rarely considered as second-hand-worthy. It is unclear if the reason is that the clothes tend to be close to genitalia and thus deemed not reusable, or if it is the shame or shyness that is related not only to buying such clothes but also to reselling.

## **One-Size-Problem**

Although the fashion is tight-fit aiming at emphasising the attractive parts of the human body, it is never tailor-made and only in cases of lingerie more or less designed to fit different bodies and body types. The failure to produce clothes that are well suited for the individual leads people to compromise and thus be likely to use the clothes less than if they felt comfortable. Furthermore, the one-size outfits are more likely to be of the type that are used as one-time-outfits in the Western consumption culture.

## **Recommendations**

One aspect that would add to the sustainability of kink fashion would be to change the materials used. A previous chapter discusses leather. Leather has sustainable advantages compared to synthetic leather-look-materials. A relatively large part of the indus-

try is based on materials that are supposed to look like leather, and replacing these with real leather would improve sustainability in several ways. If meat is eaten anyway, no cow needs to be killed for its leather. Local production of leather would decrease the need for transportation from China, while catering to local tastes. In southern Europe and in Mexico, female kink fashion includes metal-chains draped decoratively on the body.

One relatively sustainable material, which is currently only used in the Mexican kink community, is tape. Tape designed for use on the body is low-use in terms of resources and quantity. Although it can be used only once in the original form, tape is recyclable.

Finally, the currently most rarely used item, which is sustainable, is glass pearls. Alongside either tape/glue or metal chains, glass pearls can be used to decorate bodies. Glass is well-suited for reuse and thus highly sustainable.

## Sources

The people behind [www.secretswingerlust.com](http://www.secretswingerlust.com) who travel the world to rate swinger clubs have contributed information on materials used throughout the world.

---

Part III: **Innovations in Design, Supply  
Chain and Marketing**



Eric Braune and Anne-Laure Boncori

## 12 Production Innovation for Sustainability in the Fashion Industry

**Abstract:** What are the possible avenues of transformation for the various players in the fashion industry's value chains to respond to the changes in consumer expectations and the environmental and social issues pointed out by their stakeholders? Given that the fashion industry has considerable environmental impact, this chapter considers innovative production for sustainability.

**Keywords:** production innovation, demand-driven model, sustainability, fashion

The fashion industry provides hundreds of millions of jobs around the world (Thomas, 2019), mostly in developing countries. Therefore, the social impact of this industry is colossal (Gereffi, 1999). However, the fashion industry also has considerable environmental impact. Approximately 1.2 billion tons of greenhouse gases are emitted by the textile industry each year – more than the shipping industry and international flights combined (Ellen MacArthur Foundation, 2017), making it the second most greenhouse gas-generating industry after the oil industry (Morgan and Ross, 2015). It also has other impacts, such as the release of toxins and the accumulation of end-of-life waste. If nothing is changed, the textile industry will account for 26% of global emissions by 2050 (Ellen MacArthur Foundation, 2017; International Energy Agency, 2016).

These are the consequences of the rise and industrial dominance of fast fashion over the past three decades (Remy, Speelman and Swartz, 2016), mass production and a rapid shift in trends that promote highly affordable products with accelerated obsolescence (Thomas, 2019). This results in the overuse of energy, water and raw materials and the accumulation of waste. Thus, embedded in a system of global value chains, the fashion industry must rethink its extraction, production and distribution channels, and the power or collaborative relationships with all the actors involved. A major challenge for the coming decade is to drastically reduce the carbon footprint and extend the life of clothing.

In contrast to fast fashion, the slow fashion movement is currently taking momentum (McKinsey, 2019), where the activism of consumer actors is echoed via social networks, and where the tipping point in terms of market power is moving towards digital natives who are more critically aware of the consumption of fashion products than their elders. In this sense, what are the possible avenues of transformation for the various players in the fashion industry's value chains to respond to the changes in

---

**Eric Braune**, Inseec Research Centre

**Anne-Laure Boncori**, Inseec Research Centre, e-mail: [alboncori@inseec.com](mailto:alboncori@inseec.com)

consumer expectations and the environmental and social issues pointed out by their stakeholders? This chapter aims to answer this question.

## State of Affairs

The global fashion industry accounts for 2% of the global gross domestic product (GDP).

After the slump due to the COVID-19 pandemic, this sector is expected to recover its level of activity as early as 2023 (USFIA, 2021), and apparel production volumes are expected to grow by 2.7 percent per year by 2030 (McKinsey, 2021).

The abolition of the Multi-Fibre Agreement (MFA) in 2005 (Martin, 2007) profoundly changed the dynamics of markets and configuration of supply networks (Abernathy et al., 2006). Many regions in Europe and in the United States have been hit hard, while other countries, mainly located in Asia and known for their low labour costs, have gradually become new leaders in fashion production (Abernathy et al., 2006; Palpacuer et al., 2005). In 2021, China exported over USD 31 billion worth of clothing to the United States. Globalisation has become standard in the fashion industry (Spicer, 2006).

The massive reliance on production from Asia has been viewed as an opportunity by fashion brands and distribution networks that run supply networks. Large retailers and clothing brand owners are indeed the most powerful entities in these networks, regardless of their degree of resource ownership (Gereffi, 1999; Tyler et al., 2006). This new situation has allowed them to profoundly change the key success factors in the fashion industry. A report issued in 2021 by the United States Fashion Industry Association (USFIA) speaks volumes in this regard. A survey of executives from leading U.S. fashion companies emphasises the interests associated with relocating production to Asia, particularly in China. Most respondents of the USFIA survey (2021) still view China as a competitive and balanced supply base from a business perspective. Only a few other sourcing countries can match China's flexibility and agility, production capacity, speed to market and supply costs. China's role in the textile and apparel supply chain extends beyond apparel production, and continues to expand. Following these frameworks, it has become increasingly difficult to find alternatives to China.

Major U.S. brands and retailers do not plan to outsource their manufacturing to any region outside Asia. More than 85% of the respondents to the USFIA survey (2021) plan to increase sourcing from Asian countries in the next two years. India, Bangladesh, Indonesia, the Philippines, Vietnam and Cambodia were the most frequently cited countries. If trade disputes escalate, these countries will serve as alternatives to sourcing from China. Indeed, the surveyed executives consider "rising production and

supply costs” to be their second biggest trade challenge in 2021. They do not intend to leave a region where labour costs are among the lowest in the world.

In other words, decisions about where to locate the production of fashion items are guided by (1) the manufacturers’ ability to adapt quickly to changes in brand and retailer demands, (2) the manufacturers’ ability to implement large volumes of production, (3) the production speed, and (4) minimising production costs. Thus, the fashion offered to customers in developed countries is largely comprised of mass-produced, low-quality products with rapid obsolescence (McCarthy and Jayarathne, 2012). Should we consider that consumers consent to this system of supply and also indiscriminately absorb what is offered to them? As José Neves, founder and CEO of Farfetch, stated in July 2020 on *The Business of Fashion* podcast, “the industry has an overproduction problem.”

According to McKinsey (2021) 25% of clothes produced will never be sold. Furthermore, a significant part of total production will find a buyer after the seller grants a discount. Therefore, the search for a minimisation of production costs is used to provide significant markdowns that will be made on each collection. In addition, manufacturers discard 12% of the raw materials used in the production process, and only 1% of unsold garments are recycled (McKinsey, 2021).

Despite its economic value, the fashion industry has negative social and environmental impacts, such as worker exploitation, resource overuse and waste generation (Fletcher, 2007). Widely expanded due to the abolition of the MFA in 2005, the standard economic model of the fashion industry imperfectly meets the demands of consumers in developed countries. Furthermore, the rate of raw material waste during production seems to be excessive.

## The Environmental Impact of the Fashion Industry

While the fashion industry contributes to 2% of the global GDP, it produced approximately 2.1 billion tons of greenhouse gas emissions in 2018, which is equivalent to 4% of the global total (McKinsey, 2020). Approximately 70% of the fashion industry’s emissions come from upstream activities, such as the production, preparation and processing of materials. If the dominant business model for this industry does not change, the increase in greenhouse gas emissions will follow the growth in apparel production volumes. If the target of 2.7% annual growth by 2030 is met, greenhouse gas emissions from the textile industry will reach 2.7 billion tons by the end of the decade.

Therefore, ensuring industrial growth without increasing greenhouse gas (GHG) emissions is a challenge. Decarbonised production and process efficiency improvements, such as initiatives in spinning, weaving and knitting; a shift from wet to dry processing; a transition from coal to electric power; and increased use of renewables in the value chain can curb the increase in emissions related to fashion industry



growth. However, these initiatives cover only 43% of the growth target without additional GHG emissions (McKinsley, 2020).

Reductions in the overproduction and rate of raw material waste during the manufacturing process can also help move the industry closer to its goal. The desire to reduce both calls for challenging the standard economic model and replacing it with a model having sustainable development concerns (Haq and Boddu, 2017; Kong et al., 2016). The development of the textile and apparel industry has focused on the aspects of technology and cost. Moreover, the focus has been on keeping the price of the final product low and increasing production efficiency. Products are designed and manufactured according to regularly changing trends that allow for quick profit rather than radically rethinking ways of designing and manufacturing an offer that is based on consumer needs and the principles of sustainable development (Niinimäki & Hassi, 2011). Business models should be tied to more than sales and production volumes. Therefore, more sustainable consumption is seen as leading to reduced volumes and lower profitability of production, not as an opportunity for a new type of green business (Allwood et al., 2008).

The concept of sustainable development is used to indicate that the current economic, social and environmental needs are balanced with the needs of future generations. Sustainable development “meets the needs of the present without compromising the ability of future generations to meet their own needs” (UNWCED, 1987). Companies that integrate these requirements must adopt policies, ideologies and action plans that share a common worldview (Bridges & Wilhelm, 2008) regarding sustainability (Savitz & Weber, 2006). Corporate sustainability indicates that all aspects of corporate performance are sustainable (Schaltegger & Wagner, 2011), from individual employee behaviour to performance along the value chain (Fiksel, McDaniel, & Mendenhall, 1999).

The terms “ethical fashion” and “sustainable fashion” are often used interchangeably in the literature, among other terms, such as “eco” or “green” (Cervellon & Wernerfelt, 2012; Lundblad & Davies, 2016). In academic literature, environmental concerns have taken precedence over the social and societal dimensions of sustainable development. This has led to a narrowing of the analytical framework, reducing the principles of sustainable development to its green dimensions. For example, Green Supply Chain Management (GrSCM) is defined as the integration of environmental thinking into “supply chain management, including product design, materials sourcing and selection, manufacturing processes, delivery of the final product to consumers, as well as end-of-life management of the product after its useful life” (Srivastava, 2007). Choi and Hwang (2015) emphasised the importance of DfE and leverage investments by maximising the recovered value of end-of-life waste. Ecodesign, which includes product life management, may improve reputation and may lead some consumers to pay more (Choi & Hwang, 2015).

The consideration of sustainability requirements begins with considerations that guide product design (Seuring & Muller, 2008). Decisions made during new product development (NPD) processes significantly affect the degree of product sustainability.

NPD by apparel brands or retailers can often be conducted in collaboration with product developers who are employed by their suppliers. This collaboration can help the former to leverage the synergies of their suppliers and enhance or improve the environmental integrity of their materials (Thabrew, Wiek & Ries, 2009). Following Goworek et al. (2020), the integration of suppliers into the new product definition process and the creation of cross-functional teams leads to collectively addressing the principles of sustainable apparel design as described by Curwen et al. (2012). This co-design leads to the diffusion of core values guiding new product development from downstream to upstream in the value chain. It is also expected to widely disseminate the knowledge held by each other, and it should help in optimising the use of raw materials and intermediate goods (Gam et al., 2008).

## Reconciling Fashion and Sustainable Development

Sustainability is an important challenge in the fashion industry (Rutter et al., 2017). According to Mathiyazhagan et al. (2021), the relationship between sustainability and fashion business has become a central debate at the national and international levels in both developed and developing countries. There is growing pressure on the apparel industry to make its products more sustainable. However, we note that only a few concrete measures have been taken so far. In addition, these measures would not reduce the consumption. Given the characteristics of this business model, the reduction in consumption would directly impact the profits (Friedrich, 2021).

We suggest, however, a significant reduction in the environmental footprint of the fashion industry is achievable. The WRAP (2012) report notes that most of the carbon, water and waste impacts are related to the production of clothing rather than its use and care. This report indicated that extending the average life of clothing by one-third could reduce its environmental footprint by more than 20%. Extending the average life of clothing by just three months of use per item could reduce carbon, water and waste footprints by 5–10%, which would result in cost savings for producers and consumers (WRAP, 2012).

Does the above mean that the quest for sustainability relies exclusively on the adoption of best practices by manufacturers located, almost exclusively, in developing countries? The definition of new products concerns brands and retailers located in developed countries, which control the upstream part of globalised value chains. Production volumes are also determined by these brands and retailers, and a quarter of these products will never be sold (McKinsey, 2021). Finally, the fashion industry's devastating effects on the environment questions consumption habits. Regardless of the consumers' nationality, they cannot be exonerated from all responsibility.

## The Actions of Brands and Retailers in Favour of Sustainable Production

Large retailers and clothing brand owners are the most powerful entities in fashion value chains (Gereffi, 1999; Tyler et al., 2006). They thrive on a combination of short product life cycles, high levels of impulse buying, fashion influence in all product categories, increased product variety, and continuous in-season refreshment (MacCarthy & Jayarathne, 2012). In addition, the demand for a quick response from manufacturers to their requests puts strong pressure on their suppliers (Goworek et al., 2020).

This model, however, is exhibiting increasingly obvious limitations. Even before the COVID-19 pandemic, the fashion industry had approached a dangerous threshold. Excessive inventories and widespread markdowns proliferated to the point where only 60% of clothing was sold at full prices, creating billions of dollars in lost revenue and margins. In addition, inventory turns dropped by 33% in the first three months of 2020.

These findings make it easier to adopt new and environmentally friendly practices. Indeed, the limitations of the current business model tend to accelerate the evolution toward a demand-driven model, the reduction of assortment complexity and the recalibration of the price-volume equation (McKinsley, 2021).

### A Demand-driven Model

Unlike standard practices in many industries, brands and retailers in fashion rely little on technology and data analytics tools to gauge consumer sentiment before releasing new products. However, fashion is the largest business-to-consumer (B2C) e-commerce market segment and is estimated to be worth USD 752.5 billion in global size by 2020. Moreover, the market is expected to continue growing at a rate of 9.1% per year and reach a total size of USD 1,164.7 billion by the end of 2025 (Statista, 2021). Consequently, the key players in this industry, especially retailers, have access to a wealth of data. These data should allow them to make finer segmentations of the markets, unveil new consumer typologies and anticipate their expectations.

The digitalisation of the market also accompanies the development of made-to-order models, where the customers' pre-orders drive the production release process. Sharma et al. (2010) argue that a made-to-order strategy can reduce unsustainable oversupply, but requires changes in internal processes and information sharing. The technical feasibility of the new product, the time required to manufacture it and its cost must be fully defined before the prototype is offered as a pre-order to potential customers. This leads to a better consideration of the constraints borne by the various participants in the value chain, and to the creation of cross-functional and inter-firm teams capable of arbitrating feasibility, lead time and cost requirements (Ismail & Sha-

rif, 2006). The new organisation of the value chain strategies, induced by “made-to-order,” has led new players in the European fashion industry – including Asphalte and Bonne Gueule – to call on manufacturers located in nearby countries, such as Romania or Portugal. Local sourcing also contributes to a reduction in environmental impact. Made-to-order concerns all segments of the fashion industry.

Made-to-order can also be used for end-product customization purposes in other mass-market segments (Deloitte, 2019), and it generates additional value for both customers and brands that know its implementation. Finally, made-to-order is the essence of the luxury segment, and contributes to its differentiation from the premium ready-to-wear segment. In the latter case, “made-to-order” contributes to the revaluation of specific skills held by production workers. The need to base the manufacture of luxury products on these skills led LVMH to form a partnership with the *Institut des Métiers d'Excellence* and *Compagnons du Devoir et du Tour de France* to train highly skilled workers.<sup>1</sup>

## A Model Based on Increasing the Lifespan of Products

Around 65% of the consumers surveyed in McKinsey's (2020) study during the COVID-19 pandemic—consumer sentiment on sustainability and fashion in the COVID crisis—conveyed that they plan to buy more long-lasting and high-quality items. Furthermore, the consumers considered “novelty” to be one of the least important factors when making purchases. If this sentiment continues, the slow fashion movement, which respects resources and advocates slowing down the rate at which we consume them (Ozdamar Ertekin & Atik, 2015), is likely to appeal to a growing number of consumers. Former perceptions that consider sustainable clothing as not fashionable (Tomolillo & Shaw, 2003) have been disproved in recent years due to the growing awareness of slow fashion (Minney, 2016; Ozdamar Ertekin & Atik, 2015)

Slow fashion considers the needs of different stakeholders, focusing on quality over quantity, which is a more sustainable alternative (Cataldi, Dickson, & Grover, 2013; Fletcher, 2007; Henninger & Singh, 2017; Minney, 2016; Pookulangara & Shephard, 2013). The possibility of slow fashion requires designers to focus on the sustainability characteristics of new products. These question the properties of the raw materials and intermediate goods used in production. They also question aspects of the manufacturing process that lead to greater product sustainability. Once again, the implementation of products that meet the requirements of slow fashion requires

---

<sup>1</sup> See the LVMH corporate website, <https://www.lvmh.fr/talents/metiers-dexcellence/linstitut-des-metiers-dexcellence/les-programmes/cap-marouinerie/>.

greater collaboration between the various stakeholders in the value chain and greater sharing of knowledge to increase the lifespan of products. Within this framework, new product development for apparel brands or retailers can often be conducted in collaboration with product developers who are employed by their suppliers, and this collaboration can help customers to leverage the synergies of their suppliers and strengthen or improve the environmental integrity of products (Thabrew, Wiek & Ries, 2009).

Maintaining longer active use of clothing requires a proactive and visionary design approach (Laitala and Klepp, 2011; Niinimäki, 2012) to maximize emotional durability. Thus, it is not forbidden to appropriate certain attributes of the manufacture of luxury or premium ready-to-wear items. Good quality is generally considered as an intrinsic characteristic of luxury fashion (Achabou & Dekhili, 2013); therefore, designers dedicated to this segment are better able to design durable garments with fewer cost constraints than mass brands. Luxury fashion garments are occasionally referred to as investments, suggesting that they have a high level of value that may encourage their owners to keep them longer. This retention of value also facilitates second-hand resale and the proliferation of dedicated sites, such as Vinted, which will soon allow the rating of brands in the second-hand market. In fact, a single garment can create value repeatedly through sale and resale, repeated rental, or being sold, repaired, returned, refurbished or recycled, and resold again to start the loop over.

In this context, blockchains can protect consumers from fraud and counterfeiting. The recorder of the initial purchase in a store with the right to sell the brand ensures product authenticity. This information can be permanently stored. The certificate of authenticity is updated by integrating the transfer of product ownership to the blockchain. Using an internet of things (IoT) device, such as a sensor, the product, its certificate of authenticity and its legal owner can be linked to the blockchain at any time. The characteristics of the latter guarantee the reliability of the information (Yanisky-Ravid & Monroy, 2020).<sup>2</sup>

Many other ways to reduce the environmental impact of the fashion industry are available to brands and retailers. The fragmented nature of the fashion ecosystem—no single player represents more than 1% of the market (McKinsey, 2021)—makes it unlikely that standardized solutions will emerge. However, initiatives would possibly multiply and provide fragmented responses to problems. Several of them have already caught our attention. The observed decrease in the inventory turnover rate is a powerful motivation to reduce the number of stock keeping units (SKUs) because complex assortments are inherently problematic to manage. These assortments are the source of the long SKU trails that are difficult to fill. These long lines require manage-

---

<sup>2</sup> Yanisky-Ravid, S., & Monroy, G. (2020). When blockchain meets fashion design: Can smart contracts cure intellectual property protection deficiency? *Economics of Networks eJournal*. Available at SSRN 3488071.

ment efforts that are unrelated to the sales that they generate. They contribute by making the in-store offers less clear. The discounts granted for their disposal divert customers from better-priced products and obscure the analysis of data concerning customer expectations. Finally, these long lines create bottlenecks in the value chain and constitute important cash flow assets.

Another way for brands to streamline their assortments is to break the chains of the traditional fashion calendar. Indeed, the current number of collections in the seasonal calendar is increasingly viewed as a barrier to a demand-driven approach. Off-White, Tory Burch and Mugler are among the brands that have announced their abandonment of the seasonal calendar, allowing them to regain control over store delivery. Gucci announced that it would reduce the pace of its collections from five to just two in a year, reflecting a growing movement toward seasonless fashion among retailers.

## **Manufacturers' Actions in Favour of Sustainable Production**

The fashion industry's value chains are dominated by brands and retailers. The latter rely heavily on manufacturers that are located in low-wage countries to reduce the costs of labour- and capital-intensive products. The USFIA report (2021) highlights the nature of the relationship between brands and retailers and manufacturers, which are guided almost exclusively by searching for the lowest production costs, and the former are able to quickly reorganise their supply chains to take advantage of new opportunities or avoid the consequences of trade wars.

The relationships between brands and retailers and manufacturers reflect the power relationships of the former over the latter. These relationships focus on cost reduction rather than responsiveness, trust and commitment (Johnsen & Ford, 2006). The adoption of sustainable practices by manufacturers requires the sharing of financial, human and technical resources along the value chain (Formentini & Taticchi, 2016). This sharing can only be envisaged in the context of long-term relationships, and organizations with power over their partners are less likely to form and maintain long-term relationships with their suppliers (Casciaro & Piskorski, 2005). These long-term relationships would lead to the establishment of mutually dependent relationships.

Power relationships govern the relationship between brands and retailers on the one hand and manufacturers on the other. The commonly accepted definition of power in supply chain relationships is provided by Emerson (1962), who identified power as "the ability of one actor to influence another to act in a way, he would not otherwise act." Rajan and Zingales (1998) clarify the means of this power by linking it to the notion of access: manufacturers agree to specialise their human capital to meet the needs of brands and retailers to gain access to critical resources held by the latter.

These include brand awareness, the ability to influence market trends and consumer behaviour. Regulating the access to these resources provides a strong incentive for manufacturers to make the right investments, those that prioritise the needs of the companies controlling the access. The latter also explains why brands and retailers do not need to integrate upstream into the value chain. Through the regulation of access to critical resources, brands and retailers have control over the investment and specialisation choices of manufacturers' human capital (Maglaras, Bourlakis & Fotopoulos, 2015). Simultaneously, they retain a high degree of production flexibility that allows them to switch manufacturers when new opportunities arise.

The asymmetry of power in the relationships between large buyers and small suppliers within supply chains can positively influence the implementation of sustainable practices (Millington, 2008; Pedersen & Andersen, 2006). Pagell, Wu, & Wasserman (2010) suggest that the power relationships maintained by brands and retailers can be applied to achieve goals that are consistent with sustainable development requirements. Access to critical resources that are held by power holders would then become contingent on manufacturers adopting good environmental and social practices. Shi et al. (2017) proposed an analytical model to evaluate the economic and environmental performance of sustainable investments by different participants in a value chain of the fashion industry. The authors shed light on the optimal solutions for various cases associated with different power structures along the supply chain. While it is beneficial for both the manufacturer and retailer to make a sustainable investment, the power holder can capture a high economic benefit by making a low sustainable investment. The manufacturer, with low power, has a greater incentive to make a sustainable effort to achieve a higher profit. Moreover, the optimal amount of sustainable investment in the apparel manufacturer's investment case was higher than that of the retailer in most scenarios. In the model traced by power relations, the pursuit of greater environmental, social and economic efficiency commands manufacturers to make the large investments required to achieve the goals of sustainable development (Talay et al., 2020).

Shi et al.'s (2017) model does not account for the risk associated with the investments made by manufacturers to achieve the sustainability goals of brands and retailers. By making these investments, manufacturers increase their dependence on the inspiring brand or retailer, and reduce their opportunities outside of that relationship. It is possible that many of these manufacturers are reluctant to make such investments from which they derive reduced economic benefit, and which increases the degree of their dependence on a single counterparty (Cox, Chicksand & Palmer, 2007). Moreover, the power relationship linking the different stakeholders in the value chain may be reversed if the number of manufacturers adopting development practices remains limited (Runfola & Guercini, 2013). This raises the question of whether brands and retailers will agree to pursue sustainability goals that come with higher purchasing costs and reduced bargaining power (Gadde & Håkansson, 2001). There-

fore, it is questionable whether power relations along the value chain are a barrier to the fashion industry's adoption of sustainability practices.

Appropriate practices should be developed to minimize this pressure and the implemented incentives, to increase information sharing among the value chain stakeholders (Maglaras, Bourlakis & Fotopoulos, 2015). The prudent use of power, clearly incorporating the challenges faced by manufacturers, can support the goals of sustainable development (Maloni & Benton, 2000). Furthermore, some authors also advocate for a shift away from power relationships to collaborations that are deemed to be the best way to support the sustainability goals of value chains (Alvarez, Pilbeam & Wilding, 2010; Vachon & Klassen, 2008). In the absence of collaboration, companies with power over their partners will address issues unilaterally and force suppliers to adopt their codes of conduct (Pedersen, 2009). The transformation of old power relations into new collaborative relationships along the fashion industry's value chains calls for further research (Munksgaard, Johnsen & Patterson, 2015). Additionally, a lot of work needs to be done so that collaborative relationships become the norm in this industry (Mathiyazhagan et al., 2021).

## Conclusion

The COVID-19 pandemic has not spared the global fashion industry; made up of a system of global value chains, the industry has had to adapt rapidly, and profound transformations are already on the horizon (McKinsey, 2021). This chapter aims to ask the question of whether these transformations, accelerated by the health crisis, tensions of logistics flows and globalisation, will be able to respond to the new expectations of consumers and to the environmental and social challenges facing the industry. In our opinion, the success of these transformations requires the active commitment of brands, retailers, manufacturers and consumers. We cannot consider isolated responses, but rather a solution that includes the collaboration—without mitigating the power relations at stake—of all stakeholders in the fashion industry.

Players in the fashion industry will have to adapt their strategies. Supply chain, logistics flexibility and operational resilience are key issues. Furthermore, data, data analytics and the use of blockchain technology would also play important roles. Potential energy savings can also be unlocked by moving toward non-conventional textiles (see Chapter 19 in this book).

As global value chains – primarily buyer driven – (Gereffi, 1999) remain under pressure, brands and retailers may have to secure production capacities and adopt a made-to-order production model, which is one of the solutions that we believe is the most complete and effective to respond to the problems of all segments of the fashion industry.



Thus, the industry will have to review the speed of marketing of its products, which, although produced more and with increased efficiency by reducing the carbon footprint, can never be considered sustainable if their obsolescence is not reduced and if their accumulation in landfills is not visibly reduced. The complexity of the assortments must also be reduced. Finally, the issue of local sourcing, manufacturing, repair and rental of clothing will be a key factor for the success of the industry, which will impact both upstream suppliers, manufacturers and subcontractors, and downstream retailers and consumer associations. Therefore, from an ecosystem perspective, we should examine the future paths for innovation in production for sustainability in the fashion industry.

## References

- Abernathy F.H, Volpe, A., & Weil, D. (2006). The future of the apparel and textile industries: prospects and choices for public and private actors. *Environmental and Planning*, 38, 2207–2232.
- Achabou, M.A., & Dekhili, S. (2013). Luxury and sustainable development: Is there a match? *Journal of Business Research*, 66, 1896–1903
- Allwood, J.M., Laursen, S.E., Malvido de Rodriguez, C.M., & Bocken, N.M.P. (2008). An approach to scenario analysis of the sustainability of an industrial sector applied to clothing and textiles in the UK. *Journal of Cleaner Production*, 16, 1234–1246
- Alvarez, G., Pilbeam, C., & Wilding, R. (2010). Nestlé Nespresso a sustainable quality program: An investigation into the governance dynamics in a multi-stakeholder supply chain network. *Supply Chain Management: An International Journal*, 15(2), 165–182
- Bridges, C.M., & Wilhelm, W.B. (2008). Going beyond green: The “why and how” of integrating sustainability into the marketing curriculum. *Journal of Marketing Education*, 30(1), 33–46
- Caniato, F., Caridi, M., Crippa, L., & Moretto, A. (2012). Environmental sustainability in fashion supply chains: An exploratory case-based research. *International Journal of Production Economics*, 135(2), 659–670
- Casciaro, T., & Piskorski, M.J. (2005). Power imbalance, mutual dependence and constraint absorption: A closer look at resource dependence theory. *Administrative Science Quarterly*, 50(2), 167–199
- Cataldi, C., Dickson, M., & Grover, C. (2013). Slow fashion: Tailoring a strategic approach for sustainability. In M.A. Gardetti & A.L. Torres (Eds.), *Sustainability in fashion and textiles: Value, design, production and consumption* (pp. 22–46). Greenleaf
- Cervellon, M.C., & Wernerfelt, A.S. (2012). Knowledge sharing among green fashion communities online: Lessons for the sustainable supply chain. *Journal of Fashion Marketing and Management*, 16(2), 176–192
- Choi, D., & Hwang, T. (2015). The impact of green supply chain management practices on firm performance: The role of collaborative capability. *Operations Management Research*, 8(3), 69–83
- Cox, A., Chicksand, D., & Palmer, M. (2007). Stairways to heaven or treadmills to oblivion? Creating sustainable strategies for red meat supply chain. *British Food Journal*, 109(9), 689–720
- Curwen, L.G., Park, J., & Sarkar, A.K. (2012). Challenges and solutions of sustainable apparel product development: A case study of Eileen Fisher. *Clothing and Textiles Research Journal*, 31(1), 32–47
- Deloitte. (2019). *The Deloitte Consumer review: Made to order: The Rise of Mass Personalisation*
- Emerson, R.M. (1962). Power-dependence relations. In M.E. Olsen (Ed.), *Power in societies*. Macmillan Publishing

- Fiksel, J., McDaniel, J., & Mendenhall, C. (1999). *Measuring progress towards sustainability principles, process, and best practices*. Battelle Memorial Institute
- Fletcher, K. (2007). *Sustainable fashion and textiles: Design journeys*. Earthscan
- Formentini, M., & Taticchi, P., 2016. Corporate sustainability approaches and governance mechanisms in sustainable supply chain management. *J. Clean. Prod.*, 112, 1920–1933
- Friedrich, D. (2021). Comparative analysis of sustainability measures in the apparel industry: An empirical consumer and market study in Germany. *Journal of environmental management*, 289, 112536
- Gadde, L.-E., & Håkansson, H. (2001). *Supply networks strategy*. John Wiley & Sons
- Gam, H., Cao, H., Farr, C., & Heine, L. (2008). C2CAD: A sustainable apparel design and production model. *International Journal of Clothing Science and Technology*, 21(4), 166–179
- Gereffi, G. (1999). International trade and industrial upgrading in the apparel commodity chain. *Journal of International Economics*, 48(1), 37–70
- Goworek, H., Oxborrow, L., Claxton, S., McLaren, A., Cooper, T., & Hill, H. (2020). Managing sustainability in the fashion business: Challenges in product development for clothing longevity in the UK. *Journal of Business Research*, 117, 629–641
- Haq, A.N., & Boddu, V. (2017). Analysis of enablers for the implementation of leagile supply chain management using an integrated fuzzy QFD approach. *Journal of Intelligent Manufacturing*, 28(1), 1–12
- Henninger, C.E., & Singh, P. (2017). Ethical consumption patterns and the link to purchasing sustainable fashion. In C.E. Henninger, P.J. Alevizou, H. Goworek, & D. Ryding (Eds.), *Sustainability in fashion: A cradle to upcycle approach* (pp. 103–126). Palgrave Macmillan
- Hong, P., Kwon, H.B., & Roh, J. (2009). Implementation of strategic green orientation in supply chain: An empirical study of manufacturing firms. *European Journal of Innovation Management*, 12, 512–532
- Ismail, H., & Sharifi, H. (2006). A balanced approach to building agile supply chains. *International Journal of Physical Distribution and Logistics Management*, 36(6), 431–444
- Johnsen, R.E., & Ford, D. (2006). Interaction capability development of smaller suppliers in relationships with larger customers. *Industrial Marketing Management*, 35(8), 1002–1015
- Kong, H.M., Ko, E., Chae, H., & Mattila, P. (2016). Understanding fashion consumers' attitude and behavioral intention toward sustainable fashion products: Focus on sustainable knowledge sources and knowledge types. *Journal of Global Fashion Marketing*, 7(2), 103–119
- Lacoste, S., & Johnsen, R. (2015). Supplier–customer relationships: A case study of power dynamics. *Journal of Purchasing and Supply Management*, 21(4), 229–240
- Laitala, K., & Klepp, I.G. (2011). Environmental improvement by prolonging clothing use period. *Towards sustainability in the textile and fashion industry*.
- Lu, S. (2021). 2021 US fashion industry benchmarking study. United States Fashion Industry Association
- Lundblad, L., & Davies, I. (2016). The values and motivations behind sustainable fashion consumption. *Journal of Consumer Behaviour*, 15, 149–162
- MacCarthy, B.L., & Jayarathne, P.G.S.A. (2012). Sustainable collaborative supply networks in the international clothing industry: a comparative analysis of two retailers. *Production Planning & Control*, 23(4), 252–268
- Maglaras, G., Bourlakis, M., & Fotopoulos, C. (2015). Power-imbalanced relationships in the dyadic food chain: An empirical investigation of retailers' commercial practices with suppliers. *Industrial Marketing Management*, 48, 187–201
- Maloni, M., & Benton, W.C. (2000). Power influences in the supply chain. *Journal of Business Logistics*, 21(1), 49–73.
- Mathiyazhagan, K., Agarwal, V., Appoloni, A., Saikouk, T., & Gnanavelbabu, A. (2021). Integrating lean and agile practices for achieving global sustainability goals in Indian manufacturing industries. *Technological Forecasting and Social Change*, 171, 120982
- McKinsey. (2021). *The state of fashion 2021 Report*

- McKinsey. (2020). *Fashion on climate: How the fashion industry can urgently act to reduce its greenhouse gas emissions*
- Millington, A. (2008). Responsibility in the supply chain. In *The Oxford handbook of corporate social responsibility*
- Martin, M.F. (2007). US clothing and textile trade with China and the world: Trends since the end of quotas. CRS Report for Congress, A report prepared for members and committees of Congress on July 10, 2007, Order Code RL34106. [www.fas.org/sfp/crs/row/RL34106.pdf](http://www.fas.org/sfp/crs/row/RL34106.pdf)
- Minney, S. (2016). *Slow Fashion: Aesthetics Meets Ethics*. New Internationalist
- Mintel. (2017). *Clothing Retailing – UK – October 2017*. Mintel. <http://academic.mintel.com/>
- Munksgaard, K.B., Johnsen, R.E., & Patterson, C.M. (2015). Knowing me, knowing you: Self- and collective interests in goal development in asymmetric relationships. *Industrial Marketing Management*, 48(1), 160–173
- Niinimäki, K. (2012). Proactive fashion design for sustainable consumption. *The Nordic Textile Journal*, 1, 60–69
- Ozdamar Ertekin, Z., & Atik, D. (2015). Sustainable markets: Motivating factors, barriers and remedies for mobilization of slow fashion. *Macromarketing*, 35(1), 53–69
- Pagell, M., Wu, Z., & Wasserman, M.E. (2010). Thinking differently about purchasing portfolios: An assessment of sustainable sourcing. *Journal of Supply Chain Management*, 46(1), 57–73
- Palpacuer, F., Gibbon, P., & Thomsen, L. (2005). New challenges for developing country suppliers in global clothing chains: a comparative European perspective. *World Development*, 33(3), 409–430
- Pedersen, E.R. (2009). The many and the few: Rounding up the SMEs that manage CSR in the supply chain. *Supply Chain Management: An International Journal*, 14(2), 109–116
- Pedersen, E.R., & Andersen, M. (2006). Safeguarding corporate social responsibility in global supply chains: How codes of conduct are managed in buyer supplier relationships. *Journal of Public Affairs*, 6 (3–4), 228–240
- Pookulangara, S., & Shephard, A. (2013). Slow fashion movement: Understanding consumer Perceptions: An exploratory study. *Journal of Retailing and Consumer Services*, 20(2), 200–206
- Rajan, R.G., & Zingales, L. (1998). Power in a theory of the firm. *The Quarterly Journal of Economics*, 113(2), 387–432
- Runfola, A., & Guercini, S. (2013). Fast fashion companies coping with internationalization: driving the change or changing the model? *Journal of Fashion Marketing and Management*, 17(2), 190–205
- Rutter, C., Armstrong, K., & Blazquez Cano, M. (2017). In C.E. Henninger, P.J. Alevizou, H. Goworek, & D. Ryding (Eds.), *Sustainability in fashion: A cradle to upcycle approach*, 11–30. Palgrave Macmillan
- Savitz, A., & Weber, W. (2006). *The triple bottom line: How today's best-run companies are achieving economic, social and environmental success*. Jossey-Bass
- Schaltegger, S., & Wagner, M. (2011). Sustainable entrepreneurship and sustainability innovation: Categories and interactions. *Business Strategy and the Environment*, 20(4), 222–237
- Seuring, S., & Muller, M. (2008). Core issues in sustainable supply chain management – A Delphi study. *Business Strategy and the Environment*, 17, 455–466
- Sharma, A., Iyer, G.R., Mehrotra, A., & Krishnan, R. (2010). Sustainability and business to-Business Marketing: A Framework and Implications. *Industrial Marketing Management*, 39(2), 330–341
- Shi, X., Qian, Y., & Dong, C. (2017). Economic and environmental performance of fashion supply chain: The joint effect of power structure and sustainable investment. *Sustainability*, 9(6), 961
- Spicer, A. (2006). Beyond the convergence-divergence debate: The role of spatial scales in transforming organizational logic. *Organization Studies*, 27(10), 1467–1483
- Srivastava, S.K. (2007). Green supply chain management: A state of the art literature review. *International Journal of Management Reviews*, 9(10), 53–80
- Statista. (2021). Digital Market Outlook Fashion eCommerce report

- Talay, C., Oxborrow, L., & Brindley, C. (2020). How small suppliers deal with the buyer power in asymmetric relationships within the sustainable fashion supply chain. *Journal of Business Research*, 117, 604–614
- Thabrew, L., Wiek, A., & Ries, R. (2009). Environmental decision making in multi-stakeholder Context: Applicability of life-cycle thinking in development planning and implementation. *Journal of Cleaner Production*, 17, 67–76
- Thomas, D. (2019). *Fashionopolis: The Price of Fast Fashion and the Future of Clothes*. Penguin Press
- Tomolillo, D., & Shaw, D. (2003). Undressing the ethical issues in clothing choice. *International Journal of New Product Development and Innovation Management* (June/ July), 99–107
- Tyler, D., Heeley, J., & Bhamra, T. (2006). supply chain influences on new product development in fashion clothing. *Journal of Fashion Marketing and Management*, 10(3), 316–328
- United Nations World Commission on Environment and Development. (1987). *Our common future*. Oxford University Press
- Vachon, S., & Klassen, R. (2008). Environmental management and manufacturing performance: The role of collaboration in the supply chain. *International Journal of Production Economics*, 111, 299–315
- Wang, H., Liu, H., Kim, S.J., & Kim, K.H. (2019). Sustainable fashion index model and its implication. *Journal of Business Research*, 99, 430–437
- WRAP. (2012). *Valuing our clothes: The true cost of how we design, use and dispose of clothing in the UK*
- Yanisky-Ravid, S., & Monroy, G. (2020). When blockchain meets fashion design: can smart contracts cure intellectual property protection deficiency? *Economics of Networks eJournal*. SSRN 3488071



Courtney Chrimes and Hilde Heim

# 13 The Fashion Product Passport: In Search of the “Killer App”

**Abstract:** A “killer app” denotes any computer programme or software that is so essential or desirable that it demonstrates the fundamental worth of a larger technology. It is portrayed as virtually indispensable or vastly superior to competing products. Supply chain transparency (SCT) has long been ripe for disruption and in need of such a technological solution. Several applications have appeared on the market – but few have coalesced the complex tasks required for full transparency. To date, there is no “killer app” for fashion supply chain transparency.

Applications that facilitate SCT including tracking and tracing mechanisms as well as data repository and distributed ledger systems like blockchain are complex and daunting for most fashion businesses. Industry powerplays and lack of trust are blocking the universal adoption of current solutions. This chapter aims to explore how SCT can be adopted by firms and facilitated at scale. We advance current knowledge of digital technology applications for SCT through the theoretical lens of organisational culture to decipher how start-ups are developing technology for adoption by fashion firms. Using a single case study methodology, we analysed one hybrid start-up (fashion and technology firm) that has developed and implemented advanced digital technology initiatives at scale. From our case analysis, we provide insights into the requirements to build a digital ecosystem – one with which most firms are not yet familiar. We discuss key implications for theory and practise, based on our findings.

**Keywords:** Web 3.0, blockchain, supply chain transparency, start-up, organisational culture

## Introduction

Fashion system operations including sourcing, production, retailing and waste management are notoriously opaque, in many instances concealing unethical and unsustainable practises (Bai and Sarkis, 2020; Bevilacqua and Adragna, 2019; Chashchyna, 2019). Fortunately, over the last decade, fashion supply chain technology has progressed considerably. Not only is it now possible to automate previously laborious operations, but new ways for making production more sustainable and circular have also arisen. The application of advanced digital technologies for digitalising the fash-

---

Courtney Chrimes, Hilde Heim, Manchester Metropolitan University

ion supply chain is perhaps one of the most significant technological developments of the last decade (Agrawal et al., 2021; Chang et al., 2020; Choi and Luo, 2019). Among these digital tools, blockchain was originally designed to securely transmit digital assets (cryptocurrency), but it is now also being utilised to provide verifiable information on fashion products. While the potential of blockchain technologies has been recognised, and solutions are now available, scaling these approaches across the sector remains a challenge. If one large-scale implementation or the “killer app” succeeds, it may be the incentive to inspire others to follow suit. Indeed, the influence of this pivotal technology is reflected in emerging research streams, as well as the interest of numerous companies that are investigating its potential applications and associated technologies (Casino et al., 2019; Paliwal et al., 2020; Wang et al., 2018). While pilot studies are being conducted on promising applications, investigations and practise regarding the modification of existing models and the creation of new business models that are adopting advanced technologies are still under-researched. Few pilot applications have broken the universal adoption barrier. Consequently, to better understand how digital technologies can be leveraged to improve supply chain transparency we conducted case study research on one promising application.

Previous reviews of the literature have focused on blockchain-based applications (Paliwal et al., 2020) and the impact of blockchain technology on future supply chain practises (Wang et al., 2018). This chapter considers supply chain transparency as one sustainability strategy and the implementation of digital tools to facilitate transparency at scale. This study focuses on the intersection between sustainability, supply chain transparency (SCT), Web 3.0 technologies and the ecosystem required to develop and support its successful implementation. This research advances knowledge on digitalising supply chain transparency; develops the knowledge required to grow the supply chain eco-system to improve practice and develop new business models; and informs and encourages fashion firms to take part in the evolution of transparency and technology.

We propose to illustrate with the findings how companies can use advanced SCT technologies to innovate their business models. Through the case study findings, we propose the adoption of a digital ecosystem mindset that has four aspects: factory facing, brand facing, consumer facing and product facing. However, this advancement in transparency is only possible in a fashion system that is willing to share data, has a more balanced power structure and is more collaborative than the current norm (Heim, 2022; Jordan and Rasmussen, 2018). Therefore, cultural shifts are required at the organisational as well as the broader system level. While the findings show that significant progress has been made by one company, this could be because of its unique “hybrid” position as both a tech company and a fashion manufacturer.

Indeed, a number of these hybrid, “cross-disciplinary” business models are arising and showing success (Fibretrace, 2019; Doyle et al., 2022). In doing so, they demonstrate the need to develop a digital ecosystem, in which fashion and tech companies work hand in hand in a mutually beneficial relationship – as if one company. The findings may also suggest that fashion companies of the future should equally be tech

companies if they are to be successful. Conversely, the demand for increased supply chain transparency is a significant growth factor for the success of advanced technology start-ups (Francisco and Swanson, 2018). Finally, providing universal access to this hard-won tech has become a race to be first-in-market for tech companies. This explains in part the lack of universally accessible platforms that have not yet found the ideal business model to generate revenue. To answer the ubiquitous question “who will pay” we suggest that the costs be shared – that the client pays ultimately for sustainable production and the tech company for developing the tech – which they may retrieve through subscription as a service (SaaS) revenue or similar and that the brand contributes to both costs.

This chapter begins with reviewing the current literature on supply chain transparency and the advanced digital tools that have emerged in the last decade that facilitate transparency. It presents several pilot studies during that time that have offered proof of concept/ feasibility studies and arrives at the gap in current knowledge, that is, the information and implications of full implementation of the technology at scale. We discuss the single case-study methodology applied to this research as well as the theoretical constructs underpinning the research. We present our case as an exemplar of a “killer app,” discuss the challenges and opportunities encountered, findings, discussion and conclusion.

## Literature Review

### Supply Chain Transparency (SCT)

The United Nations’ sustainable development goals (UNSDGs) are a “blueprint to achieve a better and more sustainable future for all” (UN, 2020). Sustainability measures are generally categorised into three pillars – economic performance, social performance and environmental performance. Economic performance calls for economic viability and consideration of finite resources. Social performance requires a democratic system that safeguards the rights and needs of all stakeholders. Environmental performance calls for ecological protection. Considering these three pillars, supply chain transparency (SCT) offers one of many sustainable strategies. SCT is a fundamental component of good corporate governance and facilitates the development of trusting relationships with a company’s business partners by monitoring corporate efforts to achieve economic, social and environmental sustainability. Transparency is achieved through sustainability reporting, a form of internal monitoring, management and external communication that enables organisations of all sizes to satisfy the expanding information requirements of their various stakeholders. Relationships with local communities, protection of human rights and corporate governance are among the key reporting areas. In addition, transparency helps strengthen the internal capacity to engage the entire orga-



nisation in defining a corporate sustainability strategy, establishing public targets, implementing plans and evaluating results (Chashchyna, 2019). From the perspective of the customer, product information such as origin, production, modifications and chain-of-custody provides much-needed assurance (Montecchi et al., 2019). According to Casino et al. (2019), it is anticipated that research into technologies that facilitate reporting and transparency will contribute to the United Nations' sustainable development goals and support businesses in becoming more sustainable.

## Digitalising the Supply Chain for Transparency

Fashion firms are investigating several tools and innovations including emerging Web 3.0 technologies to digitalise and thus improve supply chain transparency (Sunny et al., 2020). Web 3.0 consists of technologies that facilitate connectivity and communication between a multitude of devices. Artificial intelligence (AI), tracking and tracing mechanisms, connection to the Internet of Things (IoT) and blockchain are among the so-called Web 3.0 technologies required for digitalised transparency (Flatworldbusiness, 2017; Shirky, 2010; Ray, 2010). Transparency begins with tracking the journey of products from raw materials to finished goods (Casino et al., 2019). Consumer preferences regarding three technological systems supporting traceability, namely Near Field Communication (NFC), Radio Frequency Identification (RFID), and Quick Response (QR) codes, differ due to the cost impact of adopting these complementary technologies. “Infotracing” refers to the integration of product attribute information and traceability information (Figorilli et al., 2018). This can be accomplished by employing a variety of technologies; first, the original fibres must be identified, and second, the data on the fibres must be entered, stored and retrieved before they can be separated and assigned to various processes further downstream. Fibres can be identified through textiles embedded with electronic sensors (see Loomia.com), electronic product codes, RFID tags, NFCs or QR codes and more recently DNA nanotechnology markers – in which the fibres are embedded with tracking capability. Geo trackers and DNA markers can be applied when sourcing the raw fibre on farm, and processing yarns (Fibretrace, 2019). IoT devices such as RFID Threads (CirCloLink, 2022) can be added during garment production and provide information about the products' movements through the distribution system (Blackstock and Lea, 2014; Chanson et al., 2019; Majeed and Rupasinghe, 2017). Once this is accomplished, data can be associated with the identifier and stored on the blockchain. This not only provides upstream information on the supply chain, but also provides information to end-of-life recyclers (Morlet et al., 2017).

Beyond tracking and tracing, blockchain technologies can chronologically record and store transactional data in a transparent, tamper-resistant and standardised format that is accessible to all (and/ or selected) parties involved in the transaction. The blockchain structure contains a secure, verifiable ledger of all transactions. Applications and

transactions that previously required centralised architectures or trusted third parties to verify them are now able to operate in a decentralised manner with the same level of assurance through robust, auditable and secure capabilities (Agrawal et al., 2021; Anjum et al., 2017; Bevilacqua and Adragna, 2019). Blockchain technology is the component of Web 3.0 that ensures the validity of traceability, transparency, trust, fault tolerance, immutability, tamper prevention and data integrity. A supply chain that uses a blockchain-based solution reaps these fundamental benefits. Within the supply chain, where a lack of trust is a significant barrier to collaboration, the potential for blockchain to foster trust resonates strongly (Heim, 2022; Tapscott and Euchner, 2019). From a supply chain perspective, “trust” has been identified as the blockchain’s most significant advantage (Cottrill, 2018). A blockchain can eliminate the need for users to provide conventional forms of proof when exchanging information, which could lead to considerable efficiencies. Blockchain ensures that everyone has access to the same version of transactional ledgers, thereby preventing disputes (Ghobakhloo, 2018). Blockchain networks can store a variety of crucial data types and provide digital identities. Digital identities can be applied to products – known as Product Passports (Adisorn et al., 2021). Therefore, the digital identity can serve as the primary transparency mechanism for supply chain stakeholders (Mainelli, 2017).

Fashion companies are investigating these technologies because they believe them to have the potential to decentralise their software and reduce transaction costs as they become inherently more secure, transparent and in some cases faster and more economical. By compiling and verifying information, Web 3.0 technologies facilitate the straightforward implementation of transparency features between multiple parties. According to Ko et al. (2018), Web 3.0 technologies are a recommended tool for sustainability in the manufacturing sector, due to their real-time capabilities. In turn, this has prompted businesses to rethink traditional business practises, resulting in innovative blockchain-based business models. However, despite the growing number of applications and inventions, no universally accessible application exists to date. Platforms, such as Source Map, Open Apparel Registry (OAR), and the Provenance data capture framework (Provenance, 2021), provide the fashion industry with accessible and/ or affordable databases for supply chain information. Even though these are not yet blockchain-enabled, their data collection mechanisms position them well for eventual transfer to blockchain. This also demonstrates that the current SCT Web 3.0 technology landscape is currently a work in progress and seen as fractured – therefore fashion firms remain sceptical as to their utility. This study, therefore, focuses on a successful implementation as an exemplar of good practice in Web 3.0 adoption and derives implications for industry.

## Industry Applications: A Contextual Review

The capabilities of Web 3.0 technologies sound ideal in theory, but there are currently only a small number of applicable scenarios. Those that do exist are found among large scale fashion enterprises conducted as beta pilot studies. For instance, the technology company VeChain collaborated with fashion brands such as H&M to develop pilots with digital tags that utilise blockchain technology to secure supply-chain tracking and assist customers in verifying manufacturing information and authenticity (Gates, 2019). Other pilots include the British-grown Alpaca wool for the Martine Jarlgaard label and the Swedish Asket shirt (Asket, 2021), where technology is used to verify idealistic marketing claims of sustainability, provenance and authenticity. Tech company FibreTrace is collaborating with Melbourne jeans manufacturer Nobody Denim to verify sustainable practice; tech company Labrys (Brisbane) is working with textile waste recovery firm BlockTexx to create a fibre token; TrusTrace (Sweden) is adding blockchain to QR codes on garment labels for the fashion brand Residus; LUKSO (Berlin) is developing a mobile application. IOTA, an Internet of Things technology provider, is collaborating with luxury brand Alyx to develop “Tangle”, an alternative protocol that can run multiple transactions simultaneously. Ethereum is the open-source platform that enables most supply chain protocols.

Zalando partnered with EON, a New York technology start-up that provides the digital foundation for identifying selected products throughout their lifecycle and enabling future resale, repair, reuse and recycling. Via an app named redeZIGN, each piece in the collection is fixed with a QR code that serves as a digital product passport (Heim et al., 2022). The dynamic code directs customers to a product website where they can obtain more information about the item’s origins and after-sales services. This includes information such as the manufacturing facility and the materials used. Customers can also find more detailed care instructions, including videos, and ways to prolong the life of their garments, such as returning them to the pre-owned section of Zalando (Zalando, 2021).

Web 3.0 technology adoption is hampered by entrenched interests and other technical factors such as scalability, significant energy consumption and trust. Investment in server infrastructure and the addition of specialised resources for development and governance discourages companies from adopting advanced technologies beyond the proof-of-concept stage. Given the “digital hesitancy” and combined barriers to adoption observed among firms (Heim et al., 2022), this study proposes two research questions:

**RQ1:** How can digital technologies that facilitate supply chain transparency be leveraged?

**RQ2:** How can supply chain transparency be facilitated at scale?

## Methodology: Case Study

To answer the research questions, we adopted a single case-study methodology, a common approach when exploring real-life business settings (Yin, 2009). Indeed, prior research posits that a case-study approach should be employed when there is a need to acquire an in-depth appreciation of an issue and/ or phenomenon of interest in its real-life context (Yin, 2013; Yin, 1994; Crowe et al., 2011; Stake, 1995). Thus, this approach was deemed beneficial in the context of this study, which aims to investigate how Web 3.0 tools can be applied at scale to facilitate SCT (Ko et al., 2018). Moreover, case study methodologies have been widely adopted within supply chain literature, evidencing the provision of insights into real-life practices in particular industries, such as fashion (Shen and Chen, 2020; Ye and Lau, 2018). It is important to note that case-study approaches have received criticism relating to the lack of design structure (Meyer, 2001) and so, to alleviate this issue, our study adhered to Yin et al.’s (2013) procedure for employing a robust case study methodology; specifically, the selection of the case study, sampling strategy and selection of data collection procedures. A detailed outline of such an approach is delineated in the proceeding section.

## Selection of Single Case Study

We have chosen a single case-study methodology because we aim to take a positivist approach. Based on case-study findings, testing and refining of theory are frequently emphasised (Crowe et al., 2011). This involves deciding in advance which variables to examine and determining whether they correspond with the findings (Shanks and Parr, 2003). Moreover, the application of single case-study approaches has been corroborated by prior supply chain studies (Genovese et al., 2014; Leigh and Li, 2015; Shen and Chen, 2020), signifying the usefulness of single case studies for enabling the researcher to question theoretical structures and explore a deeper understanding of the subject (Dyer Jr. & Wilkins, 1991). As already addressed and discussed within the literature review, the *a priori* variables we wish to examine and that have already been established in prior literature concerning digitalising the supply chain are:

**Challenges**, e.g., cost implications, scalability, lack of resources, lack of trust (Heim et al., 2022; Openlink, 2018; Fitzgerald, 2006; Von Hippel, 2005; Gartner, 2019; Kumar et al., 2017; Boiral and Gendron, 2011).

**Solutions**, e.g., proof of concept, technology enabled firms, connecting and collaborating (Heim, 2022; Garcia-Torres et al., 2021; Macchion et al., 2015; Gold et al., 2010).

## Sampling Strategy

We have chosen the case of applications developer PaperTale as it is one of few firms that has successfully leveraged several aspects of advanced digital technologies at scale, creating a “product passport” application, allowing us to delve deeper and produce richer insights into this unique case. The firm is distinctive because it is both a tech company and fashion manufacturer. In the words of the founder, regarding the hype surrounding digital technologies for the supply chain:

The promise hasn't come true. So, we want to take the lead in that. And if we are able to, create a business model – which is not easy – we would like to address the challenges and share knowledge.

PaperTale provides behind-the-scenes information on fashion products to various stakeholders along the supply chain. The application achieves this through the implementation of a digital eco-system, built on a public blockchain to ensure complete supply chain transparency. Brands' customers can see that the workers involved in each “PaperTale'd” product are being fairly compensated, and that each product was made with limited environmental impact. The information provided is based on science and extensive research, guaranteeing verified information. The information is not owned by anyone – it is decentralised, meaning that once it has been entered and verified it cannot be altered.

## Data Collection and Analysis

We conducted an in-depth, semi-structured interview with the CEO of PaperTale based on several prepared questions concerning the history of the company, motivation behind the app development, pilot studies, challenges experienced, solutions sought and the envisioned future of PaperTale. We then proceeded more informally, asking probing questions enabling the participant to elaborate on the answers provided. Probing questions further allowed the participant to inadvertently mention important topics that may have been missed. The interview took place online via MS Teams for convenience, as the participant resides in Sweden. The interview lasted two hours and was recorded (with the respondent's permission) and transcribed as soon as the interview was terminated. Thematic analysis was employed to analyse the data, adhering to the Template Analysis approach proposed by Brooks et al. (2015). Template Analysis uses hierarchical coding providing a high degree of structure when analysing the transcribed data while still preserving the flexibility to adapt it to the needs of the study (Brooks et al., 2015), thus data were coded according to key themes identified from the literature review.

Hence, the following procedural steps were followed: 1. identification of a priori themes (identified challenges and solutions concerning SCT established in existing literature); 2. familiarisation of the dataset; 3. preliminary coding of the data; 4. emerging themes placed into meaningful clusters; 5. finalise the template and apply it to the data set (King, 2012; Brooks et al., 2015). Template Analysis was chosen to analyse the case-study findings as it allowed the researchers to establish a priori themes already established in SCT literature, enabling us to focus on key areas potentially relevant to the study and advance existing theory concerning how digital technology can help facilitate SCT.

## Theoretical Lens

Organisational culture theory has proven to be a key influencing framework in studies focusing on supply chain management and innovative information systems adoption (Gong et al., 2022), yet its application for investigating the ability of blockchain to facilitate SCT at scale is lacking. Organisational culture consists of the unwritten rules that influence individual and group behaviour and attitudes, as well as the way an organisation conducts its business. The organisational structure, the system and processes by which work is performed, the behaviour and attitudes of employees, the organisation’s values and traditions, and the management and leadership styles adopted can all influence organisational culture. According to Caldarelli et al. (2021), “the type and culture of the company play a determinant role”.

Organisational culture theory consists of a collection of shared assumptions, values and beliefs that are reflected in organisational practises and goals and help members understand organisational functioning (Black, 2003; Deshpande et al., 2017; Khazanchi et al., 2007). It influences the way the firm responds to external events and makes strategic decisions (Deshpandé and Farley, 2004; Zammuto and O’Connor, 1992). In the extant literature, scholars have proposed various alternative ways to classify organisational culture, including relation- and transaction-oriented culture (e.g., McAfee, 2002) and flexibility-control orientation (e.g., McDermott and Stock, 1999; Khazanchi et al., 2007; Boyer and Lewis, 2002). In this study, we adopt the framework of flexibility-control orientation from Quinn and Rohrbaugh’s Competing Values Model (CVM) (1983), and the Competing Values Framework developed by Cameron and Quinn (2011). The framework posits that there are four classifications of organisational cultures:

1. **Adhocracy** – highly flexible and externally focused. Managers are forward-thinking, innovative and risk-taking.
2. **Market-orientated** – highly controlled and externally focused. Managers are focused on winning, and employees are goal focused. Higher market share remains the utmost priority.

3. **Bureaucracy** – internally focused and inflexible.
4. **Clan** – highly flexible and internally focused. Clan culture is posited to resemble a group of like-minded people. Managers are viewed as mentors.

Using the Organisational Culture Assessment Instrument (OCAI), a method for assessing organisational culture, the Competing Values Framework is populated with evaluations of the company's present and future state. Considering this theoretical framework, we propose that to facilitate SCT at scale, there needs to be an organisational culture shift towards an adhocracy culture, which focuses on flexibility, innovation and experimentation, all of which are valued deeply by management as well as employees (Gong, Jiang, and Liang, 2022). Indeed, this organisational culture is a direct challenge to current bureaucracy and market-oriented culture, which are viewed as barriers to innovation and collaboration.

## Findings and Discussions

PaperTale is a Swedish tech company founded by Bilal Bhatti, the now CEO of PaperTale, in 2019. When questioned about the motivation behind the company, Bhatti detailed his first-hand experience of the corruption, inequalities and forged certifications that occurred in fashion factories. Before discussing PaperTale's solutions to current challenges facing SCT, it is important to note that PaperTale investigates sustainability from two aspects, social performance and environmental performance:

In terms of environmental sustainability, consumers can view each step of the process [which is] based on the consumptions of the materials. The system calculates the amount of CO2 and water used to produce the product.

Now the social aspect [ . . . ] the app connects the people with the product. We want to make sure the technology is creating red lines, like no slavery. Our systems verify workers age, gender, and wage type [ . . . ] and if it's above the minimum wage.

This points to the values driven rather than market driven organisational culture of the business.

The proceeding section analyses the challenges and proposed solutions concerning digital technologies facilitating SCT through the theoretical lens of organisational culture as outlined above. The three main themes found were: cost implications, scalability and competition.

## Cost Implications: The Challenge

The cost implications associated with investing in Web 3.0 technology to help facilitate supply chain transparency have been well documented in prior academic literature. Indeed, research has revealed that the predominant reluctance for mass adoption pertains to the high investment costs and complications associated with reaching full global traceability (Boiral and Gendron, 2011; Garcia-Torres et al., 2021; Kumar et al., 2017; Macchion et al., 2015). Currently, the majority of fashion brands adopt a market-orientated organisational culture, aiming to purely sell to customers in pursuit of profit (Gong, Jiang, and Liang, 2022). Unsurprisingly, it was apparent from the interview that cost implications for firms wishing to adopt the technology were found to be an inhibiting factor for PaperTale in achieving mass adoption:

There has to be a cost, and nobody's willing to pay that cost. That's the challenge.

It's not our cost that's the problem here because we are probably gonna add maybe -3% of the production cost on the product level [ . . . ] but brands don't want to absorb this cost themselves.

Within an adhocracy organisational culture, costs are secondary yet require absorption. However, it is apparent from the interview that presently stakeholders (i.e., manufacture, brand, and consumer) are all reluctant to absorb the cost.

## Cost Implications: The Solution

When questioned about which stakeholder should absorb this cost and whether PaperTale could provide a solution for clients who express this concern, the founder detailed PaperTale's regenerative business model, or “what we [PaperTale] call a digital eco-system”. The founder emphasised the various value propositions that stem from this new regenerative model for all three stakeholder groups (consumers, factories and brands). It was apparent from the interview that the development of a new regenerative business model emerged in response to the well-documented hidden frauds experienced in the supply chain, including unfounded claims made by factories and exploitation of workers:

The current [conventional] business model is fractured and based on fake claims [ . . . ] traditional certificates are very easy to buy and sell and so, [factories] could buy them so that they don't need to do much on ground and can still get a very nice grade.

PaperTale proposes a new Regenerative Business Model, which is built on the principles of transparency and incentives within the supply chain. The more transparent a business is, the more money it should make.

PaperTale has developed a digital ecosystem focusing on four aspects: factory facing, brand facing, consumer facing and product facing. Their cloud-based platform veri-



fies factories that are compliant with current and future economic, sustainability and governance (ESG) laws and regulations, making them more desirable to brands who, via this mechanism, can confirm assets and environmental performance resulting in the optimisation of resources. This solution thus provides an answer to Research Question 1. Consumers can also derive value from the app by scanning a unique NFC tag developed by PaperTale and view the journey of a product from where each step is verified automatically on a public blockchain. It is to be noted here that the app only traces the product from manufacturer to consumer at this point. Developments are still required upstream (to fibre origin) and downstream to waste management. It is for this reason that the founder calls for a digital eco-system. The founder outlined the benefits for each stakeholder in accessing and using a digital ecosystem, justifying an increase in overall production costs:

Factories can charge brands more as our technology helps factories with being compliant with ESG laws and regulations. Factories can also use the ecosystem as a channel for direct interaction with the end customer.

By using PaperTale, brands can charge consumers more for products as it allows them to map out and control their material assets and supply chains, making compliance with current and future ESG laws and regulations easier.

PaperTale empowers the consumers to make informed buying decisions through radical transparency [ . . . ] the data shows consumers now want to pay more for sustainable products.

Hence, it is apparent from the above discourse that PaperTale's current digital ecosystem offers value to all stakeholders (factories, brands, and consumers), providing an incentive for brands to invest and innovate their current business models. Interestingly this demonstrates how a firm with an adhocracy culture can influence a market-driven company – and is demonstrated in PaperTale's pilot with a Swedish fast fashion company (see “Scalability” section below). At the same time this finding also responds to the call for urgent research into how companies can encourage stakeholders within the supply chain to adopt blockchain (Cole et al., 2019). To answer the pervasive question of “who will pay”, we suggest that the client is incentivised to pay ultimately for sustainable production and the technology company (e.g., PaperTale) for developing the appropriate technology, with the brand sharing some of both these cost positions. This finding suggests that by implementing technologies, such as AI and blockchain, a company can transform its cost structure by optimising logistical streams and shortening the supply chain. Our findings suggest that to facilitate SCT at scale, cultural shifts are required at the organisational level by demonstrating the advantages of adopting a digital ecosystem mindset, whereby fashion and tech companies work collaboratively.

PaperTale do hope to recoup their costs, but currently that seems secondary – and another adhocracy trait. In the case of PaperTale, blockchain technology acts as a “value-add” component of their business model – whereby manufacturing and selling

garments is still the profit-making core of the business. In this way the case demonstrates a twofold benefit to the company: first, it is possible to see tech as a value-add addition whereby the costs of R&D are absorbed and second, this can be achieved through mutual arrangements within a robust digital ecosystem in which players are offering mutually beneficial contributions to developing solutions. The finding that organisations are willing to go beyond their usual market approach to find reciprocally constructive synergies extends the literature on the Competing Values Framework in the context of fashion supply chains and technology.

## Scalability: The Challenge

Despite the potential of blockchain being widely acknowledged, scaling Web 3.0 technologies remains an abstruse issue amongst industry practitioners and scholars alike (Caldarelli et al., 2021), with some describing the battle for overcoming the issue of the “blockchain’s moon race” (Kenny, 2019) – the start-up phenomenon of aiming to be first-in-market. While scalability lacks a clear definition within literature, Khan et al. (2021) note that the scalability issue surfaces due to the increasing number of nodes and transactions in the blockchain and as a result public blockchains demand a vast amount of computational power, high bandwidth internet connectivity and a vast amount of storage space. Specifically, Schatsky et al. (2018) claim that the main hindrance to adopting blockchain technology was due to its slow transaction processing speed, limiting its utility in the context of large-scale applications.

## Scalability: The Solution

From the case-study findings, it is apparent that PaperTale has already developed and successfully tested the app with SMEs, including Swedish companies Gina Tricot and Sail Racing (arguably market-oriented organisations), providing proof of concept:

We had one pilot with Swedish brand Gina Tricot [. . .] which is like a fast fashion business but is quite a young brand [. . .] we made a collection with them here in Sweden. The Government factory was in Sweden and the supply chain was dispersed from Cotton Australia to mainly in Pakistan [. . .] that was a very successful project where they were able to raise the prices and sell it instantly and they [Gina Tricot] were super happy with that. They became our first test case where [we realised] the system can work actually.

The founder further detailed the successful collaboration with another Swedish brand, Sail Racing, in producing over “9,000 pieces with mixed materials”. On the Sail Racing website, consumers can download the PaperTale app and scan the NFC tag provided on the label to see the garment’s entire product journey and the total impact

of the product (PaperTale, 2022). Given the aforementioned success stories, the participant stated that PaperTale is now at the point of scalability, whereby they have partnered up with a large fashion corporation, Levi's denim manufacture in Pakistan:

[This partnership] will showcase that our technology can be implemented from a smaller supply chain to a bigger supply chain.

To our surprise from our first stage of analysis, we figured out that application is a lot easier to implement in a bigger supply chain than a smaller supply chain and so, we are currently building some things to integrate with companies' ERP systems, so the plug & play part, that's exactly what we are building now.

This partnership with Levi's shows PaperTale's ability to provide a promising solution to facilitate transparency on a large scale, directly challenging the barriers outlined by Schatsky et al. (2018). Yet, it is important to note that this advancement in scalability is only possible in a fashion supply chain that is willing to share data, has a more balanced power structure and is more collaborative than the current norm (Jordan and Rasmussen, 2018; Heim, 2022). Indeed, as noted by the founder:

Technology is not the challenge here. We have already built the base [ . . . ] we are now dependent on the vehicles [brands] to launch it to the market. We need some participation from forward thinking brands.

Needing participation from "forward thinking brands" shows that PaperTale recognises its own (adhocracy style) organisational culture – and is seeking "like-minded" organisational cultures. This finding also addresses Research Question 2. It is apparent that SCT can be facilitated and achieved at scale but for now, while the technology is still in development, only through collaborating with like-minded business partners. Indeed, based on the data, we recommend that fashion companies need to be open to the prospect of working and collaborating with tech companies as opposed to seeing technology as a "last-minute solution" to issues surrounding SCT. The current lack of technological resources in fashion companies was further alluded to by the interviewee:

Even very big brands don't have an in-house tech team and even if they have some members, it's all about the web shops, you know like basic levels. The good thing that our team has, we are a bunch of three types of people, textile engineers, tech[nology] engineers and researchers.

While this section highlights the significant progress that has been made by PaperTale, the success to date may be a result of the company's unique position as both a tech company and a fashion manufacturer. Indeed, prior literature has evidenced fashion brands' current lack of infrastructure and organisational culture required to effectively implement Web 3.0 technology.

Fashion companies often rely on sourcing a tech consultancy company to help implement digital technology. The findings from this case study also revealed that blockchain technology should not replace current systems – including legacy enterprise management (ERP) systems – but instead be integrated with existing systems. Thus, to

achieve SCT at scale, PaperTale suggests fashion companies develop a digital ecosystem mindset, enabling fashion and tech companies to work hand in hand in a mutually beneficial relationship. The findings further allude to the prospect that, as Venkatraman (2017) suggests, fashion companies of the future should equally be tech companies if they are to be successful.

## Increased Competition: The Challenge

Findings from the data also demonstrated that, as there is still no universally accepted standard on blockchain implementation to date (Caldarelli et al., 2021), competition between various tech companies offering to provide traceability solutions is mounting. Indeed, providing universal access to this hard-won tech has become a race to be first-in-market for tech companies. This increased competition has led to a new phenomenon known as tech-washing – the practice of placing a current buzzword on pseudo-tech solutions:

[. . .] before there was an era of green washing based on [unverifiable] certificates and now I see another era of tech-washing coupled with green washing because there are now a lot of solution-based tech companies now. They're just starting to use the traceability solutions and use words such as blockchain and AI just to sound more techie but, in reality they don't have implementations.

So, what is happening is digital green washing – you're putting exactly the same information that you used to do before and just including keywords e.g., traceability and transparency and launching it to consumers.

Gong, Jiang and Liang (2022) revealed that when organisations with a market-orientated culture attempt to transform towards a less market-outcome-focused organisation to pursue an environmentally friendly mission, this change is often met with scrutiny given the cultural history of the company. This does not appear to be the case with PaperTale. The company demonstrates its adhocracy organisational culture in which innovation is key; constant innovation is necessary to maintain market presence. Team members are encouraged to strive for innovation and use their creativity to generate new ideas in a work environment that is dynamic, entrepreneurial and creative (Cameron and Quinn, 2011). In addition to being innovators, managers are also risk-takers. These organisations aspire to be market leaders and/or innovators of new products and/or services. Therefore, they encourage individual initiative and provide the freedom to choose which tasks to complete.

## Increased Competition: The Solution

The findings suggest that a more collaborative approach is called for within the industry. Indeed, the participant acknowledged that although PaperTale has been open to collaborating with others to facilitate SCT on a global scale, other parties are reluctant to engage due to concerns relating to Intellectual Property (IP):

We have not explored it [collaboration] much to be honest [. . .] even if we are open, we don't see that other parties are open. I've been in some conversations, but I don't see the real intention because there is a challenge of IP here.

So, until we solve this problem of collaborating properly everybody will be out. We have to find a solution to collaborate [. . .] if we can find a way of respecting each other's IP, then we should be able to. For example, we try to find like-minded people and who add [value] so we don't need to invent the wheel on every aspect.

Therefore, although there is an appetite for SCT, stakeholders are presently operating in silos due to IP concerns, evidencing current bureaucracy and market-orientated organisational cultures which are highly controlled, inflexible and resistant to collaborative change (Gong, Jiang, and Liang, 2022; Cameron and Quinn, 2011). Wang et al. (2010) found that when organisational readiness for new technology is high, management and staff are more likely to initiate change, exhibit greater commitment and engage in collaborative behaviour. Hence, to facilitate SCT at scale, culture must change both at the inter- and intra-organisational level to embrace innovation and flexibility. Consequently, we propose that as PaperTale have already designed, developed, tested and successfully implemented blockchain technology on both small and large supply chains, this should incentivise other parties to adopt a digital ecosystem and follow suit.

## Summary and Future Considerations

This chapter adopted a single case-study methodology to answer pressing research questions addressing the leveraging of digital technologies that facilitate supply chain transparency at scale. The authors of this chapter suggest that if fashion companies wish to partake in achieving SCT authentically, then the entire culture of the organisation needs to transform from a market-orientated culture towards a more adhocracy-orientated culture, focusing on innovation – or at least collaborate flexibly with such an organisation. Organisations not only need to connect with “like-minded” business partners – but more importantly with tech companies i.e., non-fashion firms that share the same values and best practice to achieve sustainability goals. It seems to us that both tech and fashion firms are willing to undertake research and development – for their individual benefit – as well as for the greater good. The findings show that significant progress has been made by one company, PaperTale, who have developed

a digital ecosystem that has four aspects: factory facing, brand facing, consumer facing and product facing.

## References

- Adisorn, T., Tholen, L., & Götz, T. (2021). Towards a digital product passport fit for contributing to a circular economy. *Energies*, *14*, 2289.
- Agrawal, T.K., Kumar, V., Pal, R., Wang, L., & Chen, Y. (2021). Blockchain-based framework for supply chain traceability: A case example of textile and clothing industry. *Computers & industrial engineering*, *154*, 107130.
- Anjum, A., Sporny, M., & Sill, A. (2017). Blockchain standards for compliance and trust. *IEEE Cloud Computing*, *4*, 84–90.
- ASKET. (2021). *About* [Online]. <https://www.asket.com/>
- Bai, C., & Sarkis, J. (2020). A supply chain transparency and sustainability technology appraisal model for blockchain technology. *International Journal of Production Research*, *58*, 2142–2162.
- Bevilacqua, G., & Adragna, M.C. (2019). *Blockchain technology for the fashion supply chain: an analysis of its potentialities in supporting traceability and sustainability*. Politechnic di Milano.
- Black, R.J. (2003). *Organisational culture: creating the influence needed for strategic success*. Universal-Publishers.
- Blackstock, M., & Lea, R. (2014). IoT interoperability: A hub-based approach. 2014 international conference on the internet of things (IOT). IEEE.
- Boiral, O., & Gendron, Y. (2011). Sustainable development and certification practices: Lessons learned and prospects. *Business Strategy and the Environment*, *20*, 331–347.
- Boyer, K.K. & Lewis, M.W. (2002). Competitive priorities: investigating the need for trade-offs in operations strategy. *Production and operations management*, *11*, 9–20.
- Brooks, J., McCluskey, S., Turley, E., & King, N. (2015). The utility of template analysis in qualitative psychology research. *Qualitative research in psychology*, *12*, 202–222.
- Caldarelli, G., Zardini, A., & Rossignoli, C. (2021). Blockchain adoption in the fashion sustainable supply chain: Pragmatically addressing barriers. *Journal of Organizational Change Management*, *34*, 507–524.
- Cameron, K.S., & Quinn, R.E. (2011). *Diagnosing and changing organizational culture: Based on the competing values framework*. John Wiley & Sons.
- Casino, F., Dasaklis, T.K., & Patsakis, C. (2019). A systematic literature review of blockchain-based applications: Current status, classification and open issues. *Telematics and informatics*, *36*, 55–81.
- Chang, Y., Iakovou, E., & Shi, W. (2020). Blockchain in global supply chains and cross border trade: a critical synthesis of the state-of-the-art, challenges and opportunities. *International Journal of Production Research*, *58*, 2082–2099.
- Chanson, M., Bogner, A., Bilgeri, D., Fleisch, E., & Wortmann, F. (2019). Blockchain for the IoT: privacy-preserving protection of sensor data. *Journal of the Association for Information Systems*, *20*, 1274–1309.
- Chashchyna, A. (2019). *Sustainability reporting: Why transparency is always appreciated* [Online]. <https://sustainabilityexplored.medium.com/sustainability-reporting-why-transparency-is-always-appreciated-78fdb4ab9b1>
- Choi, T.-M., & Luo, S. (2019). Data quality challenges for sustainable fashion supply chain operations in emerging markets: Roles of blockchain, government sponsors and environment taxes. *Transportation Research Part E: Logistics and Transportation Review*, *131*, 139–152.
- Circlolink. (2022). *CIRCULAR TEXTILES PASSPORT Link new + recovered clothes via RFID THREADS®* [Online]. Adetex CS. <https://circlolink.com>

- Cole, R., Stevenson, M., & Aitken, J. (2019). Blockchain technology: implications for operations and supply chain management. *Supply Chain Management: An International Journal*, 24(4), 469–483.
- Cottrill, K. (2018). The benefits of blockchain: Fact or wishful thinking. *Supply Chain Management Review*, 22, 20–25.
- Crowe, S., Cresswell, K., Robertson, A., Huby, G., Avery, A., & Sheikh, A. (2011). The case study approach. *BMC medical research methodology*, 11, 1–9.
- Deshpande, A., Stewart, K., Lepetit, L., & Gunashekar, S. (2017). Understanding the landscape of distributed ledger technologies/blockchain. *British Standards Institution*, 82.
- Deshpandé, R., & Farley, J.U. (2004). Organizational culture, market orientation, innovativeness, and firm performance: an international research odyssey. *International Journal of research in Marketing*, 21, 3–22.
- Doyle, M., Simpliciano, L., & Crowley, J. (2022). *The Traceability Playbook*. TrusTrace.
- Dyer, Jr., W.G., & Wilkins, A.L. (1991). Better stories, not better constructs, to generate better theory: A rejoinder to Eisenhardt. *Academy of management review*, 16, 613–619.
- Ellen MacArthur Foundation (2017). *A new textiles economy: Redesigning fashion's future*. Ellen MacArthur Foundation. Available: <https://archive.ellenmacarthurfoundation.org/assets/downloads/A-New-Textiles-Economy.pdf> (Last Accessed: 01.08.23).
- Fibretrace. (2019). *Fibretrace* [Online]. <https://www.fibretrace.io>
- Figorilli, S., Antonucci, F., Costa, C., Pallottino, F., Raso, L., Castiglione, M., Pinci, E., Del Vecchio, D., Colle, G., & Proto, A.R. (2018). A blockchain implementation prototype for the electronic open source traceability of wood along the whole supply chain. *Sensors*, 18, 3133.
- Fitzgerald, B. (2006). The transformation of open source software. *MIS quarterly*, 30, 587–598.
- Flatworldbusiness. (2017). Web 1.0 vs Web 2.0 vs Web 3.0 vs Web 4.0 vs Web 5.0 – A bird's eye on the evolution and definition. *Flat World Business* [Online]. <https://flatworldbusiness.wordpress.com/flat-education/previosly/web-1-0-vs-web-2-0-vs-web-3-0-a-bird-eye-on-the-definition>
- Francisco, K., & Swanson, D. (2018). The supply chain has no clothes: Technology adoption of blockchain for supply chain transparency. *Logistics*, 2, 2.
- Garcia-Torres, S., Rey-Garcia, M., Sáenz, J., & Seuring, S. (2021). Traceability and transparency for sustainable fashion-apparel supply chains. *Journal of Fashion Marketing and Management: An International Journal*, 26, 344–364.
- Gartner. (2019). *Interpreting technology hype* [Online]. Gartner. <https://www.gartner.com/en/research/methodologies/gartner-hype-cycle>
- Gates, K.L. (2019). fashion & food industry update: More companies adopting blockchain solutions. *Lexology* [Online]. <https://www.lexology.com/library/detail.aspx?g=7e6e3bf7-f92b-421d-81f2-9b61f6db4c952019>
- Genovese, A., Lenny Koh, S., Kumar, N., & Tripathi, P.K. (2014). Exploring the challenges in implementing supplier environmental performance measurement models: a case study. *Production Planning & Control*, 25, 1198–1211.
- Ghobakhloo, M. (2018). The future of manufacturing industry: a strategic roadmap toward Industry 4.0. *Journal of manufacturing technology management*, 29(6), 910–936.
- Gold, S., Seuring, S., & Beske, P. (2010). Sustainable supply chain management and inter-organizational resources: a literature review. *Corporate social responsibility and environmental management*, 17, 230–245.
- Gong, L., Jiang, S., & Liang, X. (2022). Competing value framework-based culture transformation. *Journal of Business Research*, 145, 853–863.
- Heim, H. (2022). Digital fashion revolutions: Supply chain transparency, digitalisation and the non-disclosure paradox. *The Journal of Fashion Practice*, Special Issue, 14(3), 329–351.

- Heim, H., Chrimes, C., & Green, C. (2022). Digital hesitancy: Examining the organisational mindset required for the adoption of digitised textile supply chain transparency. In S. Senthilkannan Muthu (Ed.), *Blockchain Technologies in Textiles & Fashion*. Springer.
- Jordan, A., & Rasmussen, L.B. (2018). The role of blockchain technology for transparency in the fashion supply chain. Malmö universitet/Kultur och samhälle.
- Khan, D., Jung, L.T., & Hashmani, M.A. (2021). Systematic literature review of challenges in blockchain scalability. *Applied Sciences*, 11, 9372.
- Khazanchi, S., Lewis, M.W., & Boyer, K.K. (2007). Innovation-supportive culture: The impact of organizational values on process innovation. *Journal of operations management*, 25, 871–884.
- King, N. (2012). Doing template analysis. *Qualitative organizational research: Core methods and current challenges*, 426.
- Ko, T., Lee, J., & Ryu, D. (2018). Blockchain technology and manufacturing industry: Real-time transparency and cost savings. *Sustainability*, 10, 4274.
- Kumar, V., Koehl, L., Zeng, X., & Ekwall, D. (2017). Coded yarn based tag for tracking textile supply chain. *Journal of manufacturing systems*, 42, 124–139.
- Leigh, M., & Li, X. (2015). Industrial ecology, industrial symbiosis and supply chain environmental sustainability: a case study of a large UK distributor. *Journal of Cleaner Production*, 106, 632–643.
- Macchion, L., Moretto, A., Caniato, F., Caridi, M., Danese, P., & Vinelli, A. (2015). Production and supply network strategies within the fashion industry. *International Journal of Production Economics*, 163, 173–188.
- Mainelli, M. (2017). Blockchain will help us prove our identities in a digital world. *Blockchain: The Insights You Need From Harvard Business Review (HBR Insights Series)*.
- Majeed, A.A., & Rupasinghe, T.D. (2017). Internet of things (IoT) embedded future supply chains for industry 4.0: An assessment from an ERP-based fashion apparel and footwear industry. *International Journal of Supply Chain Management*, 6, 25–40.
- McAfee, A. (2002). The impact of enterprise information technology adoption on operational performance: An empirical investigation. *Production and operations management*, 11, 33–53.
- McDermott, C.M., & Stock, G.N. (1999). Organizational culture and advanced manufacturing technology implementation. *Journal of Operations Management*, 17, 521–533.
- Meyer, C.B. (2001). A Case in Case Study Methodology. *Field Methods*, 13, 329–352.
- Montecchi, M., Plangger, K., & Etter, M. (2019). It's real, trust me! Establishing supply chain provenance using blockchain. *Business Horizons*, 62, 283–293.
- Openlink. (2018). *Blockchain food traceability can revolutionize the industry*. Openlink [Online]. <https://www.openlink.com/en/insights/articles/blockchain-food-traceability-can-revolutionize-the-industry/2019>
- Paliwal, V., Chandra, S., & Sharma, S. (2020). Blockchain technology for sustainable supply chain management: A systematic literature review and a classification framework. *Sustainability*, 12, 7638.
- Provenance. (2021). *Turn positive social and environmental impact into brand value* [Online]. <https://www.provenance.org>
- Ray, K. (Dir.). (2010). *Web 3.0*.
- Schatsky, D., Arora, A., & Dongre, A. (2018). Blockchain and the five vectors of progress. *Deloitte Insights* [Online]. [https://www2.deloitte.com/content/dam/insights/us/articles/4600\\_Blockchain-five-vectors/DI\\_Blockchain-five-vectors.pdf](https://www2.deloitte.com/content/dam/insights/us/articles/4600_Blockchain-five-vectors/DI_Blockchain-five-vectors.pdf)
- Shanks, G.G., & Parr, A.N. (2003). Positivist single case study research in information systems: a critical analysis. *ECIS*. Citeseer, 1760–1774.
- Shen, B., & Chen, C. (2020). Quality management in outsourced global fashion supply chains: An exploratory case study. *Production Planning & Control*, 31, 757–769.
- Stake, R.E. (1995). *The art of case study research*. Sage.
- Sunny, J., Undralla, N., & Pillai, V.M. (2020). Supply chain transparency through blockchain-based traceability: An overview with demonstration. *Computers & Industrial Engineering*, 150, 106–895.



- Tapscott, D., & Euchner, J. (2019). Blockchain and the internet of value: An interview with Don Tapscott, Don Tapscott talks with Jim Euchner about blockchain, the internet of value, and the next internet revolution. *Research-Technology Management*, 62, 12–19.
- UN. (2020). *17 Goals to transform our world* [Online]. United Nations. <https://www.un.org/sustainabledevelopment/>
- Venkatraman, V. (2017). *The digital matrix: new rules for business transformation through technology*. LifeTree Media.
- Von Hippel, E. (2005). Open-source software projects as user innovation networks – no manufacturer required, In: Feller, J., Fitzgerald, B., Hissam, S., Lakhani, K. (eds.), *Perspectives on Free and Open Source Software*. MIT Press, Cambridge.
- Wang, Y., Han, J.H., & Beynon-Davies, P. (2018). Understanding blockchain technology for future supply chains: a systematic literature review and research agenda. *Supply Chain Management: An International Journal*, 24(1), 62–84.
- Wang, Y.-M., Wang, Y.-S., & Yang, Y.-F. (2010). Understanding the determinants of RFID adoption in the manufacturing industry. *Technological forecasting and social change*, 77, 803–815.
- Ye, Y., & Lau, K.H. (2018). Designing a demand chain management framework under dynamic uncertainty: An exploratory study of the Chinese fashion apparel industry. *Asia Pacific Journal of Marketing and Logistics*, 30(1), 198–234.
- Yin, R.K. (1994). Discovering the future of the case study. Method in evaluation research. *Evaluation practice*, 15, 283–290.
- Yin, R.K. (2009). *Case study research: Design and methods*. Sage.
- Yin, R.K. (2013). Validity and generalization in future case study evaluations. *Evaluation*, 19, 321–332.
- Zalando. (2021). *Zalando scales “redeZIGN for circularity” collection* [Online]. <https://corporate.zalando.com/en/newsroom/news-stories/zalando-scales-redezign-circularity-collection>
- Zammuto, R.F., & O’Connor, E.J. (1992). Gaining advanced manufacturing technologies’ benefits: The roles of organization design and culture. *Academy of Management Review*, 17, 701–728.

Nadia Weber and Elaine L. Ritch

# 14 Fast Fashion: Exploring the Impact of Impulse Buying among Scottish Generation-Z Consumers

**Abstract:** The fast-fashion business model is used by fashion retailers to inexpensively sustain consumer demand. This chapter discusses fast fashion and explores how consumers reflect on their post-consumption of frequent impulse consumption, in order to understand how to break this cycle and advance sustainable fashion practice.

**Keywords:** fast fashion, impulse buying, sustainability, fashion

## Introduction

Despite growing discourse regarding the impact that the fast fashion industry has on the environment (Environmental Audit Committee, 2021), and allegations of exploiting garment-workers, the popularity of fast fashion consumption has not diminished (Zhang, Zhang & Zhou, 2021). This is particularly relevant in the UK, where the fast fashion industry is valued at £60 billion (Radonic, 2022) and UK consumers purchase more clothing than in any other country in Europe (Zhang, Zhang & Zhou, 2021). While the fast fashion business model is adopted by fashion retailers to inexpensively sustain consumer demand (Bick et al., 2018), demand is also stimulated by marketing tactics, often within a limited time period to encourage impulse consumption (Bick et al., 2018; Keegan et al., 2021; Lim et al., 2017; Niinimäki et al., 2020). Impulse buying is an unforeseen buying decision that eradicates consumers' rational thinking, replacing it with the immediate need to buy and feel self-satisfaction (Lim et al., 2017; Rook, 1987). Research has found that fashion induces higher levels of impulse buying than other product categories (Floh & Madlberger, 2013; Joung, 2014) and this can be a consequence of consumers experiencing style boredom and their need to follow fashion trends (Watson & Yan, 2013). Often fast fashion is discarded after limited wear (Zhang, Zhang & Zhou, 2021); yet, with clothing worth £140 million ending up in UK landfills annually (Environmental Audit Committee, 2019), it is clear that the fast fashion model reliant on frequent impulse consumption contributes significantly to the climate crisis and over consumption (Bick, Halsey & Ekenga, 2018; McNeill & Moore, 2015; Zhang, Zhang & Zhou, 2021).

---

**Nadia Weber**, Glasgow Caledonian University, e-mail: NWEBER200@caledonian.ac.uk

**Elaine L. Ritch**, Glasgow Caledonian University, e-mail: Elaine.Ritch@gcu.ac.uk

This chapter explores how consumers reflect on their post-consumption of frequent impulse consumption, in order to understand how to break this cycle and advance sustainable fashion practice. Previous research has found that consumers feel locked in and addicted to frequent fashion consumption (Kidd et al., 2020); however, little is known about how consumers experience post-purchase impulsive fashion consumption, and whether they experience post-consumption regret and disappointment from their behaviour (Chen, Chen & Lin, 2020), and how this informs subsequent behaviours. As young females are the main target for fast fashion marketers, and subsequently the main consumers (Cook & Yurchisin, 2017; McNeil & Moore, 2015), the chapter focuses on Generation Z women who are also considered to be the most materialistic generation (Djafarova & Bowes, 2021). We adopt a novel approach of a Scottish context, whereas most previous studies on fast fashion impulse consumption have emerged from Asian markets (Akbar et al., 2020; Bandyopadhyay et al., 2021; Chauhan, Banerjee & Dagar, 2021; Lee & Lee, 2019; Son & Lee, 2021; Togawa et al., 2019). The chapter is structured as follows: the next section presents the conceptual framework that was informed from reviewing the literature, followed by the methodology and the themes that emerged from analysis, before concluding with insights into the implications for encouraging sustainable fashion practice.

## Literature Review and Conceptual Framework Development

Generation Z, born between 1996 and 2005 (Hall et al., 2017), are digital natives, having adopted digital technology skills in their early years, and they engage on social media platforms for entertainment, socialisation, learning, playing and consumption (Adgate, 2021). Fast fashion retailers recognise the importance of engaging with Generation Z on social media and use this platform for marketing campaigns and employing social media influencers to promote new trends by encouraging frequent impulse consumption of “throwaway fashion”, which Yalkin & Elliott (2006, cited in Joung, 2014) define as discarding clothing after singular use to continually appear trendy. Hur & Cassidy (2019) found that young consumers compare themselves with their peers and often feel inferior if they do not follow fashion trends or if they re-wear an outfit, and this encourages impulse buying. This is a social norm among young consumers, which encourages impulse consumption, and it is thought to have stemmed from the social media culture of wearing a different outfit in every picture (Denisova, 2021). Research has also identified that online shopping has therapeutic effects, concluding that female consumers may impulse buy fashion to overcome low self-esteem (Denisova, 2021; Iyer et al., 2020; Lee & Lee, 2019; Son & Lee, 2019; Nash, 2018). It is suggested that this therapeutic shopping experience is extended owing to delivery waiting times, instead of in-store where the buying process is instant (Son & Lee, 2019). Although re-

search has identified that young women are more prone to frequent impulse consumption (Cook & Yurchisin, 2017; Djafarova & Bowes, 2021; McNeil & Moore, 2015), they also are more likely to feel shame and guilt post-purchase (Iyer et al., 2020). This may be due to growing sustainability discourse, and while Hur & Cassidy (2019) found that younger consumers were more likely to shop ethically, their participants were fashion professionals, lecturers and students with greater knowledge of the unethical aspects to fast fashion, which other consumers may not be aware of. Therefore, exploring how young people reflect on their fast fashion consumption, and how they experience the emotive aspects related to fast-fashion consumption, will allow insight into understanding how to empower their decision-making to avoid the guilt of impulsive buying.

## Marketing tactics

As noted above, fast fashion retailers employ marketing tactics to suggest product scarcity and imbue a sense of urgency to stimulate frequent impulsive consumption, and this can create a loss of self-control for consumers (Bandyopadhyay et al., 2021; Akbar et al., 2020). Marketing tactics include “buy one get one free”, discount codes (Khan & Zubair, 2019), free shipping and limited time only sales (Sundström et al., 2019). During the global COVID-19 lockdown, online fast-fashion retailers relied on marketing to encourage sales, as the social occasions that normally led to consumption reduced and prices fell as low as eight pence (UK Sterling) (Blackhall, 2020). Brydges, Retamal & Hanlon (2020) conducted research into consumer fashion shopping habits during COVID-19 in the UK and found that while online fashion consumption decreased by 50 per cent from the year before, fast fashion sales are predicted to rise again because of heavy discounting, with the potential to fuel frequent impulsive consumption. The pandemic offered a unique opportunity to illuminate upon extreme circumstances that were emotionally challenging and may provide insight into the role of emotion in frequent impulsive consumption. Therefore, a closer examination of how the extremity and uncertainty experienced during lockdown encouraged impulsive frequent fast fashion consumption will enhance our understanding of how to empower consumers to rationalise marketing tactics to avoid post-purchase regret.

## Post-Purchase Cognitive Dissonance

According to Chen, Chen & Lin (2020), consumers may experience post-purchase regret when they impulsively buy online. This psychological phenomenon of post-purchase cognitive dissonance is experienced when consumers consider whether they truly needed the product or if they feel regret and disappointment in their own decision-making. Cognitive dissonance theory was originally developed by Leon Fes-

tinger in 1957 to measure consumer behaviour, and it was found to be provoked by the difference in a person's beliefs and information that contradicts their belief (Festinger, 1957). According to Festinger (1957), consumers may attempt to reduce their feelings of dissonance by changing their behaviours to match their beliefs, or to be selective in being exposed to information that contradicts their behaviours. Akbar et al. (2020) positively related cognitive dissonance theory to online impulse buying and sales incentives because consumers often have high expectations for the product at point of purchase. However, this can change to feelings of disappointment and regret once the item arrives and is different to their expectations (Akbar et al., 2020). Chen, Chen & Lin (2020) found that the more impulsive consumption is, the greater the feelings of post-purchase disappointment and regret. However, Togawa et al. (2019) encountered different results, as they found that their participants reflected on their impulse buying experiences with positive emotions and this, therefore, was the cause of their repetitive impulsive behaviour. Spiteri Cornish (2020) conflicts this theory as they found that although consumers felt happiness when first impulse buying, over time these emotions turned negative. Thus, consumers may suffer negative feelings long after making the purchase, incongruent with the continuation to make frequent impulsive consumption. In addition, some consumers may use emotion-focused coping mechanisms, such as denial, to lessen their feelings of regret, making it difficult for shoppers to break their cycle of impulse buying.

While cognitive dissonance has been identified in previous fashion research, this has focused on why consumers do not buy sustainable fashion rather than how they reflect on impulsive fast fashion consumption (Cairns, Ritch & Bereziat, 2021). Emerging from a similar concept of consumers claiming to care about the environmental and the social impact of fast fashion, oftentimes this concern is not reflected in behaviours (McNeill & Moore, 2015). Previous research has not identified a way in which to disrupt fast fashion consumption; rather, the barriers prohibiting fast-fashion consumption appear to justify the continuation to buy fast fashion as postulated at the beginning of this chapter. Therefore, understanding how consumers reflect on impulsive fast fashion could provide an impetus for encouraging consumers to apply sustainable principles to their fashion practice, if similar emotions from fast fashion can be experienced. Figure 14.1 below presents the conceptual framework that underpins this research.



**Figure 14.1:** Conceptual framework.

## Methodology

This research is interpretivist in approach, as social phenomena are uniquely experienced and emerge from idiographic social constructions (Cairns et al., 2021; Berger & Luckman, 1966). As the research investigates the role of emotion and personal constructs of self that are reflected through fashion practice, a qualitative research strategy was considered as enabling a lens into complex understandings and connections (Roller & Lavrakas, 2015). Adopting purposive sampling, as guided by extant literature, ten in-depth interviews offered a platform to explore post fast-fashion consumption reflections. The interviews began with a grand tour question where the participants were asked to recall their recent experiences of purchasing online fast fashion and how they felt during each stage of the buying process. This was followed by semi-structured pre-determined questions that were informed by the literature, which allowed flexibility when new ideas emerged during the interviews (Ragab & Arisha, 2018). The interviews lasted approximately an hour each and once transcribed provided 130 A4 pages of data. Thematic analysis was applied to the data, allowing themes and patterns to be identified across the different transcripts, creating a logical approach to analysing the data and the opportunity to analyse similar experiences to create a foundation for flexible and interesting interpretations (Saunders, Lewis & Thornhill, 2019). The themes identified are presented next.

## Findings

Before presenting the themes, Table 14.1 below provides an overview of the participants who informed the data. It is important to note that not all participants considered themselves as impulsive buyers, yet all reported buying fast fashion at least twice a month which is consistently frequent for a commodity context that is inessential rather than utilitarian. In understanding the impact of the Scottish context, the participants all lived in Glasgow, and have access to many mainstream fast fashion

retailers in the city centre; however, the focus is online fashion consumption which is not affected by geographical location. Data were collected during the pandemic in early 2021 and the participants reflected on their behaviours during the lockdown, as will become apparent within the quotes below.

**Table 14.1:** Participant profiles.

Participant	Nationality	Gender	Age	How frequently participant buys fast fashion	Do they consider themselves impulse buyers?
Participant A	Scottish	Female	23	1–2 times per month	No
Participant B	Scottish	Female	22	1–2 times per month	No
Participant C	Scottish	Female	21	2–3 times per month	Yes
Participant D	Scottish	Female	21	2–3 times per month	No
Participant E	Scottish	Female	23	1–2 times per month	Yes
Participant F	Scottish	Female	24	1–2 times per month	Yes
Participant G	Scottish	Female	22	2–3 times per month	Yes
Participant H	Scottish	Female	19	1–2 times per month	No
Participant I	Scottish	Female	24	1–2 times per year	No
Participant J	Scottish	Female	23	1–2 times per month	Yes

Initial analysis identified interesting findings. Firstly, as the data were collected during the pandemic, the lack of social occasions and activities led to “lockdown boredom”, where fashion consumption offered excitement and a hedonic “dopamine rush”. Secondly, receiving marketing offers instigated a sense of urgency, and selective amnesia of what garments were already owned, and this may be reflective of the need to experience the “new” and the hedonistic excitement that purchasing fashion offers. When they were reminded of “the clothes still sitting in my wardrobe with the tags on” there were expressions of regret, but some of the participants were caught in an addictive cycle of seeking hedonism through the process of fashion consumption. The data also found that along with excitement, buying new fashion and following fast fashion trends was important for their self-esteem as this illustrated conformity and belonging, emotions that were challenged during the pandemic. Themes were developed around pre and post-purchase emotions, and how cognitive dissonance was viewed as either impacting on the environment or garment-workers in the supply chain. It was interesting that this was considered separately; it aligns with Wells et al. (2011) who found that concern for one ethical issue does not necessarily transfer to another and therefore more than one issue should be addressed. The themes discussed in this chapter are presented in Table 14.2 below.

**Table 14.2:** Data themes.

Analytic theme	Sub theme
Pre-purchase emotions and influences	Boredom COVID-19 lockdown Sales incentives Pressure to wear new clothing
Post-purchase emotions	Excitement Post-purchase regret
Evidence of cognitive dissonance	Changing behaviours based on sustainably knowledge Selectively acknowledging information to avoid behavioural change

## Pre-Purchase Emotions and Influences

When asking the participants what influenced their fashion consumption, boredom was a common response, as illustrated below:

I usually shop online out of boredom. Sometimes, if I feel sad, I'll buy myself new clothes to cheer myself up, like retail therapy. (Participant H)

Most of the time I buy clothes out of boredom, it makes me feel like I've achieved something that day. That's why I only buy from fast fashion retailers like Shein. It's cheap enough that I can shop more often for the dopamine rush. (Participant F)

Both quotes articulate that boredom leads to engaging with fast fashion online, to improve their emotional state as “retail therapy” and to provide a sense of achievement, as previously identified by Iyer et al. (2020) and Lee & Lee (2019). Similarly, Sundstrom et al. (2019) found that fashion consumption offered an opportunity to escape the boredom of everyday life. However, this was heightened during the COVID-19 lockdown in 2020 and other participants described feeling “miserable” and “depressed” because of the pandemic and therefore used online shopping as a coping mechanism to distract them from the monotony of lockdown. It should be acknowledged that this behaviour was made possible by the low pricing of fast fashion retailers, such as Shien, who also promote new garments weekly to stimulate frequent impulsive consumption (Ritch, 2023). Although Participant H was adamant that she was not an impulse buyer, when asked how she often bought fashion online, she responded with:

Over lockdown, I was impulse buying almost weekly. There [are] many clothes in my wardrobe that I've never worn, even though that was two years ago now. (Participant H)

Participant H was receiving furlough pay, with limited opportunity to spend it due to suspended social activities, therefore she bought fashion to “cheer myself up”, al-



though she is reflecting on this and indicating regret. This appears that fashion provides linkage to a sense of existentialism, the promise of excitement and being part of an outside world that indicates an aspiration life and buying new garments is akin to preparing to be part of external social activities. As fashion retailers and physical stores closed (Brydges et al., 2020), fast fashion retailers offered incentives to stimulate online consumption and the participants reported responding to these offers:

I recently bought a new dress for a night out because it was on sale. I was going to wear an outfit I already had in my wardrobe, but I got a notification from the website to say they had 20% off everything and so I decided to buy a new dress instead. (Participant E)

Participant E was one of a few participants who was unapologetic about her impulsive buying habits and explained that she has multiple fast fashion retailer applications which triggered push notifications that alerted her of new sales promotions. These discount notifications made her feel “instant excitement” at the thought of buying new clothing and she acted quickly due to fears it will go out of stock, as previously postulated by Cook & Yurchisin (2017) and Sundström et al. (2019). This indicates a “Fear of Missing Out” (FOMO) of being noticed wearing the latest trends. Although Participant E’s consumption was only encouraged by the discount in this instance, for many participants a social occasion triggered the need for a new outfit, as part of the “excitement” and “anticipation” of social activities, and due to social pressure to be seen in new outfits. This pressure stemmed from a variety of reasons, such as social media culture, validation from peers and everchanging fashion trends, as noted below:

I see other people wearing new clothes to every event they go to and so I think I need to do that too. (Participant F)

There’s pressure to not wear the same thing twice and as much as I try to wear something more than once, I’m conscious if I’ve worn an outfit recently, I need to buy something else. (Participant G)

Both participants acknowledged that they often purchase fast fashion to impress others by appearing “stylish” or “trendy”, and this reflects social media culture of influencers who regularly post photographs of themselves in new fashions. Therefore, it appears that self-relevance is represented in wearing new fashion, improving self-esteem, as found by Niinimäki et al. (2020) and Son and Lee (2019). For example, Participant E reflects on how she felt when someone noticed that she was “outfit repeating”:

One night, when I was out, [someone] said “you were wearing that same outfit the last time I met you” which was months before. I was mortified.” (Participant E)

While Participant E was comfortable re-wearing outfits prior to this incident, this comment impacted upon her confidence, and she felt pressurised to buy new clothing for every social occasion. She mentioned that her commentator was a friend of a new boyfriend, heightening her need to be perceived as stylish and fashionable. The par-

ticipants reported that wearing new fashion made them feel “confident”, with Participant B explaining why she likes wearing new clothes:

*It releases a bit of serotonin, you feel good about yourself, especially something really trendy and you think it's cool because everyone's wearing it, even when it's not actually your style. (Participant B)*

The participants illustrate that being seen in new fashion impacts on their self-confidence and self-esteem by offering validation in an external world, as expressed by the quotes at the beginning of this section. Collectively, these emotions were manipulated by marketing to trigger hedonic emotions as a stimulus for consumption of inexpensive fashion, by situating FOMO against the depiction of aspirational lifestyles that offer a sense of belonging. Thus, the participants exhibit a compulsion to consume, as explained by Participant J:

*The last fast fashion item I bought was definitely an impulse buy. It was a leather jacket that I knew I didn't need because I had just recently thrown out my old one that I never wore, but I got it anyway because it was on sale. I think I'm saving money and it feels urgent like I need to buy it now. Even if I don't like it, I'll tell myself I do because it feels like a good bargain. (Participant J)*

Participant J acknowledges that her consumption was entirely due to the discounted price and that she felt compelled to buy the discounted jacket “even if I don't like it”. Similar to Participant B, the item may not be reflective of their personal style, but it speaks to an accepted social style that indicates belonging in this social world. Reacting in this way to marketing indicates that discounts provoke a loss of self-control, triggering impulsive behaviour (Bandyopadhyay et al., 2021; Akbar et al., 2020). Also, this impulsiveness demonstrates cognitive dissonance: Participant J knew purchasing the jacket was unnecessary, but she bought it because of the urgency created by the sales incentive, as was found by Cook & Yurchisin (2017). Yet, what Participant J and Participant H have also expressed is that during their post-consumption reflections their behaviours are incongruent to their beliefs.

## Post-Purchase Emotions

For some participants, positive post-purchase emotions were extended to eagerly waiting for the fashion to arrive to try the outfit on. Participant H described this waiting period as “thrilling” because when she received her delivery it “feels like a present from me to me”. On the other hand, it is clear that for some the happy emotions felt post-purchase eventually become irrelevant once the high of impulse buying wears off.

*I felt satisfied that I got them in the sale, but once they arrived, I very quickly got over it. (Participant D)*

*The excitement lasted while I waited for the delivery the next day and when I tried it on. However, as soon as I took it off, I forgot about it until my night out. (Participant E)*

Both participants express feeling rewarded after they purchased their fast fashion items, as both shopping experiences were influenced by sales incentives. It can, therefore, be argued that fast fashion provides a means for gratification; because their post-purchase pleasure was short lived, impulse buying behaviour becomes a habit to maintain hedonistic gratification, as found by Togawa et al. (2019). However, other participants expressed buyer's remorse after purchasing fast fashion, and sometimes this was in relation to how much was spent:

I always feel good after buying clothes, but if I've spent a lot, I feel guilty about it. I'll usually think I could have spent that on a holiday or something. (Participant H)

Recalling that Participant H was buying fashion weekly during the lockdown, her impulsive spending could be significant. Participant H evaluates her consumption post-purchase and thinking about what she would really value, clothes in her wardrobe (unworn, with the labels still on) or an experience such as a holiday. Participant F also expresses remorse, but rather than focus on how impulsive consumption has impacted upon her personal circumstances, she has allowed her knowledge of exploitation in the supply chain to become part of her reflective evaluation:

I feel regret after every fast fashion purchase. I've wasted my money on clothes that I know I don't need. Someone has suffered making these clothes just to be shoved at the bottom of a drawer after being worn once, it feels so wasteful [but] I quickly forget about it all when I see something I like." (Participant F)

Participant F illustrates selective amnesia towards her knowledge of garment-workers exploitation in fashion production, so focused on the positive emotions that buying fashion can offer. Despite regretting "every fast-fashion purchase" that "go[es] out of fashion" very quickly and wearing a garment once before forgetting about it, she felt compelled to splurge all of her income on online shopping as soon as it enters her bank account. She describes her shopping habits as an "addiction to the dopamine rush" that she experiences every time she buys items online and due to the pressure she feels from social media to update her wardrobe. Participant F described her life as a "constant loop of being skint" because of the burden of her impulse buying habits, despite being aware of the unethical practices of the fast fashion industry. Therefore, Participant F embodies the theory that at point of purchase, the emotive value of impulsive consumption outweighs the financial cost (Bayley & Nancarrow, 1998, cited in Cook et al., 2017). This supports the idea that consumers focus on the happy emotions felt during the impulse buying experience and may use coping mechanisms, such as denial or selective amnesia, to lessen their feelings of guilt; therefore, this cognitive dissonance (Chen et al., 2020) allows the cycle of impulse buying to continue (Spiteri Cornish, 2020).

## Evidence of Cognitive Dissonance

The participants deviated between accepting responsibility for their contribution to unsustainability (Participants A, B, D, H & I) and prioritising their consumer needs (Participants C, E, F, G, J). In terms of displaying cognitive dissonance, half made an effort to change their behaviours to align with their beliefs, whereas others were selective in allowing exposure to information that might induce guilt in their behaviours (Festinger, 1957). Those changing their habits to incorporate sustainability concerns did so due to their knowledge of the environmental impact from fast fashion production and consumption, such as: landfill; water wastage; wasteful synthetic materials; and large carbon emissions. The first group prided themselves in trying to reduce their consumption:

I don't buy clothes often. I've tried to be more sustainable and wear the clothes I own. If I do want new clothing, I'll try and buy from ethical brands [or] second-hand from Depop. (Participant A)

I stopped buying fast-fashion because it's so unethical, it was giving me anxiety. I buy from Etsy now, from small businesses, but not often [as] I'm conscious of the carbon footprint from deliveries. So, if I see something I like, I'll wait and see if I need to buy more first so that they come in the one parcel. (Participant I)

All participants in the first group gave similar answers, stating they have reduced their fast fashion consumption in favour of more sustainable brands. This aligns with Hur & Cassidy (2019) who suggested that there has been an increase in preference towards sustainable fashion brands amongst young female consumers. While Participant H has made behavioural change, she was still debating whether her own actions contributed to environmental degradation:

I have recently reduced how often I shop because I feel guilty knowing that fast fashion is so bad for the environment, but everyone does it. Sometimes I think if I didn't do it, would that even have a big impact if I stopped?" (Participant H)

Participant H was unique in her approach of changing behaviour, and applying a rationale to minimise the reduced fast fashion she purchased to avoid feeling guilt/dissonance. Conversely, the second group also knew that "fast-fashion is bad", so were selective in what information they focused on:

I know fast fashion is bad, but I got a good bargain, so I don't think about it. (Participant G)

If I [thought] about how negative fast fashion is for the planet, I would never buy anything, and I really like buying new clothes. (Participant C)

When I'm buying clothes, I get caught up in getting something new. I know that it's bad, but I choose not to think about it, I suppose I'm quite selfish that way. (Participant E)

These participants manage their dissonance through prioritising the emotions experienced in fast fashion impulsive consumption, selectively choosing to ignore any sustainability related impact. When asked about how fast fashion has led to increased pressure of landfill space, some expressed this made them “angry” and “disgusted”; however, these thoughts were separate to their acts of consumption where the focus was on marketing tactics and discounts sparking the impulse to buy:

I would like to change my shopping habits, but I know that I won't. (Participant J)

When considering Participant J's quote above, advancing the sustainable fashion agenda appears overly complex. Interestingly, despite fast-fashion retailers employing influencers to encourage frequent impulse consumption, our research illustrated that a fast fashion influencer had altered dissonance from being selective in acknowledging information to actively changing behaviour due to ethical concerns:

I knew brands did not treat their workers well, but it wasn't until I saw the PrettyLittleThing scandal online: they hired Molly-Mae and she said everyone can be as successful as her because we all have the same 24 hours in the day. She got the job because she was on Love Island, it's obnoxious [of her] to say that when she's on a multi-million-pound salary while her staff are making £3 an hour. (Participant H)

It was interesting to see almost all participants mentioned Molly-Mae by name and had awareness of the “scandal” that emerged from this statement. They had observed online criticism for her not recognising her platform of privilege (Ritch, 2023) and the social media discourse surrounding this comment included the low salaries of the garment-workers making PrettyLittleThing clothing compared to how much she was paid as creative director. Had this discourse not been debated online, they would have remained unaware of the contradictions of privilege. Ironically, they only knew about the social impact of fast fashion from reading her scandal online, making her an influencer for social good; however, despite every participant stating they felt outraged after learning about this scandal, many admitted they will continue to buy from the fast fashion brand:

*I feel bad, but I probably will still shop from there, because it's cheap and if I don't shop there, I don't know where I would.* (Participant C)

Participant C further demonstrates cognitive dissonance, as despite knowing the inequality of the fast-fashion model she postulates that she will continue to prioritise her consumer orientated desires (Stringer, Payne & Mortimer, 2021). However, there is also evidence of social media influence and the challenge of social norms. If social media can influence assumptions around how socially acceptable it is to buy new fashion, and induce shame for wearing fashion more than once, it can shape new practice that focuses on social welfare and environmental conservation as well as challenge social norms to make sustainability fashionable.

## Concluding Remarks

The research aimed to explore the role of emotions in frequent impulsive fast fashion consumption in order to identify how consumers can experience similar positive emotions through sustainable fashion practice. The research indicates that consumption is a consequence of marketing tactics and social media influence, which satisfies emotive traits of confidence, self-esteem, hedonism and belonging. Conversely, social media influence had also introduced some participants to the inequalities of fashion production, promotion and consumption, and this had begun to have an impact on their practice. Raising awareness through social media may counterbalance marketing tactics and nudge consumers towards sustainable fashion practice.

The research adds novel value as it reflects upon consumer experience during the pandemic. The monotony and boredom experienced due to the suspension of social activities led to some of the participants feeling regretful after overconsuming fast fashion during the 2020 lockdown for COVID-19. Some of this clothing has never been worn, and yet they felt compelled to buy more. This illustrates the physiological emotiveness of fashion-consumption, which has to be accounted for within sustainable fashion practice.

This study did not aim to research generalised findings, but instead focus upon the personal experiences of each participant. Future research would benefit from conducting further interviews involving different demographics, such as gender and age, which would allow a richer insight into consumer experiences and emotions of fast fashion consumption. This could be followed by a quantitative study which could move towards generalised understanding of the role emotions play in fashion consumption.

## References

- Adgate, B. (2021). *Deloitte report: Digital media activities vary by generation age group*. Forbes. <https://www.forbes.com/sites/bradadgate/2021/05/05/deloitte-report-digital-media-activities-vary-by-generation-age-group/?sh=db8069204bec>
- Akbar, M.I.U.D., Ahmad, B., Asif, M.H., & Siddiqui, S.A. (2020). Linking emotional brand attachment and sales promotion to post-purchase cognitive dissonance: The mediating role of impulse buying behavior. *The Journal of Asian Finance, Economics, and Business*, 7(11), 367–379. <https://doi.org/10.13106/jafeb.2020.vol7.no11.367>
- Bandyopadhyay, N., Sivakumaran, B., Patro, S., & Kumar, R.S. (2021). Immediate or delayed! Whether various types of consumer sales promotions drive impulse buying?: An empirical investigation. *Journal of Retailing and Consumer Services*, 61. <https://doi-org.gcu.idm.oclc.org/10.1016/j.jretconser.2021.102532>
- Berger, P., & Luckmann, T. (1966). *The social construction of reality. A treatise in the sociology of knowledge*. Penguin Books Ltd.
- Bick, R., Halsey, E., & Ekenga, C.C. (2018). The global environmental injustice of fast fashion. *Environmental Health* 17(1), 1–4. <https://doi.org/10.1186/s12940-018-0433-7>

- Blackhall, M. (2020, November 27). Critics attack Pretty Little Thing's 8p Black Friday dress deal. *The Guardian*. <https://www.theguardian.com/business/2020/nov/27/critics-slam-pretty-little-things-8p-black-friday-dress-deal>
- Brydges, T., Retamal, M., & Hanlon, M. (2020). Will COVID-19 support the transition to a more sustainable fashion industry? *Sustainability: Science, Practice and Policy*, 16(1), 298–308. <https://doi.org/10.1080/15487733.2020.1829848>
- Cairns, H.M., Ritch, E.L., & Bereziat, C. (2021). Think Eco, Be Eco? The tension between attitudes and behaviours of millennial fashion consumers. *International Journal of Consumer Studies*, 1–16. <https://doi.org/10.1111/ijcs.12756>
- Chauhan, S., Banerjee, R., & Dagar, V. (2021). Analysis of Impulse buying behaviour of consumers during COVID-19: An empirical study. *Millennial Asia*. <https://doi.org/10.1177/09763996211041215>
- Chen, W., Chen, C., & Lin, Y. (2020). Understanding the influence of impulse buying toward consumers' post-purchase dissonance and return intention: an empirical investigation of apparel websites. *Journal of Ambient Intelligence and Humanized Computing*, 1–14. <https://doi.org/10.1007/s12652-020-02333-z>
- Cook, S.C., & Yurchisin, J. (2017). Fast fashion environments: consumer's heaven or retailer's nightmare? *International Journal of Retail & Distribution Management*, 45(2), 143–157. <https://doi.org/10.1108/IJRDM-03-2016-0027>
- Denisova, A. (2021). *Fashion media and sustainability*. University of Westminster Press.
- Djafarova, E., & Bowes, T. (2021). 'Instagram made me buy it': Generation Z impulse purchases in fashion industry. *Journal of Retailing and Consumer Services*, 59. <https://doi.org/10.1016/j.jretconser.2020.102345>
- Environmental Audit Committee. (2019). *Fixing fashion: clothing consumption and sustainability*. House of Commons.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford University Press.
- Floh, A., & Madlberger, M. (2013). The role of atmospheric cues in online impulse-buying behavior. *Electronic Commerce Research and Applications*, 12(6), 425–439. <https://doi.org/10.1016/j.elerap.2013.06.001>
- Hall, A., Towers, N., & Shaw, D.R. (2017). Understanding how millennial shoppers decide what to buy: digitally connected unseen journeys. *International Journal of Retail and Distribution Management*, 45(5), 498–517.
- Hur, E., & Cassidy, T. (2019). Perceptions and attitudes towards sustainable fashion design: Challenges and opportunities for implementing sustainability in fashion. *International Journal of Fashion Design, Technology and Education*, 12(2), 208–217. <https://doi.org/10.1080/17543266.2019.1572789>
- Iyer, G.R., Blut, M., Xiao, S.H., & Grewal, D. (2020a). Impulse buying: a meta-analytic review. *Journal of the Academy of Marketing Science*, 48(3), 384–404. <https://doi.org/10.1007/s11747-019-00670-w>
- Joung, H., & Park-Poaps, H. (2013). Factors motivating and influencing clothing disposal behaviours. *International Journal of Consumer Studies*, 37(1), 105–111. <https://doi.org/10.1111/j.1470-6431.2011.01048.x>
- Joung, H. (2014). Fast-fashion consumers' post-purchase behaviours. *International Journal of Retail & Distribution Management*, 42(8), 688–697. <https://doi.org/10.1108/IJRDM-03-2013-0055>
- Kidd, E., Ritch, E.L., & Carey, L. (2020). The fashion detox challenge: An experiment in reduced clothing consumption. *The Legacy of Fashion: Past, Present and Future*. Global Fashion Conference. Université de la Mode.
- Lee, J., & Lee, Y. (2019). Does online shopping make consumers feel better? Exploring online retail therapy effects on consumers' attitudes towards online shopping malls. *Asia Pacific Journal of Marketing and Logistics*, 31(2), 464–479. <https://doi.org/10.1108/APJML-06-2018-0210>
- Lim, S.H., Lee, S., & Kim, D.J. (2017). Is online consumers' impulsive buying beneficial for e-commerce companies? An empirical investigation of online consumers' past impulsive buying behaviors. *Information Systems Management*, 34(1), 85–100. <https://doi.org/10.1080/10580530.2017.1254458>

- McNeill, L., & Moore, R. (2015). Sustainable fashion consumption and the fast fashion conundrum: fashionable consumers and attitudes to sustainability in clothing choice. *International Journal of Consumer Studies*, 39(3), 212–222. <https://doi.org/10.1111/ijcs.12169>
- Nash, J. (2019). Exploring how social media platforms influence fashion consumer decisions in the UK retail sector. *Journal of Fashion Marketing and Management: An International Journal*, 23(1), 82–103. <https://doi.org/10.1108/JFMM-01-2018-0012>
- Niinimäki, K., Peters, G., Dahlbo, H., Perry, P., Rissanen, T., & Gwilt, A. (2020). The environmental price of fast fashion. *Nature Reviews Earth & Environment*, 1(4), 189–200. <https://DOI:10.1038/s43017-020-0039-9>
- Radonic, D. (2022). *27 revealing fast fashion statistics for 2022*. <https://fashiondiscounts.uk/fast-fashion-statistics/>
- Ragab, M.A., & Arisha, A. (2018). Research methodology in business: A starter's guide. *Management and Organizational Studies*, 5(1), 1–14.
- Ritch, E.L. (2023). Sustainable fashion marketing: Green or greenwash? *Marketing fashion: Critical perspectives on the power of fashion in contemporary culture*. Edited by Karin M Ekström. Routledge.
- Ritch, E.L. (2020). Socially responsible fashion practice: Looking good and feeling good. In L. McNeil (Ed.), *Transitioning to responsible consumption and production* (pp. 60–83). MDPI SDG Series.
- Roller, M.R., & Lavrakas, P.J. (2015). *Applied qualitative research design: A total quality framework approach*. Guilford Publications.
- Saunders, M.N.K., Lewis, P., & Thornhill, A. (2019). *Research methods for business students*. Pearson.
- Son, H., & Lee, J. (2021). Does online shopping make people feel better? The therapeutic effect of online shopping on Korean female consumers' mood, self-esteem, and self-efficacy: Based on the context of fashion product shopping. *Journal of Global Scholars of Marketing Science*, 31(4), 580–597. <https://doi.org/10.1080/21639159.2020.1808821>
- Spiteri Cornish, L. (2020). Why did I buy this? Consumers' post-impulse-consumption experience and its impact on the propensity for future impulse buying behaviour. *Journal of Consumer Behaviour*, 19(1), 36–46. <https://doi.org/10.1002/cb.1792>
- Stringer, T., Payne, A.R., & Mortimer, G. (2021). As cheap as humanly possible: why consumers care less about worker welfare. *Journal of Fashion Marketing and Management: An International Journal*, 1(1), 1361–1382. <https://doi.org/10.1108/JFMM-06-2021-0158>
- Togawa, T., Ishii, H., Onzo, N., & Roy, R. (2019). Effects of consumers' construal levels on post-impulse purchase emotions. *Marketing Intelligence & Planning*, 38(3), 269–282. <https://doi.org/10.1108/MIP-01-2019-0022>
- Watson, M.Z., & Yan, R. (2013). An exploratory study of the decision processes of fast versus slow fashion consumers. *Journal of Fashion Marketing and Management: An International Journal*, 17(2), 141–159. <https://doi.org/10.1108/JFMM-02-2011-0045>
- Wells, V.K., Ponting, C.A., & Peattie, K. (2011). Behaviour and climate change: Consumer perceptions of responsibility. *Journal of Marketing Management*, 27(7/8), 808–833.
- Zhang, B., Zhang, Y., & Zhou, P. (2021). Consumer attitude towards sustainability of fast fashion products in the UK. *Sustainability*, 13(4), 1646. <https://doi.org/10.3390/su13041646>





Ruth Marciniak

# 15 Sustainable Assessment and Fashion Brand Ratings

**Abstract:** In response to the growing demand for transparency in the supply chain, fashion brands have responded through sustainability marketing in the form of free form communication, application for certifications and making publicly available sustainability reports, which in turn have been used by third party organisations for brand rating. The purpose of the chapter is to explore the purpose, examine the methodologies and assess who benefits from these ratings.

**Keywords:** sustainability, sustainability marketing, rating systems, fashion brand equity

## Introduction

Whereas the fashion sector is estimated to be responsible for at least 2% of total global greenhouse gas emissions (Jacobs, 2022), it is increasingly difficult for the sector to respond to the damage it causes to the environment. Furthermore, reports of disturbing social issues including unfair and unethical working conditions contribute to increased consumer dissatisfaction with the sector (Brun, Castelli & Karaosman, 2017). Linked to this is the growing demand for transparency.

The emergence of sustainability in the consciousness of businesses as a mainstream concern came about and was reported within business literature in the 1990s through the work of John Elkington (Purvis, Mao & Robinson, 2018). In addition to focusing on the economic interests and financial gains of a business, Elkington espoused the view that businesses should also take into consideration social and environmental concerns (Elkington, 1997), what he referred to as the Triple Bottom Line (TBL), these being, people, planet and profit. Alternatively, economic, social and environmental areas, others such as Caradonna (2014) refer to them as environment, economy and equity. In the financial sector the terms environment, social and governance (ESG) are used, all being the criteria for assessing sustainability in terms of how a company safeguards the environment, manages its relationships with employees, suppliers, customers and the communities in which it operates, as well as the company's leadership with regards to audits, internal controls, shareholder rights and executive pay (Ziolo et al., 2019).

---

Ruth Marciniak, e-mail: ruth.marciniak@gcu.ac.uk

Since the 1990s, numerous sustainability rating systems have emerged, which serve to function what Turunen and Halme (2021) describe as a consumer-oriented sustainability communication, which serve to provide sustainability knowledge on businesses' supply chain practices, the purpose of which is to support consumption decisions. A sustainability rating is defined as a measure of company performance regarding environmental and social responsibility. An example of a sustainability rating system relevant to the fashion sector is Good On You, which assesses thousands of fashion brands for their impact on people, the planet and animals. Another example is The Ethical Consumer who base their ratings on politics, company ethos and product sustainability. Whilst such ratings systems exist, they are not without criticism, a key criticism being that some indexes are not rigorous enough. For example, Pucker (2022) indicates the reporting does not always accurately quantify what is being rated e.g. the full carbon emissions profile of a fashion brand. Further, the Higgs Materials Sustainability Index, used by numerous major fashion brands, has been described as greenwashing. In June 2022, in response to this criticism, brands including H&M, who belong to the Sustainable Apparel Coalition (SAC), announced they would suspend its use (Britten, 2022), the shortcoming of this product labelling tool index being that the data used for undertaking materials assessment was misleading to consumers as it was perceived to be outdated (Kent, 2022). Such criticism leads the researcher to question the value of rating systems and their fitness for use in claiming sustainable credibility.

Through the examination of rating systems, this chapter reviews sustainability marketing communications and fashion brand sustainability assessment practices. Focusing on the evaluation criteria of rating systems, the chapter asks the question: to whose benefit are these rating systems? For the benefit of enhancing brand equity via sustainability marketing communications? Or to support fashion consumption decision making?

The chapter offers contributions to the research fields of sustainability and sustainability marketing, and via a literature review aims to explore the following:

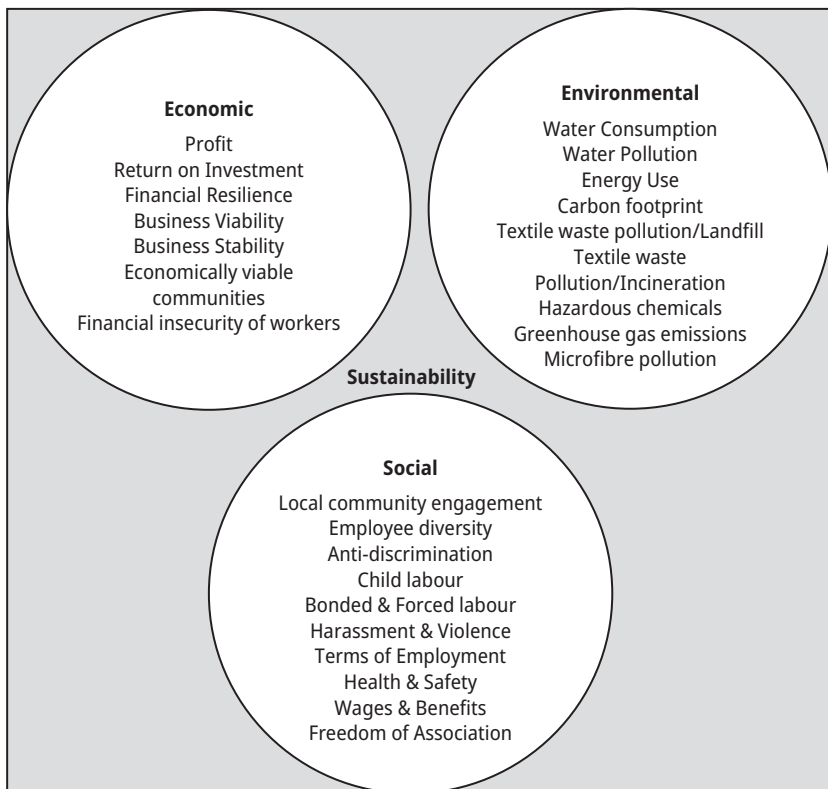
- Concept and scope of sustainability marketing
- Emergence of fashion brand sustainability assessment
- Fashion brand rating systems relating to sustainability

## Sustainability Marketing

### The Problem

The fashion industry is premised on growth. Rather than superior performance, greater efficiency, or higher quality goods to motivate fashion consumption, offering goods that are just different, cheaper, or faster to both market and to produce provides mainstream fashion brands with competitive advantage (Pucker, 2022). This is

problematic for the fashion industry. Competing on a global basis, fashion brands source the lowest cost areas of production. Consequently, chasing a competitive advantage has resulted in some fashion brands working with suppliers in garment producing countries whose employee working conditions have been challenged to the extent that some companies have faced allegations of modern-day slavery (Brydges, Henninger & Hanlon, 2022). Further, due to its heavy reliance on and use of natural resources, negative consequences have arisen such as resource depletion, pollution and greenhouse gas emission. These all present the fashion industry with additional challenges (Gbolarumi, Wong & Olohunde, 2021). In all, both the textile and garment industries generate environmental harm from the cultivation of raw materials to disposal of end-of-life products. In light of this, over the last decade and more, there have been growing calls for systematic changes to current fashion business models with a view to reducing environmental and social imprint. In so doing, there have been calls to integrate the accounting framework the Triple Bottom Line (TBL) into business operations (Blagov & Petrova-Savchenko, 2021). The scope of the challenge of achieving this is outlined in Figure 15.1. As is illustrated in the figure, any attempt for



**Figure 15.1:** The Triple Bottom Line: scope of fashion sustainability.

a fashion business to be sustainable needs to be addressed by a multitude of factors. The increasingly socially and environmentally conscious consumer is presented with a long, complex list of potential factors to consider in making a sustainable fashion purchase decision (McKinsey & Company, 2022).

## The Solution

In efforts to integrate sustainability into the fashion sector, new products and new fashion business models have emerged, for example, the creation of the circular business model, wherein waste from one life cycle becomes the raw materials for the next and the reuse business model in which the life of a garment is extended through selling on to other intermediaries. Examples of reuse business models include the recommerce model where money is exchanged to own a garment and the rental model where money is exchanged to possess the garment for a stated period of time. Alongside efforts to make sustainability an integral part of fashion business strategy, a growing volume of environmental and social legislation and regulation has emerged. Further, the industry has witnessed numerous pressure groups and activists lobbying to change business practices.

Marketing has traditionally operated on the assumptions that (i) there is a finite supply of resources; and (ii) the production, movement and retailing of goods incur no negative impact on the environment or raise any social concerns (Kotler, 2011). However, in response to changes in business sustainability practices, fashion brands are engaging in marketing efforts to signal to consumers changes they have made. Consequently, over recent years, the concept of sustainability marketing has emerged, defined as marketing activities undertaken by a business to promote environmental wellbeing, and social equity, in addition to economic development (NBS, 2021). As Lim (2016, p. 237) points out: “The concept of sustainability is recognised as a viable marketing approach that can influence consumers to minimise waste and contribute to the conservation of the environment”.

Applying the marketing activities of the 4 Ps framework, product, price, place and promotion, Table 15.1 provides examples of sustainability marketing practices.

Leveraging marketing toward the promotion of sustainable practices has the potential to improve a brand’s image, create positive consumer opinion, enhance sales, increase brand equity and gain more loyal customers. Hence, for fashion brands, there is a strong desire to promote engagement in sustainable initiatives and, in so doing, acquire positive consumer responses (Chan et al., 2021).

**Table 15.1:** 4 Ps of marketing applied to sustainability marketing (adapted from Kotler, 2011).

Marketing element	Application to Sustainability Marketing	Example
Product	Sustainable materials sourcing	Levi's commitment to using 100% sustainably sourced cotton by 2025
	Environmental packaging	Puma's Clever Little Bag Finisterre's marine safe garment bags and mailbags MUD Jeans's RePack's packaging
Price	Environmentally or socially friendly products priced higher, assumption being consumers will pay more for such products	Mother of Pearl Veja Reformation Matt and Nat
Place	Production of goods located close to consumption or nearshoring to achieve lower greenhouse emissions	According to McKinsey & Company (2021) 71% of fashion brands are planning to increase nearshoring by 2025
Promotion	Product labelling/ certification	The Global Organic Textile Standard (GOTS) Fairtrade label
	Communication of commitment to sustainability	Christopher Raeburn: "Changing the world through responsible design"
	Sustainability reporting	NIKE Impact Report Gucci Equilibrium Impact Report
	Sustainability rating system	Higg Index Fashion Transparency Index

## Non-Legislative and Legislative Guidance for Fashion Sustainability

Provision of information to guide fashion brands in integrating sustainability into their businesses emanates from numerous and diverse sources. Primarily the international organisation the United Nations (UN), through their agencies' initiatives, plays a major role. Since 2015 they have created three agendas for action, these being the Paris Agreement, the 2030 Agenda for Sustainable Development and the Sendai Framework for Disaster Risk Reduction. Whilst the Paris agreement provides the foundation to reduce greenhouse gas emissions, the primary goal being to keep the average global temperature rise well below 2 °C, the SDGs are broader in scope. As stated on their website, the 17 SDG goals seek to "call to action to end poverty, protect the planet and improve the lives and prospects of everyone, everywhere" (UN.org). With regards to Europe in par-

ticular, there are the European Green Deal and the Circular Economy Action Plan, both part of the European Union's (EU) Strategy on Sustainable and Circular Textiles, its purpose being to make textiles more durable, repairable, reusable and recyclable. Other sources include campaign organisations such as Clean Clothes Campaign, Collective Fashion Justice, Drip by Drip, the Conscious Fashion Campaign and the activist movement Fashion Revolution, all of whom work towards both supporting the fashion sector and informing the consumer.

Several elements of sustainability are incorporated into fashion businesses through legislation (Henninger et al., 2022; Karaosman et al., 2018).

In response to legislation, calls for action and consumer interest, many fashion brands have produced annual reports communicating sustainability initiatives undertaken, and, in some cases, set performance targets. Nike and Gucci, H&M Group, Patagonia, ASOS and Primark, amongst others, all produce sustainability reports.

## Sustainability Communications

As is evidenced so far in this chapter, the consumer is faced with a myriad of information to guide their purchasing decision. In terms of product alone, as Pucker (2022) points out: "Products ranging from swimsuits to wedding dresses are marketed as carbon positive, organic, or vegan while yoga mats made from mushrooms and sneakers from sugar cane dot retail shelves."

Product related environmental and social information to guide sustainable consumer purchases are manifest in two forms, free-form communications and third-party verification labelling and/or systems (Turunen & Halme, 2021). Free-form sustainability communications have emotional appeal, e.g., Patagonia's statement, "We are in business to save the planet"; however as Turunen and Halme (2021) point out, they have reliability issues, which potentially leads consumers to struggle to obtain trustworthy information. Communication issues are identified by Brydges et al. (2022) as being one sided, self-declared and vague in content. Sustainability or eco-labelling offers improved transparency and comprehensiveness of information provision (Morris, Koep & Damer, 2021). Such labelling has a better chance of generating cognitive responses from consumers and therefore supports purchasing decisions (Phipps et al., 2013). There are numerous sustainability certifications or labels that fashion brands can apply for. Examples include Global Organic Textile Standard (GOTS), which amongst other factors, certifies that garments are made from 70% organic fibre content and manufactured via environmentally friendly processes; Oeko-Tex, which certifies a garment's materials have no harmful environmental substances; and the Fair Trade Certification, which amongst other factors it certifies that fair wages are paid to workers and no forced or child labour is evident. Labelling exists to support fashion brands' sustainability claims, and typically businesses apply to be certified and subsequently provided with a licence

to use the certification mark or logo on their products. A full and comprehensive label directory can be found on the Siegelklarheit website, an initiative of the German Federal Government (<https://www.siegelklarheit.de/en>). Through its Sustainability Standards Comparison Tool (SSCT), Siegelklarheit functions to compare and assess sustainable or eco labels, rating them with the purpose of setting a standard to incentivise fashion brands to improve on their sustainability practices. Performance ratings of the labels assessed are reported on their website.

Compared to free-form communication, eco or sustainability labelling offers credibility to sustainable marketing communications. In addition to these and Siegelklarheit's comparison tool, which aggregates these labels, are third-party companies who also develop rating systems that assess and report on fashion brands. Rather than their output being a label, they publish reports which are available in the public domain. As with labelling, they function to measure, for example, relative levels of sustainability compliance and performance or goals set by the organisation who devised the rating systems. Often called indexes, examples of organisations who produce reports are the online trade magazines *Business of Fashion*, *Stand.earth*, a not-for-profit social enterprise, and *Fashion Revolution*. In some instances, a rating system is devised by the fashion brand themselves; for example, Gucci designed their own index called Environment, Profit and Loss (EPL). Using six criteria in its rating system, it measures the environmental footprint across all its operations and supply chain, including end of life (Gucci Equilibrium, 2021).

## Measuring Sustainability

From a sustainable marketing perspective, the benefits of rating systems are that they provide the opportunity to generate positive marketing. Reported ratings, either by a third party or the fashion brand themselves, evidence transparency in what the business is doing. For any rating system to be dependable and verifiable, independently set criteria need to be designed into the system.

Being informed by the TBL and devising criteria from the environmental and social elements of this framework is a typical approach for designing a system (Szabó and Körtvési, 2022). An alternative is Halme and Laurila's (2009) framework wherein they identify three ways sustainability might be measured, these being philanthropy, integration and innovation.

Since the 1990s numerous rating systems have emerged (Morris et al, 2021). Szabó and Körtvési's (2022) study identified 13 rating systems relevant to fashion brands, which they classified by: those emphasising environmental criteria; those emphasising social criteria; and those that used all three dimensions, that is, including the economic dimension. However, although some did include it, the economic dimension was predominantly ignored by the systems they examined. Neglecting this neglects the Triple



Bottom Line approach to sustainability. As an example of the importance of the economic dimension, a fashion brand may be the major employer in a particular geographical area, hence, contributing significantly to sustaining a community and its local economy. This was indeed the case in when in 2007 Burberry closed its manufacturing operations at Treorchy, a small town in Wales. Prior to this date, they had been the largest employer in the area for many years. Burberry's stated rationale for the closure was that they could source products overseas at a much lower cost (House of Commons, 2009). Gbolarumi et al. (2021, p. 2) also identify that assessment rating systems are biased towards either social or environmental issues only or both. They too identify that there is little or no consideration of the economic dimension, which is problematic. As they point out, "due to its contribution to export, industrial production, foreign exchange and employment", the textile and garment sectors contribute significantly to an economy (Gbolarumi et al., 2021, p. 2).

Given the multi-tier design of many fashion supply chains, applying TBL dimensions in measuring a fashion brand's commitment to sustainability requires scrutiny. Further, many fashion brands, operating on a global basis, are dependent upon both suppliers and sub suppliers (Mejías et al., 2019). However, as Mejías et al. (2019) point out, traceability in management systems has typically focused on the buyer-supplier relationship, that is the retailer and the garment manufacturer. One explanation for this may be fashion brands' response to the collapse of the Rana Plaza building in Dhaka, Bangladesh in 2013, which housed five garment factories, and the subsequent Bangladesh Accord, which sought to protect health and safety of workers in the Bangladeshi Ready-Made Garment (RMG) Industry.

More recent consideration of all elements of and intermediaries in the supply chain may in part be due to greater interest in and fashion brands' movement from a linear to a circular economy, this being from the cradle to grave or "take-make-use-dispose" approach to an approach wherein raw materials and finished garments last for more than one consumption cycle, sometimes referred to as cradle to cradle or loop approach. Rating systems that are designed to capture and measure indicators throughout the multiple levels and tiers of the supply chain, and reported in the media, prompt fashion brands to improve on their sustainability practices.

Adopting the tier approach and drawing on the ethos of the circular economy, in which everything is engineered to be reused or recycled to keep resources in use as long as possible, Table 15.2 illustrates the scope of intermediaries involved in production of a garment from raw materials to retail distribution and beyond. The final column of the table provides examples of "loop" opportunities that potentially could be captured, measured and integrated into the design of a rating system.

**Table 15.2:** Tiers of suppliers in fashion and loop opportunities (adapted from Drew et al., 2020).

<b>Tiers of suppliers</b>	<b>Activities</b>	<b>Loop opportunities that can be captured and measured</b>
4 Fibre	Raw material cultivation, extraction from either plants, animals or the ground e.g. wool fibre from sheep	Only a small amount of raw wool is suitable for the textile industry. Waste raw wool can be used as a source of slow-release nitrogen in weed and pest control (Rajabinejad, Bucişcanu & Maier, 2019)
3 Yarn	Raw material processing into yarn e.g. wool fibre into wool yarn	Wool yarn waste can be shredded to turn back into fibres then re-spun into yarn
2 Fabric	Fabric and trim manufacture e.g. knitted or woven fabrics	Unused woollen fabric can be deconstructed and woven or knitted into other products e.g. rugs
1 Garment	Garment manufacture – cut, sew and finish e.g. woollen knitwear/ jumper	Woollen garments unfit for market can be broken down and used in other products e.g. padding or insulation
0 Retail Stores, Offices, Warehouses	Fashion brand's buildings not involved in production processes e.g. brand's headquarters, retail outlet and distribution centres	Build on brown field site or reclaimed land e.g. Westfield London was formerly a railway depot. The Gucci Hub in Milan was a redevelopment project as it was the former Caproni factory (aircraft manufacturer)
Use phase	Washing, dry cleaning, ironing and general care	Increased clothing use through repair e.g. replace a button/ a zip or sell/ pass on for others to use e.g. sell to a subscription service/ donate to charity
End of life phase		Recycle (including upcycling and downcycling) e.g., cut up to be used as dusters

## Rating System Methodologies

In addition to assessing TBL indicators, organisations who have developed rating systems, typically, provide an account and justification for the methodological approach. Some of these accounts are vague, however, a sample of those whose methodologies are clear are presented in Table 15.3, these being, Fashion Revolution (Fashion Revolution, 2022), Business of Fashion (Business of Fashion, 2021b), and Stand.earth (Stand.earth, 2021). Methodologies include criteria for the sample of fashion brands selected. Given the large number, an assessment of all fashion brands operating in the UK alone would be a mammoth task. To offer some perspective, according to the UK Fash-

ion and Textile Network (ukft.org), in 2020 there were 34,045 businesses operating in the UK fashion and textile sector across retail, wholesale and manufacturing with 16,905 in retail.

As can be seen in Table 15.3, it is the largest fashion brands who are assessed i.e., large in terms of revenue or turnover. Method of data capture is via self-reporting, with data verified by experts post capture. For two organisations in Table 15.3, self-reporting was in the form of a questionnaire. For the third organisation, Stand.earth, data was captured via a dialogue with the company. In addition to self-reporting, for all three organisations, sources in the public domain were drawn on. These include fashion brands' sustainability and annual reports, company websites and social media accounts, media and press releases and for Stand.earth, submissions to the Carbon Disclosure Project (CPD).

Whilst the organisations who rate fashion brands do so under the umbrella of sustainability, capturing this is very complex. To understand explicitly what is being measured, it is important to further scrutinise the methodology. Fashion Revolution's Fashion Transparency Index takes care to explain it is not sustainability impact that is being rated. Rather, as the Index's title makes explicit, it is transparency, that is, what the fashion brand publicly discloses on human rights and environmental policies, practices and impacts. Alternatively, the Business of Fashion's Sustainability Index states its purpose is to explicitly measure actions to track fashion's progress towards environmental and social transformation. Hence, it seeks to measure progress as opposed to capture current practices. Stand.earth's Fossil Free Fashion Scorecard seeks to measure actions and commitments. This scorecard assesses solely environmental dimensions.

With regards to the audiences of rating systems, Fashion Revolution indicate it is the fashion brands themselves. They state the purpose of the Fashion Transparency Index is to incentivise brands to disclose information. Hence, the opportunity to compare themselves against their competitors' practices serves as a motive to improve their own performance. Further, Fashion Revolution state their rating system is not for the purposes of a consumer shopping guide. Rather, along with other stakeholders, including investors and trade unions, the rating system responds to demand for greater transparency. The Business of Fashion state the aim of their rating system is to create a transparent and trusted benchmark. Stand.earth's rating system also functions as a benchmark tool, in this case, in response to the many fashion brands who pledged, via the Fashion Industry Charter for Climate Action, to take steps to cut the climate emissions.

Whilst selecting one rating system, fashion brands can compare themselves to their competitors, however, given the different methodologies and indicators selected, comparisons across rating systems cannot be made.

**Table 15.3:** Fashion sustainability rating systems relevant to fashion brands(compiled by the author using Stand.earth, 2021; Fashion Revolution, 2022; Business of Fashion, 2021b; 2021c).

Rating System	Rating Criteria Categories	No. of Indicators	Sample	Source & Method of Data Capture	Methodology
Fossil Free Fashion Scorecard (Stand. Earth) 2021 Report	<ul style="list-style-type: none"> <li>- Climate Commitments and Energy Transparency</li> <li>- Renewable &amp; Energy Efficient Manufacturing</li> <li>- Renewable Energy Advocacy</li> <li>- Low Carbon and Longer Lasting Materials</li> <li>- Greener Shipping</li> </ul>	15	47 leading apparel and footwear companies	<ul style="list-style-type: none"> <li>- Public domain</li> <li>- Company dialogue</li> </ul>	Assessment is based on a brand's commitment and actions to reduce climate pollution Evaluations are scored via letters F for lowest, A+ for highest Each category is weighted differently to obtain the final overall score for a fashion brand
The Fashion Transparency Index (Fashion Revolution) 2022 Report	<ul style="list-style-type: none"> <li>- Policies &amp; Commitments</li> <li>- Governance</li> <li>- Supply Chain Traceability</li> <li>- Know, Show &amp; Fix</li> <li>- Spotlight for 2022 (e.g. Decent work, Gender and racial equality, Sustainable sourcing and materials, Overconsumption and business models, Waste and circularity, Water and chemicals, Climate change and biodiversity)</li> </ul>	246	250 of the largest brands (annual turnover over USD \$400 million)	<ul style="list-style-type: none"> <li>- Public domain</li> <li>- Company Questionnaire</li> </ul>	Assessment is based on transparency For each category, a brand is rated out of a total of 250 points. This figure is then presented as a percentage Each category is weighted differently to obtain the final overall score for a fashion brand

(continued)

Table 15.3 (continued)

Rating System	Rating Criteria Categories	No. of Indicators	Sample	Source & Method of Data Capture	Methodology
Business of Fashion 2021 Report	<ul style="list-style-type: none"> <li>- Transparency</li> <li>- Emissions</li> <li>- Water &amp; Chemicals</li> <li>- Materials, Workers' Rights</li> <li>- Waste</li> </ul>	338	15 of the largest publicly listed brands (by annual revenue)	<ul style="list-style-type: none"> <li>- Public domain</li> <li>- Company Questionnaire</li> </ul>	<p>Fashion brands are assessed on their progress towards a series of targets A point is awarded when sufficient public information is provided to indicate a performance criterion is met</p> <p>Points are converted and presented as percentages</p> <p>Each category is weighted equally</p>

## Limitations of Rated Systems

Both academics and the organisations themselves raise several limitations associated with rating systems. These are outlined below.

### Distance to Suppliers

The ability to capture accurate information, which is then subsequently used to measure a rating, faces a key challenge in distance to suppliers. Mejias et al. (2019) identify three types of distance, geographical, cultural and organisational. Organisational refers to both the length of the supply chain and the number of intermediaries in a supply chain. All these forms of distance potentially contribute to potentially diminishing accuracy of information. One problem relating to organisational distance is lack of contractual relationships between a buying firm and its second-tier suppliers (Mejias et al., 2019).

### Self-Reporting

Horton (2022) lists problematic consequences of data capture via self-reporting as being failure to report bad practices or report facts that lack substance. Further, information sourced only from the public domain excludes what is happening internally in an organisation and therefore limits the scope for transformative impact of a rating system. Public disclosure drives public accountability (Fashion Revolution, 2022). Business of Fashion (2021) support this as they state public disclosures are an imperfect barometer of performance. For this reason, they indicate “the results should be viewed as a proxy for sustainability performance and not an absolute measure”.

### Content of Disclosure

Relating to self-reporting, Deeley (2022) provides examples of shortcomings in the content of disclosure: “45 percent of brands have set time-bound targets to source more sustainable materials, but just 37 percent define what they mean by that . . . just 4 percent of companies disclose how many workers are paid a living wage.”

### Changing the Methodology

With the intention to improve, organisations make changes to their rating systems e.g. adapting the methodology. For example, the Fashion Transparency Index made revisions between 2021 and 2022 to emphasise the importance of demonstrating prog-

ress and monitoring, not just commitments, subsequently making year on year comparative assessments on performance improvements difficult.

## Ignoring the Economic Dimension

As identified in the above literature and evident in the examination of the three rating systems presented in Table 15.3, the economic dimension of the TBL is ignored or not made explicit. Although instances of fashion retail brands cancelled orders, delayed payments and breaches of contractual obligations may be captured via governance indicators, the economic consequences of such are ignored.

## Conclusion

Rating systems benefit fashion brands by providing them with a further opportunity to make transparent sustainable practices, hence, adding reliability and decreasing the bias in their own sustainability reporting and free form communications. Yet ironically, the source of rating systems is from the fashion brands themselves, which, as indicated above, is problematic in terms of what is selected for disclosure. Nevertheless, the conclusion of this chapter is that, although not the intended purpose, rating systems serve to enhance sustainability marketing efforts of fashion brands and, in doing so, enhance brand equity.

Problems identified with disclosure calls for greater scrutiny and legislation. Consumers themselves, investors and activist organisations all have a role to play in demanding this (Deeley, 2022). Current proposed EU legislation is the Corporate Sustainability Reporting Directive (CSRD), which requires all large companies to publish regular reports on their environmental and social impacts (Fashion Revolution, 2021). Such legislation supports disclosure as part of normative action in which reporting becomes established as best practice (Morris et al., 2021).

## References

- Blagov, Y., & Petrova-Savchenko, A. (2021). The transformation of corporate sustainability model in the context of achieving the UN SDGs: evidence from the leading Russian companies. *Corporate Governance*, 307–321. <https://doi.org/10.1108/CG-01-2020-0047>
- Britten, F. (2022, June 28). Fashion brands pause use of sustainability index tool over greenwashing Claims. *The Guardian*. <https://www.theguardian.com/fashion/2022/jun/28/fashion-brands-pause-use-of-sustainability-index-tool-over-greenwashing-claims>

- Brun, A., Castelli, C., & Karaosman, H. (2017). A focused supply chain strategy for luxury fashion management. *Journal of Fashion Marketing and Management*, 544–563. <https://doi.org/10.1108/JFMM-03-2017-0026>
- Brydges, T., Henninger C.E., & Hanlon, M. (2022). Selling sustainability: investigating how Swedish fashion brands communicate sustainability to consumers. *Sustainability: Science, Practice and Policy*, 18(1), 357–370.
- Business of Fashion. (2021a). The sustainability gap.
- Business of Fashion. (2021b). The sustainability index. <https://www.businessoffashion.com/reports/sustainability/measuring-fashions-sustainability-gap-download-the-report-now/>; <https://www.businessoffashion.com/reports/sustainability/measuring-fashions-sustainability-gap-download-the-report-now/>
- Business of Fashion. (2021c). FAQs: The BoF sustainability index. <https://www.businessoffashion.com/articles/sustainability/faqs-the-bof-sustainability-index/>
- Caradonna, J.L. (2014). *Sustainability: A History*. Oxford University Press.
- Chan, S., Creel, T., Song, Q., & Yurova, Y. (2021). Does CSR reporting indicate strong Corporate governance? *International Journal of Accounting and Information Management*, 27–42. <https://doi.org/10.1108/IJAIM-07-2020-0099>
- Deeley, R. (2022). *Fashion's transparency efforts fall short on fundamental data points*, *Business of Fashion*. <https://www.businessoffashion.com/articles/sustainability/fashions-transparency-efforts-fall-short-on-fundamental-data-points/>
- Drew, D., Dickerson, A., Gillick-Daniels, A., & Metzger, E. (2020). Square your circle. World Resources Institute. <https://doi.org/10.46830/wrigb.19.00091>
- Elkington, J. (1997). *Cannibals with forks – Triple bottom line of 21st century business*. New Society Publishers.
- Fashion Revolution. (2022). *Fashion transparency index*. <https://www.fashionrevolution.org/about/transparency/>
- Gbolarumi, F.T., Wong, K.Y., & Olohunde, S.T. (2021). Sustainability Assessment in The Textile and Apparel Industry: A Review of Recent Studies. IOP Conference Series: Materials Science and Engineering. <https://iopscience.iop.org/article/10.1088/1757-899X/1051/1/012099/meta>
- Gucci Equilibrium. (2021). *Gucci equilibrium report*. <https://equilibrium.gucci.com/impactreport-2021>
- Halme, M., & Laurila, J. (2009). Philanthropy, integration or innovation? Exploring the financial and societal outcomes of different types of corporate responsibility. *Journal of Business Ethics*, 84(3), 325–339.
- Henninger, C.E., Niinimäki, K., Blazquez, M., & Jones, C. (2022). *Sustainable fashion management* Taylor & Francis.
- Horton, H. (2022, March 11). Greenwashing UK fashion firms to be named and shamed by watchdog, The Guardian. <https://www.theguardian.com/fashion/2022/mar/11/greenwashing-uk-fashion-firms-to-be-named-and-shamed-by-watchdog>
- House of Commons. (2009). Globalisation and its impact on Wales, House of Commons Welsh Affairs Committee. <https://publications.parliament.uk/pa/cm200809/cmselect/cmwelaf/184/18402.htm>
- Karaosman, H., Perry, P., Brun, A., & Morales-Alonso, G. (2018). Behind the runway: Extending sustainability in luxury fashion supply chains. *Journal of Business Research*, 90, 1–19. <https://doi.org/10.1016/j.jbusres.2018.09.017>
- Jacobs, B. (2022). How to be a sustainable fashion lover – and why it matters. BBC.com. <https://www.bbc.com/culture/article/20220329-how-to-be-a-sustainable-fashion-lover-and-why-it-matters>
- Kent, S. (2022). Norway warns H&M, Norrøna over misleading sustainability claims. *Business of Fashion*. <https://www.businessoffashion.com/articles/sustainability/hm-norrøna-norway-sustainability-environmental-marketing-higg/>
- Kotler, P. (2011). Reinventing marketing to manage the environmental imperative. *Journal Of Marketing*, 75(4): 132–135.
- McKinsey and Company. (2021). *State of fashion report*. McKinsey Global Institute. <https://www.mckinsey.com/industries/retail/our-insights/state-of-fashion>



- McKinsey and Company. (2022). *In search of fashion's sustainability seekers*, McKinsey and Company. <https://www.mckinsey.com/industries/retail/our-insights/in-search-of-fashions-sustainability-seekers>
- Mejías, A.M., Bellas, R., Pardo, J.E., & Paz, E. (2019). Traceability management systems and capacity building as new approaches for improving sustainability in the fashion multi-tier supply chain. *International Journal of Production Economics*, 217(2019), 143–158.
- Morris, J., Koep, L., & Damert, M. (2021). Labels in the textile and fashion industry: Communicating sustainability to effect sustainable consumption. In *Sustainable Textile and Fashion Value Chains* (pp. 257–274).
- NBS. (2021). *What is sustainable marketing? The Network for Business Sustainability (NBS)*. <https://nbs.net/what-is-sustainable-marketing/>
- Phipps, M., Ozanne, L.K., Luchs, M.G., Subrahmanyam, S., Kapitan, S., Catlin, J.R., et al.(2013). Understanding the inherent complexity of sustainable consumption: a social cognitive framework. *Journal of Business Research*, 66(8),1227–1234.
- Pucker, K. (2022). The myth of sustainable fashion. *Harvard Business Review*. <https://hbr.org/2022/01/the-myth-of-sustainable-fashion>
- Purvis, B., Mao, Y., & Robinson, D. (2018). Three pillars of sustainability: in search of conceptual origins. *Sustainability Science*. <https://doi.org/10.1007/s11625-018-0627-5>
- Rajabinejad, H., Bucişcanu, I.I., & Maier, S.S. (2019). Current approaches for raw wool waste management and unconventional valorization: A review. *Environmental Engineering & Management Journal (EEMJ)* 18(7).
- Stand.earth. (2021). *Fossil-free fashion scorecard*. <https://www.stand.earth/sites/stand/files/stand-fossil-free-fashion-scorecard.pdf>
- Szabó T., & Körtvési, D. (2022). *Fashion industry sustainability rating systems from the perspective of fashion SMEs*. [https://www.researchgate.net/profile/Dorina-Koertvesi2/publication/359606175\\_Fashion\\_industry\\_sustainability\\_rating\\_systems\\_from\\_the\\_perspective\\_of\\_fashion\\_SMEs/links/6277ba6e107cae291994cefa/Fashion-industry-sustainability-rating-systems-from-the-perspective-of-fashion-SMEs.pdf](https://www.researchgate.net/profile/Dorina-Koertvesi2/publication/359606175_Fashion_industry_sustainability_rating_systems_from_the_perspective_of_fashion_SMEs/links/6277ba6e107cae291994cefa/Fashion-industry-sustainability-rating-systems-from-the-perspective-of-fashion-SMEs.pdf)
- Turunen, L.L.M., & Halme, M. (2021). Communicating actionable sustainability information to consumers: The Shades of Green instrument for fashion. *Journal of Cleaner Production* 297. <https://doi.org/10.1016/j.jclepro.2021.126605>
- Ziolo, M., Filipiak, B.Z., Bąk, I., & Cheba, K. (2019). How to design more sustainable financial systems: The roles of environmental, social, and governance factors in the decision-making process. *Sustainability*, 11(20).

---

Part VI: **Circular Initiatives as Sustainable  
Alternatives for End of Life**



Aidin Salamzadeh\*, Morteza Hadizadeh, Yasaman Yazdanpanah and  
Agu Godswill Agu

# 16 Marketing Innovation Drivers: Toward Reusing and Recycling

**Abstract:** Due to a continuous increase in polluting and destructing resources, environmental protection has become an unprecedented ultimatum that requires the attention of businesses and governments. Information technologies can help companies to be effective in forming a resilient and green society in addition to the competitiveness scope and meeting the new customer needs. Over the past few decades, technological advancements have developed exponentially, especially in the field of artificial intelligence (AI). Digital technology applications based on artificial intelligence (AI) have also been accepted and expanded in the fashion industry to improve products, services and new ways of communication, such as virtual reality and social media platforms. In this research, we identified drivers of marketing innovations in the fashion industry by reviewing library research and taking advantage of the panel of experts, consisting of startup executive managers and academic faculty members in fashion design and computer engineering.

**Keywords:** fashion, marketing, artificial intelligence, innovation, reuse, recycling, futurology

## Introduction

Production, marketing and consumption of fashion products have negative environmental effects (Thorisdottir & Johannsdottir, 2019). The sustainable agenda has developed over the last four decades and has emphasised the collaboration among governments and firms by performing strategies focused on sustainability-related areas (Drexhage & Murphy, 2010).

Fashion is the second most environmentally destructive industry after oil (Moorhouse & Moorhouse, 2017). As a result, there are increasing pressures from the market

---

\***Corresponding author: Aidin Salamzadeh**, Faculty of Management, University of Tehran, Tehran 1411713114, Iran, e-mail: salamzadeh@ut.ac.ir; <https://orcid.org/0000-0001-6808-1327>

**Morteza Hadizadeh**, Faculty of Management and Accounting, Shahid Beheshti University, Tehran 1983969411, Iran, e-mail: hadizadeh@bzte.ikiu.ac.ir; <https://orcid.org/0000-0002-2595-8560>

**Yasaman Yazdanpanah**, Isfahan University of Art, Isfahan, e-mail: Yazdanpanah6970@gmail.com; <https://orcid.org/0000-0003-4552-6949>

**Agu Godswill Agu**, Department of Marketing, Abia State University, Nigeria, e-mail: godswill.agu@abiastateuniversity.edu.ng; <https://orcid.org/0000-0002-7050-9430>

and beneficiaries to apply sustainable environmental methods. Consequently, sustainable strategies can be implemented as an instrument to create more value for the customers and improve the brand image. While devising digital transformation strategies, firms must also consider sustainable environmental strategies (Aron & Molina, 2020; Neutzling et al., 2018; Tariq et al., 2017).

On the one hand, developing political, economic and cultural relations have increasingly formed an interconnected world, and notions like the digital sharing economy have led to redefining business efficiency to achieve sustainability (Sarc et al., 2019). Industrial processes are constantly evolving at the same time. Then, the need to gain competitive advantages in production has historically been a driving force for developing new economic mechanisms. Since the beginning of industrialisation, a technological leap has occurred from time to time that transformed the concept of industrial production. For instance, industry 4.0 is part of the realisation of an integrated and united world that has evolved through the ICT revolution. Technological changes in Industry 4.0 occur through smartness which electronically connects the industry with internal and external supply chain networks through the internet of things (Liao et al., 2017; Ślusarczyk, 2018). Many organisations that have not accepted IT are striving for survival. In contemporary firms, business units have the same vision for the future regardless of their departments and activities. Therefore, every sector uses Industry 4.0 to achieve capabilities in product customisation. However, there is still a high consumption of resources, raw materials, information and energy with Industry 4.0, which is environmentally unsustainable despite its many benefits. It has also made society and the public aware of the threats (McWilliams et al., 2016). Technologies of Industry 4.0 and digital innovations have recently positively impacted the promoting of circular economy (CE), for example, through product life cycle analysis. Accordingly, there is a need for a close collaboration between industries, consumers and politicians to gain more accurate and detailed information about the product life cycle, waste collection and consumers' behaviour. In this regard, digitalisation can help track products by transmitting real-time data about the products' location, status, availability, etc., extending product life expectancy through sensors and digital platforms.

In order to reach more efficient and effective circular economy solutions, close cooperation between different players in the circular textile ecosystem is required where consumers are at the core of such an ecosystem. In this sense, the internet of things plays a fundamental role by transmitting information and data to all players and improving their awareness of new circular opportunities (Ghoreishi & Happonen, 2022). Recently, fashion studies have received increasing attention from computer vision, machine learning and artificial intelligence (Gu et al., 2020). Artificial intelligence (AI) involves machines that learn from experience, adapt to new inputs and perform tasks like humans (Duan et al., 2019). In this chapter, we review the extant literature to identify the driving forces of marketing innovations in the fashion industry by forming a panel of experts.

## Related Literature

### Sustainability in the Fashion Industry

Nowadays, sustainability is an essential issue at all levels of society. Sustainability means using resources to meet the needs of current and future generations without jeopardising ecosystems. This global sustainability trend has led to many innovative business strategies in various companies selling fashion products (Caniato et al., 2012; Dana et al., 2022; Dana & Salamzadeh, 2021; Morelli, 2011; Toghraee et al., 2022). There are some limitations to ensuring that natural resources are not overused at a constant rate higher than the renewal rate of these resources. Also, one should not overlook the environment's capacity to absorb these wastes. Therefore, the focus should be on renewable natural resources as an alternative to non-renewable resources (Zhu et al., 2015). The production of massive waste, which mainly consists of goods that are not disposed of, leads to huge irreparable damages to our planet and ecosystem and constitutes the experience of a global environmental crisis.

The supply of textiles and their components is an integral part of the fashion industry, but the fabric has large environmental impacts. For example, Woodside & Fine (2019) claim that at least 8,000 chemicals are used to transform raw materials into textiles. Also, cotton is the most common crop worldwide, but it takes 20,000 litres of water to grow one kilogram of cotton. Much pesticide is used on cotton and almost 1% of the global CO<sub>2</sub> emissions are produced by cotton agriculture (Organic Cotton Plus, 2017).

Advanced societies are trying to reduce the environmental pollution caused by industries by limiting resource consumption (Sandhiya et al., 2021). Significant efforts have been made to promote consumers' sustainable consumption, and sustainability has become an important issue in marketing theory and practice (Di Benedetto, 2017). According to the losses incurred to the environment and the environmental crises, paying attention to sustainability has become necessary, and it requires the most advanced and newest solutions. However, despite the abovementioned points, and although the consumers are aware of resource limitations and their importance, we are still far from sustainable consumption, and the demand for products is much more than the real needs. Therefore, there is a big difference between sustainable consumption and real behaviour (Terlau & Hirsch, 2015; Sogari et al., 2017). Industry, innovation and infrastructure have emerged to form Industry 4.0 with smart factories that carry out smart production through innovative methods that encourage research and development of technology to increase efficiency and effectiveness (Lentner et al., 2019).

The fashion industry should be considered an important and interesting area to evaluate the consequences of the so-called Industry 4.0 and digital transformation paradigms. Fashion is a proper context for studying for several reasons. From a diachronic perspective, this sector has played a key role during the industrial revolutions over the centuries and has historically been considered a "design-driven" sector. Most designers

and managers work together to create a brand and a successful business model through which they can interact (Bertola & Teunissen, 2018). In the fashion industry, the concept of sustainability has been synonymous with “eco-friendly”, “green”, “ethical”, and “sustainable” fashion (Leahy, 2019; Min Kong & Ko, 2017). Thus, some fashion companies have tried to increase sustainability by reengineering their business processes (Morelli, 2011), and in certain cases creating formal programs with a 5R approach (Reduce, Reuse, Recycle, Redesign, Reimage) to achieve sustainability (Ho & Choi, 2012; Li et al., 2015).

Some firms have offered a digital solution for preserving selected clothing with the advent of artificial intelligence and virtual simulation of clothing. Some researchers have focused on reconstructing historical three-dimensional clothes and have successfully studied the restoration of old clothes and virtual mannequins (Moskvin et al., 2020). In general, with its technological development, digitalisation strengthens the transition towards circular economy models by supporting the analysis of massive data about the products and materials in their life cycle from the design stage up to the end of life and recycling stages. The digitalisation helps extend a product’s life through data analysis and transformation processes such as product maintenance services or digital platforms used to resell second-hand products (Ghoreishi et al., 2020).

## Reuse and Recycle

The textile and apparel industries are moving towards circular economy models such as recycling and reuse. Here, production flow is reduced by reusing, recycling, or minimising waste. For instance, the 2008 Waste Framework Directive (WFD) was introduced accordingly. The effects of recycling can affect the reduction in prices. In this regard, it is crucial to understand customers’ views because the customer experience plays an important role in the adaption of CE products (European Parliament and Council, 2021; Ta et al., 2022). Therefore, attracting customers, their interests, engagements and retention, learning customer preferences and communicating with customers are key strategies in building strong customer relationships. However, many firms ignore the long-term aspects of customer relationship management (Nikunen et al., 2017). From a customer perspective, there is an increased customer acceptance of recycled and reused materials and products (Vehmas et al., 2018). Then, firms can develop their business models based on the products designed for reusing or recycling. Moreover, social media influencers’ support of second-hand clothes causes the adoption of online platforms for second-hand clothing retailers (Shrivastava et al., 2021; Salamzadeh et al., 2022, a, b). Using digital technologies in marketing offers several advantages for marketers in their customer relationships. The customers’ perceived value of using digital channels and interacting with marketing can be increased accordingly. Regular communication with customers through digital marketing communication (DMC) provides marketers with new ways to form customer relationship management.

It can be argued that digital solutions can play a critical role in supporting the creation of CE, and digital development can help remove the obstacles throughout the value chain accordingly. Also, they can help improve product design, manufacturing processes, the use of recycled products and waste management. Digitalisation could change the current linear models, reduce resource consumption and even support dematerialisation (Hedberg & Šipka, 2021). Research on the overlap between fashion and digital technologies is growing and attracting the interest of academics and practitioners (Noris et al., 2021). Today, the fashion industry players interact with information and communication technologies at different levels, helping adopt digital media and develop reusing and recycling (Janigo & Wu, 2015; Rocamora, 2017). Data analysis is critical for implementing successful strategies in the business context. Besides, technologies such as artificial intelligence play a significant role in this industry (Duan et al., 2019). Artificial intelligence integrates thousands of computers and other resources to solve some problems, achieve goals and reach the desired result. With the use of AI, business practices have evolved in various industries. Since the decisions made by AI are derived from objective data and are far from cognitive and emotional biases, they differ from the results obtained by experts (Nishant et al., 2020).

AI rapidly changes digital marketing practices (Mogaji et al., 2020). As the nascent technology of the “fourth industrial revolution”, it can support and accelerate human innovation to design fashion developments in sustainable future cities (Kadar & Kadar, 2020). AI aims to study new ways to attract new customers and expand the business. Even the fashion industry has benefitted from the business advantages of Instagram in this rapid and competitive industry. AI appears promising and can change Instagram users’, advertisers’ and influencers’ approaches (Yeo et al., 2022).

## Marketing Innovations and Using Artificial Intelligence

Fashion is an integral part of human life around the world, affecting the life and career of many people in society. On the one hand, according to previous research in fashion marketing, the share of AI in the fashion market was globally estimated 419.70 million dollars in 2021, and it is expected to reach 500.66 million dollars in 2022 and over a billion dollars in 2027 (ReportLinker, 2022). On the other hand, various resources, such as human resources, environmental resources, etc., are used in producing different fashion products (Sandhiya et al., 2021). With the help of digital technologies and fashion product customisation, the consumer purchase intention may change, and they will be more willing to purchase the products that meet their needs as explicitly as possible (Meng, 2022). It would prevent the accumulation of goods and lead to sustainable economic and environmental savings. It is noteworthy that a significant part of the waste produced in the fashion industry was because of the poor marketing strategies resulting from customer dissatisfaction with the product size, colour or style (Eppinger, 2022; Piippo et al., 2022). Therefore, reducing waste with smart recycling of products is



necessary to improve customer satisfaction and create a sustainable digital supply chain. The ultimate value of AI is not merely limited to reducing natural resources and the energy consumed by human activities. It is rather beyond these issues, and its ultimate goal is to create a new attitude and thought for facilitating and strengthening sustainability in the industry (Linkov et al., 2018). AI systems try to identify as much human behaviour as possible, like seeing and hearing and imitating it in the best possible way (Russell & Norvig, 2016). The fashion industry's recycling process should focus on the design so that the consumer can participate in the entire design process with the producer. Thus, the output would meet all the individual needs and the most suitable product for each customer would be produced in the shortest time (Qiu & Ma, 2021).

Some startups and applications based on AI can significantly help customers in the process of purchasing and ordering products. For instance, Zeekit is a startup in the field of fashion that Walmart acquired. Using AI, this company has come up with virtual fitting rooms for customers allowing them to try on the products in their size without physically touching them or even visiting the store. Also, Goodstyle application is a digital fitting room with a personal virtual stylist that helps people find their style and choose their favourite style from various fashion products with the help of customised recommendations from AI.

## The Process of Selling

AI can make significant changes in all parts of society and be implemented in all stages of the value chain (Silvestri, 2020). One of the stages that leaves the greatest impact and footprint on the environment is the product design stage (EU Science Hub, 2022). On the other hand, new products' lifecycle in the fashion industry is very short for each season (Ceptureanu et al., 2018). As a result, it is very difficult to accurately predict product sales in any specific period. Using AI, every company and designer can predict the process of affecting the audience (Silvestri, 2020). One of AI's most valuable use case is achieving valuable sustainable business goals (Candeloro, 2020).

Brands such as H&M use AI, data analysis programs and 3D visualisation to predict the customer demand and desire and, accordingly, reduce the excessive accumulation of unsold clothes that end up as waste and improve their sales process towards sustainability. They calculated the probability of selling one product instead of another product (De Bruyn et al., 2020; McKinsey, 2018). They have transformed customer purchase behaviour using AI-based digital technologies and marketing programmes. Yeo et al. (2022) used Engel Kollat Blackwell (EKB) theory in their research to analyse the effects of digital technology based on AI and its applications in manipulating buying decisions of fashion products on Instagram. They have shown how the buyers' views and understanding have changed industry through AI on social media. Online fashion marketing has improved customer experiences by customising and understanding new concepts in the new world of digital fashion (Nobile & Kalbaska, 2020).

Heuritech is a fashion forecasting agency that uses data analytics, AI and image processing technologies to analyse photos on social media, especially Instagram and Weibo, to predict trends. The forecasting process of this agency is briefly explained below:

- (i) **Audience definition:** at first, it defines a relevant panel, using random sampling among the audience interested in fashion on social media.
- (ii) **Image analysis:** then, by using computer vision technology, it defines and categorises photos and clothing components, and by monitoring the details of key trends (from shapes and features to fabrics, patterns, prints and colours) and through data analysis over time. How a trend evolves using prior data gives a comprehensive view of the market, making this information quantitatively accessible and comparable.
- (iii) **Trend prediction:** it predicts the fashion trends until a year before, using machine learning algorithms (ML) to predict the future and other algorithms to integrate the predictions of fashion items that have been followed.
- (iv) **Inform fashion brands:** finally, when the trend forecasting results have been published on the platform, sellers and designers can use these results and make conscious decisions about their next products.

Some famous brands like Louis Vuitton, Wrangler, Paco Rabanne, Adidas, Dior, Jimmy Choo and Lee have been mentioned as this agency's clients.

## Consumer Behaviour

AI can also affect consumer purchase behaviour and move towards sustainability by informing and educating customers about the products' production process. In this regard, Fertechn, an online luxury fashion platform, has created a partnership with its online users. It has done it by using the Farfetch fashion footprint tool on its official website and with the help of artificial intelligence, as well as with accurate calculation and publication of the environmental effects of each fabric type in garment manufacturing. It suggests alternative materials that are less harmful to the environment, shows which textiles are more sustainable than traditional textiles and leads customers to use pre-owned fashion. Footprint also shows how many primary resources are saved by choosing a pre-owned (second-hand) garment and how effectively it reduces environmental pollution (Candeloro, 2020; Salamzadeh et al., 2022 a, b; Wightman, 2020).

Among other use cases of artificial intelligence in the fashion industry, we can mention virtual fashion shows using virtual fashion. Companies like ORDRE changed the world of events and fashion shows and disrupted the traditional channels of the fashion business. In the virtual catwalk, buyers of the retail network are given virtual

reality headsets, and they can watch the show from anywhere in the world, sitting in the front row without having any physical presence there (ORDRE, 2022).

Also, ORDRE online wholesale platform offers a complementary channel to luxury brands using 360-degree cloud technology to present seasonal collections through the online showrooms. Recently, Tommy Hilfiger (an American premium clothing brand) has expanded its activity in using virtual and hyperreal models with the help of AI in 3D virtual corridors in collaboration with Elite World virtual group (Douglass, 2021). Buyers can see the fabric details by rotating, zooming and reviewing each part of the garment on the 3D models and purchase (ORDRE, 2022). According to Silvestri's research (2020) on the future of the fashion industry, it has been shown that virtual reality and AI have improved the relationship between the brand and customer's positive attitude towards the brand, and customers feel a higher level of ownership and trust which has led to a higher and more informed purchase probability that helps approach sustainability.

## Methodology

This research is exploratory and functional and takes advantage of the Delphi method to identify the innovation drivers in the fashion industry. In the current research, we identified the innovative marketing drivers based on the role of the artificial intelligence approach in reusing and recycling in the fashion industry. We determined the accuracy of the classification of drivers in the four fields of institutional and legal, economic, social and cultural, and ultimately technological, relying on the panel of experts to discover the main drivers in addition to the accuracy of the division. In the third round of Delphi, we measured the degree of certainty in the fashion industry's marketing innovations' occurrence, dimensions and effective accelerating factors. Previous research has emphasised the importance of systematically identifying strategic issues for consideration in subsequent Delphi studies. The Delphi method has been widely used in planning, policy analysis and long-term forecasting in the public and private sectors. It has also been used in various fields like education and library studies. The Delphi techniques are valuable tools for choosing which ones can be implemented. Therefore, we followed a rigorous methodology to uncover the list of strategic issues intended to form the future state of smart city policymaking.

In order to ensure the reliability of findings, it is necessary to identify and select the right experts to participate in the survey. Previous researchers have emphasised the integration of diverse perspectives in strategy development to avoid misleading consensus of stakeholder opinions with similar orientations. We argue that the participation of people with functional and scientific backgrounds in the field of marketing innovations in the evaluation of strategic issues can be a way to increase both scientific and operational aspects in perceptions about strategic matters. Therefore, we have also used academic faculty members related to the subject in addition to the

agents from startup executive managers. We specifically put the scientific and operational stakeholders in our panel because they are mainly affected by social and technical changes in urban mobility. Accordingly, this process has been conducted by the expert team consisting of 57 academic faculty members, researchers and marketing innovation managers who are experts in the field of artificial intelligence or fashion with several years of experience in the fashion industry. Academic faculty members were selected from fashion design and computer engineering fields. Executives of startups in the fashion and fashion design fields were also invited to take advantage of their experiences in marketing innovations and discovering opportunities for quick exploitation. The members of an expert team can significantly help the policy-makers with their full knowledge of the research field and generalisation of their idea in the body of fashion industry knowledge (see Table 16.1).

**Table 16.1:** Demographic characteristics of experts.

Education degree	Master's level		PhD	
		10 (20.6%)		47 (79.4%)
Type of activity	Faculty members of fashion design	Faculty members of computer engineering	Startup executive managers	
	12 (35%)	5 (5%)	17 (50%)	
Experience of activity	Less than 5 years	5–10 years	10–15 years	Over 15 years
	2 (6%)	4 (12%)	12 (35%)	16 (47%)

The face and content validity of the interview protocol is equal to 79.8%. Therefore, the validity of the interview protocol is accepted. Cronbach's alpha was used to measure reliability. The results of validity and reliability tests in the qualitative section are as follows (Table 16.2):

**Table 16.2:** Evaluating convergent validity and reliability in qualitative protocol.

Reliability	Number of respondents	All the questions		Compliance of the questions with the preliminary research model	
		34	Validity	Average	3.8
	Cronbach's alpha	0.916	Validity score		79.80

## Findings

The identified drivers from library research have been divided into four axes by obtaining the opinion of experts in two rounds of Delphi.

**Table 16.3:** Drivers and factors.

Factors & Drivers	Macro-axis	Main Driver	Index	Uncertainty	Importance
Collaboration among stakeholders	Institutional and legal	Longitudinal and transverse integration of institution	IS1	7	7
Formation of new connotations and needs					
Regulation					
Virtual communication between stakeholders					
Planning and public policy making					
Public and private partnership development					
Reduction of pollution level	Institutional and legal	Sustainable management	IS2	2	3
Consumption management and raw material quality					
Energy consumption reduction					
Reduction of raw material consumption					
Resource deficiency					
Waste Management Systems					
Sustainable management of natural resources	Institutional and legal	Strategic management	IS3	10	11
Goals and visions					
Transparent governance					
Using the experience of intelligentisation of industries					
Public safety and security					
Increase social awareness					
Environmental support					

**Table 16.3** (continued)

<b>Factors &amp; Drivers</b>	<b>Macro-axis</b>	<b>Main Driver</b>	<b>Index</b>	<b>Uncertainty</b>	<b>Importance</b>
Encouraging entrepreneurship and innovation	Institutional and legal	Innovative management	IS4	6	6
Knowledge capital development					
Labour productivity improvement					
Modern urban infrastructure					
Smart planning in the fashion industry					
Digital marketing infrastructure					
Knowledge capital expansion					
Ownership structure in cyberspace	Social and cultural	Social capital participation	CS1	8	10
Citizen participation in collaborative decision-making					
Citizenship education	Social and cultural	Social education development	CS2	9	8
Facilitating lifelong learning					
Environmental awareness					
Availability of labor (skilled and unskilled)					
Citizen empowerment	Social and cultural	Improving and developing of social services	CS3	12	14
Public and social service improvement					
Increasing urban capacity to attract tourists					
Improving the quality of life					
Interactive systems in customer relationship					
Attractive fashion tourism projects					

Table 16.3 (continued)

Factors & Drivers	Macro-axis	Main Driver	Index	Uncertainty	Importance
Innovative educational institutions	Social and cultural	Social innovation development	CS4	1	2
Knowledge sharing					
Innovative companies					
Innovative sanitary facilities					
Research and development (R&D)					
Funding from subsidies (interest-free loans, tax exemptions, cash grants, etc.)	Economic	Objective economics	E1	14	15
Using renewable energy sources, energy saving initiatives, smart energy systems	Economic	Resource depletion	E2	11	12
Conserve resource					
Business intelligence	Economic	Techno economics	E3	5	9
Energy efficiency					
Foreign investment attraction	Economic	International economic	E4	3	4
Value chain optimisation					
Business network management					
Expertise in new technology design and technology-based solutions in fashion industry Cost-effective and developed technologies suitable for local conditions in fashion recycling	Technological	Native technology	T1	15	13
Smart technologies					
Flexible working models					

**Table 16.3** (continued)

<b>Factors &amp; Drivers</b>	<b>Macro-axis</b>	<b>Main Driver</b>	<b>Index</b>	<b>Uncertainty</b>	<b>Importance</b>
Artificial intelligence	Technological	New technology	T2	4	1
Internet of things (IOT)					
Big data					
Data mining					
Data security & information security					
Smart technologies					
Social media					
3D design					
simulation 3D					
Customer behaviour analysis					
Socio-technical effects of digitalisation (impact of technology on production tasks)	Technological	Technology acceptance	T3	13	16
Acceptance of new construction technologies (smart materials, smart structure technologies, etc.)					
Integration of physical infrastructure	Technological	Technology platforms	T4	16	5
Boardband and internet access					
Platform infrastructure					

The identified drivers are presented to the panel of experts. Confirmation of the factors in two rounds of Delphi is shown as described in Table 16.3. Sixteen identified drivers have the threshold of more than three and have been approved. By conducting the third round of Delphi, factors based on the importance and uncertainty of occurrence were ranked by experts. It was done with the 5-point Likert scale: one means very little and five means very much. The final ranking of key factors is determined based on the average level of importance and uncertainty of occurrence, along with the ranking of importance and uncertainty of the factors in Table 16.4.



**Table 16.4:** Validation of drivers and key factors (KFs) based on the Delphi method.

Main driver	Average	Consensus percentage	Weight	Rank	2nd round		
					Average	Consensus percentage	Weight
<b>1st round</b>							
IS1	4.4375	56.25	0.059019119	15	4.625	65.625	0.060730406
IS2	4.90625	93.75	0.065253533	3	4.9375	93.75	0.064833812
IS3	4.75	78.125	0.063175395	7	4.78125	78.125	0.062782109
IS4	4.59375	65.625	0.061097257	11	4.625	65.625	0.060730406
CS1	4.65625	78.125	0.061928512	9	4.78125	84.375	0.062782109
CS2	4.84375	90.625	0.064422278	5	4.875	93.75	0.064013131
CS3	4.59375	81.25	0.061097257	11	4.6875	84.375	0.061551087
CS4	4.90625	93.75	0.065253533	3	4.9375	93.75	0.064833812
E	4.28125	53.125	0.056940981	16	4.34375	56.25	0.057037341
E2	4.59375	78.125	0.061097257	11	4.625	81.25	0.060730406
E3	4.9375	93.75	0.06566916	2	4.9375	93.75	0.064833812
E4	4.59375	78.125	0.061097257	11	4.78125	84.375	0.062782109
T1	4.65625	78.125	0.061928512	9	4.78125	78.125	0.062782109
T2	4.96875	96.875	0.066084788	1	4.96875	96.875	0.065244153
T3	4.6875	87.5	0.06234414	8	4.65625	87.5	0.061140747
T4	4.78125	81.25	0.063591022	6	4.8125	81.25	0.06319245

## Conclusions

This chapter has investigated the marketing innovation drivers based on the reusing and recycling approach in the fashion industry. The purpose is to understand how customers are persuaded to accept and practice reusing and recycling while increasing their awareness. We have focused on the innovations that result from artificial intelligence in investigating marketing innovations. This information helps businesses in the industry to create a powerful AI marketing plan to increase awareness. Based on this, the concept of reusing and recycling was examined in describing the performance of artificial intelligence in business environments, customers' purchase behaviour and marketing for accessing through the various digital marketing channels and platforms. The findings are consistent with those of Yeo (2022) and Zhao (2019) regarding the value of big data produced on digital platforms to discover information and the flow of their hidden knowledge in changing traditional marketing trends. In contrast, due to the research done by Brevini (2020) and Dauvergne (2022), digital technologies like artificial intelligence lead to consumerism and disrupt the sustainable cycle by persuading customers. Using artificial intelligence in marketing will bring out major changes in terms of innovation. Artificial intelligence brings a revolution to business and society. It provides companies with a set of ways to better understand, predict and interact with customers. It can enable the reusing and recycling approach as a strategy for fashion business owners during their interactions with customers. In the fashion industry, to encourage customers towards reusing and recycling and using artificial intelligence in the emergence of innovations in marketing, two axes were investigated further as follows: (i) focusing on the products' sales trend, and (ii) changing the consumers' behaviour. In order to explain the requirements that can be set as this form of marketing development drivers, we investigated and identified drivers along axes: (i) institutional and legal; (ii) social and cultural; (iii) economic; and (iv) technological. Such analysis effectively comprehends the systematic relationships between constituent parameters in the analysis of ecosystem's service flow and the green development issues (Everard et al., 2012) and (Everard 2013; 2015). The results were obtained from interviews with industry experts. The results show that sustainable management in the institutional and legal axis, the development of social innovation in the social and cultural axis, the economy of innovation in the economic axis and the development of new technologies in the technology axis are the drivers of marketing innovations towards reusing and recycling in the fashion industry. The main limitation of our research is narrowing the innovation down to the innovative effects of artificial intelligence in marketing which can lead to reusing and recycling among customers. As a suggestion for future research, investigating the other aspects of the innovation can be considered. Also, researchers can explore how the sixteen identified drivers affect each other to do further study.

## References

- Aron, A.S., & Molina, O. (2020). Green innovation in natural resource industries: The case of local suppliers in the Peruvian mining industry. *The Extractive Industries and Society*, 7(2), 353–365.
- Bertola, P., & Teunissen, J. (2018). Fashion 4.0. Innovating fashion industry through digital transformation. *Research Journal of Textile and Apparel*, 1–5.
- Brevini, B. (2020). Black boxes, not green: Mythologising artificial intelligence and omitting the environment. *Big Data & Society*, 7(2).
- Candeloro, D. (2020). Towards sustainable fashion: the role of artificial intelligence – H&M, Stella McCartney, Farfetch, Moosejaw: A Multiple Case Study. *ZoneModa Journal*, 10(2), 91–105
- Caniato, F., Caridi, M., Crippa, L., & Moretto, A. (2012). Environmental sustainability in fashion supply chains: An exploratory case based research. *International journal of production economics*, 135(2), 659–670.
- Ceptureanu, S.I., Ceptureanu, E.G., Luchian, C.E., & Luchian, I. (2018). Community based programs sustainability. A multidimensional analysis of sustainability factors. *Sustainability*, 10, 870.
- Dana, L.P., & Salamzadeh, A. (2021). Why do artisans and arts entrepreneurs use social media platforms?: Evidence from an emerging economy. *Nordic Journal of Media Management*, 2(1), 23–35.
- Dana, L.P., Ramadani, V., Palalić, R., & Salamzadeh, A. (2022). *Artisan and handicraft entrepreneurs past, present, and future*. Springer.
- Dauvergne, P. (2022). Is artificial intelligence greening global supply chains? Exposing the political economy of environmental costs. *Review of International Political Economy*, 29(3), 696–718.
- De Bruyn, A., Viswanathan, V., Beh, Y. S., Brock, J. K. U., & von Wangenheim, F. (2020). Artificial intelligence and marketing: pitfalls and opportunities. *Journal of Interactive Marketing*, 51, 91–105.
- Di Benedetto, C.A. (2017). Corporate social responsibility as an emerging business model in fashion marketing. *Journal of Global Fashion Marketing*, 8(4), 251–265.
- Douglass, R. (2021). *Tommy Hilfiger partners with virtual marketing company for future digital ventures*. Fashion United. <https://fashionunited.uk/news/fashion/tommy-hilfiger-partners-with-virtualmarketing-company-for-future-digitalventures/2021092357870>
- Drexhage, J., & Murphy, D. (2010). *United Nations climate change*. [http://www.un.org/wcm/webdav/site/cli/matechange/shared/gsp/docs/GSP16\\_Background%20on%20Sustainable%20Dev.pdf](http://www.un.org/wcm/webdav/site/cli/matechange/shared/gsp/docs/GSP16_Background%20on%20Sustainable%20Dev.pdf)
- Duan, Y., Edwards, J. S., & Dwivedi, Y. K. (2019). Artificial intelligence for decision making in the era of Big Data—evolution, challenges and research agenda. *International Journal of Information Management*, 48, 63–71.
- Eppinger, E. (2022). Recycling technologies for enabling sustainability transitions of the fashion industry: status quo and avenues for increasing post-consumer waste recycling. *Sustainability: Science, Practice and Policy*, 18(1), 114–128.
- EU Science Hub (2020). *Sustainable product policy*. EU Science Hub – European Commission. <https://ec.europa.eu/jrc/en/research-topic/sustainable-product-policy>
- European Parliament and Council. (2021). Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain directives (Waste framework). 32008L0098. *Off. J. Eur. Union*, 3–30. <https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=celex%3A32008L0098>
- Everard, M. (2013). *The hydro politics of dams: Engineering or ecosystems?* Zed Books.
- Everard, M. (2015). Community-based groundwater and ecosystem restoration in semiarid north Rajasthan (1): socio-economic progress and lessons for groundwaterdependent areas. *Ecosyst. Serv.*, 16, 125–135.
- Everard, M., Harrington, R., & McInnes, R.J. (2012). Facilitating implementation of landscape-scale integrated water management: the integrated constructed wetland concept. *Ecosyst. Serv.*, 2, 27–37.

- Ghoreishi, M., & Happonen, A. (2022). The case of fabric and textile industry: The emerging role of digitalisation, internet-of-things and industry 4.0 for circularity. In *Proceedings of Sixth International Congress on Information and Communication Technology* (pp. 189–200). Springer.
- Ghoreishi, M., Happonen, A., & Pynnönen, M. (2020, February). Exploring industry 4.0 technologies to enhance circularity in textile industry: role of internet of things. In *Twenty-first International Working Seminar on Production Economics* (p. 16).
- Gu, X., Gao, F., Tan, M., & Peng, P. (2020). Fashion analysis and understanding with artificial intelligence. *Information Processing & Management*, 57(5), 102276
- Hedberg, A., & Šipka, S. (2021). Toward a circular economy: The role of digitalisation. *One Earth*, 4(6), 783–785.
- Ho, H.P.Y., & Choi, T.M. (2012). A five-R analysis for sustainable fashion supply chain management in Hong Kong: a case analysis. *Journal of Fashion Marketing and Management: An International Journal*, 16(2), 161–175.
- Janigo, K.A., & Wu, J. (2015). Collaborative redesign of used clothes as a sustainable fashion solution and potential business opportunity. *Fashion Practice*, 7(1), 75–97.
- Kadar, T., & Kadar, M. (2020, June). Sustainability is not enough: Towards AI supported regenerative design. In *2020 IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC)* (pp. 1–6). IEEE.
- Leahy, S. (2019). *Climate study warns of vanishing safety window – Here's why*. <https://www.nationalgeographic.com/environment/2019/03/climatechange-model-warns-of-difficult-future/>
- Lentner, C., Vasa, L., & Zéman, Z. (2019). New dimensions of internal controls in banking after the GFC. *Economic Annals-XXI*, 176.
- Li, W.Y., Choi, T.M., & Chow, P.S. (2015). Risk and benefits brought by formal sustainability programs on fashion enterprises under market disruption. *Resources, Conservation and Recycling*, 104, 348–353.
- Liao, Y., Deschamps, F., Loures, E.D.F. R., & Ramos, L.F.P. (2017). Past, present and future of Industry 4.0-a systematic literature review and research agenda proposal. *International journal of production research*, 55(12), 3609–3629.
- Linkov, I., Trump, B.D., Poinsatte-Jones, K., & Florin, M.V. (2018). Governance strategies for a sustainable digital world. *Sustainability*, 10(2), 440.
- McKinsey. (2018). *The state of fashion*. <https://www.mckinsey.com/~media/mckinsey/industries/retail/our%20insights/renewed%20optimism%20for%20the%20fashion%20industry/the-state-of-fashion-2018-final.pdf>
- McWilliams, A., Parhankangas, A., Coupet, J., Welch, E., & Barnum, D. T. (2016). Strategic decision making for the triple bottom line. *Business Strategy and the Environment*, 25(3), 193–204.
- Meng, X. (2022). Application of digital technology to the construction of the fashion design system under mass customization mode. *Mathematical Problems in Engineering*. <https://doi.org/10.1155/2022/8734113>
- Min Kong, H., & Ko, E. (2017). Why do consumers choose sustainable fashion? A crosscultural study of South Korean, Chinese, and Japanese consumers. *Journal of Global Fashion Marketing*, 8(3), 220–234.
- Mogaji, E., Soetan, T.O., & Kieu, T.A. (2020). The implications of artificial intelligence on the digital marketing of financial services to vulnerable customers. *Australasian Marketing Journal*. <https://doi/abs/10.1016/j.ausmj.2020.05.003>
- Moorhouse, D., & Moorhouse, D. (2017). Sustainable design: circular economy in fashion and textiles. *The Design Journal*, 20(sup1S), 1948–S1959.
- Morelli, J. (2011). Environmental sustainability: A definition for environmental professionals. *Journal of Environmental Sustainability*, 1(1), 2.
- Moskvin, A., Moskva, M., & Kuzmichev, V. (2020). Parametric modeling of historical mannequins. *International Journal of Clothing Science and Technology*, 32(3), 366–389.

- Neutzling, D.M., Land, A., Seuring, S., & do Nascimento, L.F.M. (2018). Linking sustainability-oriented innovation to supply chain relationship integration. *Journal of Cleaner Production*, 172, 3448–3458.
- Nikunen, T., Saarela, M., Oikarinen, E.L., Muhos, M., & Isohella, L. (2017). Micro-enterprise's digital marketing tools for building customer relationships. *Management* (18544223), 12(2).
- Nishant, R., Kennedy, M., & Corbett, J. (2020). Artificial intelligence for sustainability: Challenges, opportunities, and a research agenda. *International Journal of Information Management*, 53, 102–104.
- Nobile, T.H., & Kalbaska, N. (2020). An exploration of personalisation in digital communication. Insights in fashion. In F.H. Nah & K. Siau (Eds.), *HCI in business, government and organisations. HCCI 2020. Lecture notes in computer science* (Vol. 12204, pp. 456–473). Springer.
- Noris, A., Nobile, T.H., Kalbaska, N., & Cantoni, L. (2021). Digital fashion: A systematic literature review. A perspective on marketing and communication. *Journal of Global Fashion Marketing*, 12(1), 32–46.
- ORDRE. (n.d.). "About" section on official website. <https://www.ordre.com/en>.
- Organic Cotton Plus. (n.d.). *Organic cotton 101*. <https://organiccottonplus.com/pages/learningcenter>.
- Piippo R, & Niinimäki, K. (2022). Aakko M. Fit for the future: Garment quality and product lifetimes in a CE context. *Sustainability*, 14(2), 726.
- Qiu, J., & Ma, L. (2021). Fusion mode and style based on artificial intelligence and clothing design. *Mathematical Problems in Engineering*, 23, 1–16.
- ReportLinker. (2022). *AI in fashion market research report by product type, component, deployment, application, end user, region – global forecast to 2027 – cumulative impact of COVID-19*. <https://www.globenewswire.com/news-release/2022/04/13/2421798/0/en/AI-in-Fashion-Market-Research-Report-by-Product-Type-Component-Deployment-Application-End-User-Region-Global-Forecast-to-2027-Cumulative-Impact-of-COVID-19.html>
- Rocamora, A. (2017). Mediatisation and digital media in the field of fashion. *Fashion Theory*, 21(5), 505–522.
- Russell, S. J., & Norvig, P. (2016). *Artificial intelligence: A modern approach*. Pearson Education Limited.
- Salamzadeh, A., Dana, L.P., Mortazavi, S., & Hadizadeh, M. (2022a). Exploring the entrepreneurial challenges of disabled entrepreneurs in a developing country. In *Disadvantaged minorities in business* (pp. 105–128). Springer.
- Salamzadeh, A., Mortazavi, S.S., & Hadizadeh, M. (2022b). Social media and digital technologies among pottery makers and in the sewing sector. In *Artisan and handicraft entrepreneurs* (pp. 217–238). Springer.
- Sandhiya, R., Boopika, A., Akshatha, M., Swetha, S., & Hariharan, N. (2021). Future of fashion industry: sustainable fashion using blockchain. In D. Khazanchi, A. Kumar Vyas, K Kant.Hiran & S. Padmanaban (Eds.), *Blockchain 3.0 for Sustainable Development* (pp. 145–154). De Gruyter.
- Sarc, R., Curtis, A., Kandlbauer, L., Khodier, K., Lorber, K.E., & Pomberger, R. (2019). Digitalisation and intelligent robotics in value chain of circular economy oriented waste management—A review. *Waste Management*, 95, 476–492.
- Shrivastava, A., Jain, G., Kamble, S.S., & Belhadi, A. (2021). Sustainability through online renting clothing: Circular fashion fueled by Instagram micro-celebrities. *Journal of Cleaner Production*, 278, 123772.
- Silvestri, B. (2020). The future of fashion: How the quest for digitisation and the use of artificial intelligence and extended reality will reshape the fashion industry after COVID-19. *ZoneModa Journal*, 10(2), 61–73
- Ślusarczyk, B. (2018). Industry 4.0: Are we ready? *Polish Journal of Management Studies*, 17.
- Sogari, G., Pucci, T., Aquilani, B., & Zanni, L. (2017). Millennial generation and environmental sustainability: The role of social media in the consumer purchasing behavior for wine. *Sustainability*, 9(10), 1911.
- Ta, A.H., Aarikka-Stenroos, L., & Litovuo, L. (2022). Customer experience in circular economy: Experiential dimensions among consumers of reused and recycled clothes. *Sustainability*, 14(1), 509.
- Tariq, A., Badir, Y.F., Tariq, W., & Bhutta, U.S. (2017). Drivers and consequences of green product and process innovation: A systematic review, conceptual framework, and future outlook. *Technology in Society*, 51, 8–23.

- Terlau, W., & Hirsch, D. (2015). Sustainable consumption and the attitude-behaviour-gap phenomenon—causes and measurements towards a sustainable development. *International Journal on Food System Dynamics*, 6(3), 159–174.
- Thorisdottir, T.S., & Johannsdottir, L. (2019). Sustainability within fashion business models: A systematic literature review. *Sustainability*, 11(8), 2233.
- Toghraee, M.T., Ahmadi, A., & Salamzadeh, A. (2022). Arts entrepreneurs in an emerging economy. In *Artisan and handicraft entrepreneurs* (pp. 137–147). Springer.
- Vehmas, K., Raudaskoski, A., Heikkilä, P., Harlin, A., & Mensonen, A. (2018). Consumer attitudes and communication in circular fashion. *Journal of Fashion Marketing and Management: An International Journal*, 22(3), 286–300.
- Wightman, D. (2020). *Farfetch launches consumer fashion footprint tool*. <https://fashionunited.com/news/fashion/farfetch-launches-consumer-fashion-footprint-tool/2020061834064>
- Woodside, A.G., & Fine, M.B. (2019). Sustainable fashion themes in luxury brand storytelling: The sustainability fashion research grid. *Journal of Global Fashion Marketing*, 10(2), 111–128.
- Yeo, S. F., Tan, C. L., Kumar, A., Tan, K.H., & Wong, J.K. (2022). Investigating the impact of AI-powered technologies on Instagrammers' purchase decisions in digitalisation era—A study of the fashion and apparel industry. *Technological Forecasting and Social Change*, 177, 121551.
- Zhao, L., & Min, C. (2019). The rise of fashion informatics: A case of data-mining-based social network analysis in fashion. *Clothing and Textiles Research Journal*, 37(2), 87–102.
- Zhu, D., Zhang, S., & Sutton, D.B. (2015). Linking Daly's proposition to policymaking for sustainable development: indicators and pathways. *Journal of cleaner production*, 102, 333–341.



Abram Kok and Léo-Paul Dana

# 17 Kringloopwinkel Steenwijk

**Abstract:** The subject of this chapter is a thrift shop that expanded to include a café that gives a learning-on-the-job experience to persons who are not easily employable in mainstream society. An interviewee suggests, “Sustainability is not only about goods but also about people; we give them a purpose”.

**Keywords:** sustainability, fashion, preloved clothing, second-hand, used clothes, innovative management

## Introduction

Some readers may know the Dutch city of Steenwijk as it was originally a fortified town with canals and ramparts dating from the time of the war of Netherlands' independence from Spain that lasted from 1568 to 1648.

More recently, the Dutch people suffered under Nazi occupation during WWII, when over 100,000 Dutch civilians were killed by the Nazis; most Dutch Jews and Roma were exterminated (see Figure 17.1). Other people survived but poverty was rampant, and many could not afford new clothes.

By 1970, the Netherlands was an affluent nation again and there came to be a surplus of unwanted clothing; thrift shops came into existence, selling used garments. Nowadays, Steenwijk is a growing community with a healthy economy, and strong awareness of sustainability issues. Kringloopwinkel Steenwijk, which began as a thrift shop in 1990,<sup>1</sup> is a non-profit organisation in Steenwijk.

---

<sup>1</sup> There have been thrift shops in the Netherlands since 1970.

---

**Note:** The authors thank Ineke de Jong CEO of Kringloopwinkel Steenwijk, management assistant Jolanda Vermaire and shop manager Marc Soede for their kind assistance in preparing this chapter. Thanks also to Wout Vaartjes for suggestions on how to improve an earlier draft of this chapter

---

**Abram Kok**, Nyenrode Business University

**Léo-Paul Dana**, Dalhousie University, ICD Business School Paris and Lappeenranta University of Technology





**Figure 17.1:** Memorial to Nazi victims in Meppel, The Netherlands (photo: Léo-Paul Dana).

## Humble Beginnings

Kringloopwinkel Steenwijk was launched as a social enterprise by five municipal employees, as a side-line to their full-time jobs. A building was rented where donated items were sorted and sold. This included furniture and various household items as well as clothing.

Meanwhile, Ineke de Jong trained to be a nurse and served in Iraq. After she returned to the Netherlands, in 2003 she became CEO of Kringloopwinkel Steenwijk and, with an interest in retail and people, she took it to heart to steer the non-profit organisation to do good for the community, in more ways than one. During an interview with the authors, she emphasised the 10 Rs: “Respect; Responsibility; Refuse; Reduce; Rethink (about what you buy); Repurpose; Reuse; Repair; Recycle; and Restore”.

## Innovative Management

Using profits from sales, Kringloopwinkel Steenwijk purchased three buildings, one solely for sorting items received (see Figure 17.2). Good quality garments are to be sold locally, while other clothing is exported to a buyer in Belgium, from where some items are sent to developing countries. Of course, not everything received is sold.

Tools that are in good condition are sold at the shop, but others are given to Gered Gereedschap; this is an NGO that is focused on sustainable poverty alleviation via the promotion of technical craftsmanship as a basis for self-reliance; this organisation provides support to vocational education and training programmes in Africa by supplying machines, tools and sewing machines. Gered Gereedschap focuses on Ghana Malawi, Tanzania and Uganda. In future, foci may also include India (see Figure 17.3).



**Figure 17.2:** Sorting warehouse, lit and heated by solar panels (photo: Léo-Paul Dana).

In 2012, Kringloopwinkel Steenwijk CEO Ineke de Jong spearheaded significant expansion. This expansion included installation of a commercial kitchen and establishment of Het Eethuisje – a café, one objective of which was to be a place where many challenged workers can learn skills on the job. Here, shoppers can take a pause from trying on clothes and sit with a book from a nearby shelf and enjoy an affordable lunch or savour a delicacy while drinking a cappuccino at an attractive price (see Figure 17.4). But another objective is to provide a venue where individuals (often with disabilities) can learn while working. It turned out that an existing employee had learned pastry-making



**Figure 17.3:** Tailors in India (photo: Léo-Paul Dana).

and this was an opportunity for him to train others. Since 2012, Het Eethuisje has been providing people with an opportunity to reintegrate into the workforce.

Thijs Berends first came to work at Kringloopwinkel Steenwijk as a student intern. For school credit, he started as an apprentice at the retail shop (of Kringloopwinkel Steenwijk) selling furniture for 10 weeks, followed by 10 weeks at the warehouse. He had formerly had a bad experience working for a restaurant and expressed a significant fear of working at Het Eethuisje. Yet, with encouragement from management assistant Jolanda Vermaire, he conquered his fear and decided to become a professional pastry-maker. After earning a three-year certificate and becoming a qualified independent baker, he returned to Het Eethuisje where he is a happy, paid employee.

Wout Vaartjes started his career as an electrician but was unsure of his career objectives. He worked in IT but discovered it was not for him. Leaving his IT job, he suffered from depression and used online games to escape from reality until he had suicidal thoughts. One night, he decided not to end his life and he called his mother saying that he needed help. He obtained phone numbers of psychologists and psychiatrists and after three months of therapy felt much better. In 2014, Wout started as an



**Figure 17.4:** Tea-time (photo: Léo-Paul Dana).

intern trainee, sorting clothes at the Textiel Sorteert Centrum Steenwijkerland. When asked what he wished to do, he asked whether there was an opportunity at the Het Eethuisje restaurant, and to his delight there was. He is now a paid employee at the restaurant. Wout Vaartjes explains, “You are never too old to find what you like . . . Sometimes you just find it.”

## Operations Today

Based on the cost of burning rubbish, Kringloopwinkel Steenwijk receives government funding amounting to 7 euro per 100 kg of books, clothing, furniture and other goods received. Donated items are sorted in a dedicated facility. Some clothes are prepared to sell at the local shop. Garments deemed inappropriate for the local market are sold to Belgium where some are sent to developing countries. Furs are donated to organisations for educational purposes.

In addition to clothing and operating the café, Kringloopwinkel Steenwijk sells books,<sup>2</sup> curtains, duvet covers, electrical items (such as televisions), kitchenware, frames, furniture, paintings, shoes tools and toys as well as vinyl records, CDs and

---

<sup>2</sup> Kringloopwinkel Steenwijk sells 65,000 books a year.

DVDs. The enterprise employs 31 people and provides positions for 178 volunteers, some of whom are juvenile delinquents sentenced to community service, while others are being re-integrated into society. As explained by Kringloopwinkel Steenwijk shop manager Marc Soede, “Sustainability is not only about goods but also about people; we give them a purpose.”

---

Part V: **Toward the Future with Sustainable Fashion  
Business Models**



Hafiz Wasim Akram and Léo-Paul Dana

# 18 Unconventional Materials for Fashion

**Abstract:** The fashion industry has begun to introduce garments made from relatively sustainable fibres that were little known until recently. Some natural fibres – that can be derived from various sources including animals, insects, minerals and plants – have unique characteristics making them suitable in the industry. Hence, we see the fashion industry evolving to include a new focus on the production of fashion products based on these fibres. These fibres can be used alone or in combination with others, to create innovative clothing and other fashion products, but when mixed become less easy to recycle. This chapter discusses the potential of some unconventional materials.

**Keywords:** sustainability, fashion, materials, bamboo, hemp, Pinatex, ramie

## Introduction

Clothing can be made from a variety of materials, including natural fibres such as cotton, silk and wool and synthetic fibres including nylon, polyester and spandex (Al-lary, 2021). The actors who mould the fashion industry – including designers, manufacturers, retailers and fashion media – are constantly evolving, with new trends and styles emerging on a regular basis. Among these trends is the consideration and increasing use of unconventional fibres.

Sustainability has become a key focus (Balslev & Dana, 2022) of the fashion industry, with increased recognition that being sustainable is not merely a short-lived trend but a means of surviving. Consequently, fibres with greater natural sustainability and minimal environmental impacts are being developed. Examples of sustainable, natural fibres that are becoming increasingly common within the textile industry include (among others): abaca (a species of banana); bamboo; flax; hemp (cannabis); jute (a common cordage fibre usually obtained from the bark of patsun); ramie; and sisal (native to southern Mexico).

While significant amounts of resources are consumed in the process of making of clothes, textile manufacturers are now taking sustainability aspects into consideration. In general, natural fibres are believed to offer greater sustainability than those that are synthetic (Nayak et al. 2020). It is generally assumed that the process of pro-

---

**Hafiz Wasim Akram**, Department of Marketing and Entrepreneurship, College of Commerce and Business Administration, Dhofar University, Oman, e-mail: hakram@du.edu.om

**Léo-Paul Dana**, Dalhousie University, ICD Business School Paris and Lappeenranta University of Technology



ducing natural fibres consumes fewer resources than is the case with synthetic fibres; however, a variety of factors should be considered; for example, while producing synthetic fibres consumes a significant amount of resources, the effects of cultivating cotton are also significant as large volumes of water, fertilisers and pesticides are used in this process (Bevilacqua, 2014). Cotton that is organic or that has minimal chemical levels offers a more sustainable option compared to traditional cotton due to its socio-environmental advantages, as neither fertilisers nor pesticides are used to produce organic cotton.

Furthermore, the ethical and social effects of producing fibres should be considered. There is concern about carbon emissions that arise from the production of synthetic fibres, and this has led to calls for fibres that are carbon-neutral – including those from plants such as bamboo and lyocell. In the growth process, such plants are capable of absorbing sufficient carbon dioxide from the environment to compensate for the amount released in the production process, and this aids with cleaning the atmosphere; such natural plant fibres sourced from natural resources are inherently environmentally-friendly, consume less resources and can be recycled.

## Bamboo

Due to its eco-friendly properties, there has been considerable focus on bamboo in the textile industry. Unlike man-made materials such as polyester, bamboo offers breathability, stretchability and durability (Dong, 2020). It is widely used in the textile industry for the purpose of manufacturing a variety of different products. A wide range of home products including towels, sheets and blankets now contain bamboo. As a result of their antibacterial properties, textiles made from bamboo are frequently used in the production of socks, T-shirts, undergarments and similar products. Garments made from bamboo have become increasingly popular in the clothing sector as they are soft and durable.

Due to their ability to wick moisture, textiles manufactured from bamboo are also used to make performance garments. The ability to control perspiration has particular appeal to hikers.

Although bamboo is certainly more beneficial for warm environments, it can also provide benefits in cold weather (Nan et al., 2020). During winter, sweating makes people feel cold. In contrast to synthetic fabrics that retain moisture, the moisture-wicking properties of bamboo render the latter ideal for colder environments.

Bamboo viscose and associated semi-synthetic fibres are neither soft nor flexible, but an advantage is that they are undeniably more effective at preventing the growth of bacteria while synthetic materials cannot.

## Hemp

The plant hemp belongs to the Cannabaceae family and is a source of bast fibres, which are soft and woody in nature and can be found in dicotyledonous plants' stems (Kozłowski, 2005). Hemp was one of the initial plants cultivated by people and was historically regarded as being a key agricultural crop. Hemp is indigenous to the Central Asian region and evidence dating back to 2800 BC shows that civilisations grew the plant to obtain its fibres (McPartland, 2019). In the Middle Ages, countries in the Mediterranean region also cultivated hemp.

In comparison to cotton, the effects of hemp on the environment are lower as almost no pesticides and minimal volumes of fertiliser are needed in the growth process (Dhondt 2021), while its levels of productivity per land unit are significantly increased. In fact, it was demonstrated by an LCA analysis that hemp grown in an organic manner is significantly more eco-friendly compared to polyester or even cotton (Cherrett et al., 2005). Nevertheless, the diffusion of hemp in the garment industry is significantly limited as the properties of its fibres increase the complexity of production and reduce the appeal to consumers (Cherrett et al., 2005).

## Pinatex

Numerous firms in the fashion industry now utilise cost-effective and vegan alternatives to leather. Pinatex – a leading alternative to leather – is produced from fibres of cellulose found in the leaves of pineapples. The result is a leather-like material produced from pineapple waste that can be considered significantly more ethical than the production of actual leather sourced from the skins of animals (Meyer, 2021).

Most artificial leathers contain polyurethane, a thermoplastic polymer, which is fully synthetic but causes no direct harm to animals (Kemoni 2020). Although it is not completely sustainable, it can be argued that it is more ethical and eco-friendly than traditional leather.

Since it was launched commercially in 2015, Pinatex has been used by at least 500 manufacturers. Pinatex pineapple leather is now being utilised by large brands in the fashion industry – including H&M, Hugo Boss and Paul Smith.

## Ramie

Ramie is a vegetable fibre, the usage of which can be traced back across millennia. Egyptians used the material for wrapping mummies between 5000 and 3000 BC, and it has a long history of being grown in Chinese culture (Schoeser, 2022).

Ramie belongs to the group known as bast fibre crops. Due to the versatility of ramie as a textile material, it has numerous applications. In terms of furnishings, ramie fibres are employed in the production of stylish napkins and tablecloths as well as superior blankets and pillowcases.

With respect to the fashion industry, the fabric is largely utilised by fashion brands focused on sustainability: scarves, trousers and shirts made of ramie are coveted by those who truly appreciate natural fabrics.

## Conclusion

Overall, the use of natural fibres in the fashion industry offers numerous benefits, and future manufacturers might very well make increasing use of the materials discussed above and others such as MuSkin, which is produced from mushrooms. These fibres are often more sustainable and environmentally friendly than synthetic fibres, and they can provide unique characteristics and added value to fashion products. In addition, the use of unconventional natural fibres can be more profitable for the industry and help to drive innovation in product design. As the fashion industry continues to evolve, it is likely that the use of unconventional fibres will play an increasingly important role in the creation of sustainable and high-quality fashion products.

## References

- Allary, T. (2021). Future Fashion. *Industrial biotechnology*, 17(4), 190–203.
- Balslev, H., & Dana, L.P. (2022). Opportunities for entrepreneurial sustainability initiatives to advance Sustainable Development Goals. Conference paper for *Global production, innovation and sustainable development goals*, University of Southern Denmark, Odense, Denmark, February 7–11.
- Bevilacqua, M., Ciarapica, F.E., Mazzuto, G., & Paciarotti, C. (2014). Environmental analysis of a cotton yarn supply chain. *Journal of Cleaner Production*, 82, 154–165.
- Cherrett, N., Barrett, J., Clemett, A., Chadwick, M., & Chadwick, M.J. (2005). *Ecological footprint and water analysis of cotton, hemp and polyester*. Stockholm Environmental Institute.
- Dhondt, F., & Muthu, S.S. (2021). The environmental and social impacts of hemp. In *Hemp and sustainability* (pp. 15–35). Springer.
- Dong, K., Peng, X., & Wang, Z.L. (2020). Fiber/fabric-based piezoelectric and triboelectric nanogenerators for flexible/stretchable and wearable electronics and artificial intelligence. *Advanced Materials*, 32(5), 1902549.
- Kemona, A., & Piotrowska, M. (2020). Polyurethane recycling and disposal: Methods and prospects. *Polymers*, 12(8), 1752.
- Kozłowski, R., Baraniecki, P., & Barriga-Bedoya, J. (2005). Bast fibres (flax, hemp, jute, ramie, kenaf, abaca). *Biodegradable and Sustainable Fibres*, 36–88.

- McPartland, J.M., Hegman, W., & Long, T. (2019). Cannabis in Asia: its center of origin and early cultivation, based on a synthesis of subfossil pollen and archaeobotanical studies. *Vegetation History and Archaeobotany*, 28(6), 691–702.
- Meyer, M., Dietrich, S., Schulz, H., & Mondschein, A. (2021). Comparison of the technical performance of leather, artificial leather, and trendy alternatives. *Coatings*, 11(2), 226.
- Nan, X., Yan, H., Wu, R., Shi, Y., & Bao, Z. (2020). Assessing the thermal performance of living wall systems in wet and cold climates during the winter. *Energy and Buildings*, 208, 109680.
- Schoeser, M. (2022). *World Textiles*. Thames & Hudson.



Aidin Salamzadeh, Jumana Nalakam Paramba, Michelle Brandstrup  
and Léo-Paul Dana

# 19 A Sustainable Business Model for the Fashion Sector

**Abstract:** The fashion industry is among the most polluting in the world. Hence, fashion products lead to major global challenges, and new trends have arisen to address such challenges. Among these approaches are sustainable fashion business models devised by various companies worldwide. To shed light on the subject, this chapter briefly reviews the history of the sustainable fashion industry. Then, it discusses different types of sustainable fashion and suggests a classification. Subsequently, sustainable business models for fashion are discussed based on some facts and figures from multiple cases. Finally, the chapter concludes with some remarks on this area and provides directions for future research.

**Keywords:** sustainability, business model, fashion, sustainable fashion, fashion industry

## Introduction

Although there is not one universally accepted definition of sustainable fashion, the concept has been proposed as a response to consumerism and pollution (Henninger et al., 2016). Sustainability includes taking employees into account as well as the environment. There is no consensus as to how many sustainable actions a company must engage in before calling itself sustainable.

In contrast to bi-annual collections of the past, Claxton & Kent (2020) note that nowadays, some firms present more than ten collections per year. Textile recycling accounts for only approximately 15% of total production each year; as much as 85% might end up in landfills (Nodoushani et al., 2016). When consumers throw away clothing, it is not only a waste of money and resources, but materials can take considerable time to decompose in a landfill (Gupta et al., 2020; Salamzadeh et al., 2021). An environmental issue is that textiles produce methane gas and leak toxic chemicals into groundwater and soil during decomposition. Many people do not realise this (Dabas & Whang, 2022).

---

**Aidin Salamzadeh**, University of Tehran, e-mail: salamzadeh@ut.ac.ir

**Jumana Nalakam Paramba**, Farook College, India, e-mail: jumanajabi9@gmail.com

**Michelle Brandstrup**, fashion designer

**Léo-Paul Dana**, Dalhousie University, ICD Business School Paris and Lappeenranta University of Technology

Sustainable fashion attempts to minimise harm to our environment and is sometimes entangled with green materials. Clothing and textiles can be bulk collected, packaged and reprocessed into raw materials to produce new apparel or non-apparel products (Hassan et al., 2022).

Some fashion houses are using artificial leather, opening new doors to the fashion industry (Dana et al., 2022). This move is towards a cleaner and greener future. In fact, sustainable fashion aims at creative designs in harmony with professional values and high quality (Grazzini et al., 2021). Many recent movements are accelerating this trend. For instance, actress Emma Watson recently put sustainable fashion in the spotlight. She made headlines when she wore a Calvin Klein dress to the Met Gala. This dress was made from recycled bottles. Watson pointed out that the fashion industry is the second largest pollutant of fresh water on the planet. She also mentioned that plastic is a huge pollutant in our world (Shrivastava et al., 2021).

## **A Brief History of Sustainable Fashion**

It is not obvious when exactly the sustainable fashion movement was initiated, but this movement has been associated with environmental activism for more than 30 years. Nevertheless, the intermittent fashion crisis is a problem in today's modern world (Kabir, 2022). During the first half of the twentieth century, clothing was much more valuable and expensive. In that period, people used to repair and wear their old clothes rather than buy new ones (McKeown & Shearer, 2019). There were also tailor shops, where made-to-measure garments were made, and fashion cycles moved much more slowly. As technological advancements and globalisation accelerated during the second half of the twentieth century, the demand for mass production of fashionable clothes rose exponentially. Thus, clothing manufacturers filled their pockets with money, and people were satisfied with their passion for buying clothes (Testa et al., 2021). In the meantime, no research was conducted on the consequences of this kind of clothes production on the earth. Even the United Nations did not use the word “sustainable” until 1987.

Yet, microplastics had polluted the sea, and humankind was already destroying the environment (Khandual & Pradhan, 2019). A few pioneers, including Esprit and Patagonia, began considering the environment during the 1990s (Kim et al., 2020; Woodside & Fine, 2019).

Later, important issues, such as the scandal of the Nike fashion warehouse in 1991 (De Brito et al., 2008) and the Rana Plaza disaster in Bangladesh in 2013, drew the attention of many people around the world to the problems that the fashion industry brought with it (Firdaus & Rahmanillah, 2022). Since it is the nature of the fashion industry to constantly change and update, this industry continues to damage the environment more than other industries, such as the food, health and beauty industries (Khan, 2019). But fortunately, the mindset of many consumers has changed to a pref-

erence for more sustainable products. It is time for fashion industry brands to change their behaviours and move towards protecting the environment. Also, governments should consider the fashion industry as one of the harmful factors in their discussions about climate change (Lohmeyer et al., 2022).

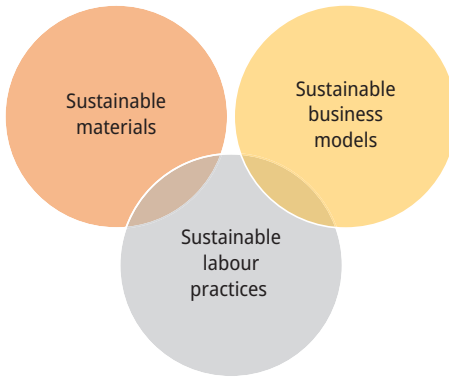
Sustainable fashion is a movement and process in which clothes are designed and produced in an environmentally friendly manner (Cooke et al., 2022). In this approach, not only fabric and clothing production is considered, but social, cultural, environmental and financial systems are also taken into account. In fact, sustainable fashion is exactly the opposite of intermittent (fast) fashion (Hammer & Plugor, 2019). In this fashion, instead of encouraging people to buy more clothes from retailers and brands, they lead people to buy higher quality and more durable clothes. Additionally, unlike seasonal fashion, sustainable fashion often motivates customers to use the clothes they buy for a longer period to greatly reduce the destructive effects of the fashion industry on the environment (West et al., 2021). Proponents of sustainable fashion believe that the fashion industry can operate differently than it is doing now and seek to create more moral values and wealth for society and, ultimately, the world economy instead of individual profiteering (Toghraee et al., 2022).

## Towards Sustainability

Several actions can decrease impact on the environment, including (see Figure 19.1):

- (i) **Sustainable materials:** one way to make fashion products sustainable is to use environmentally friendly materials to make these products. Synthetic fabrics can be very harmful to the environment, but natural raw materials such as cotton, hemp and bamboo can be sustainably grown and processed without causing significant damage to the environment (Khandual & Pradhan, 2019; Shen, 2014).
- (ii) **Sustainable labour practices:** even inherently sustainable materials like cotton can harm the environment if unfair practices are used to produce textiles. Therefore, sustainable brands must ensure that they process their textile products without using toxic chemicals, and with the least harm to the environment as possible (McNeill & Moore, 2015; Vincent, 2017).
- (iii) **Sustainable business models:** an essential aspect of the sustainable fashion industry is related to fair trade. Ensuring that textile workers are paid decent wages and work in safe conditions are major concerns of many sustainable brands (Kozlowski et al., 2016; Todeschini et al., 2017).





**Figure 19.1:** Towards sustainability.

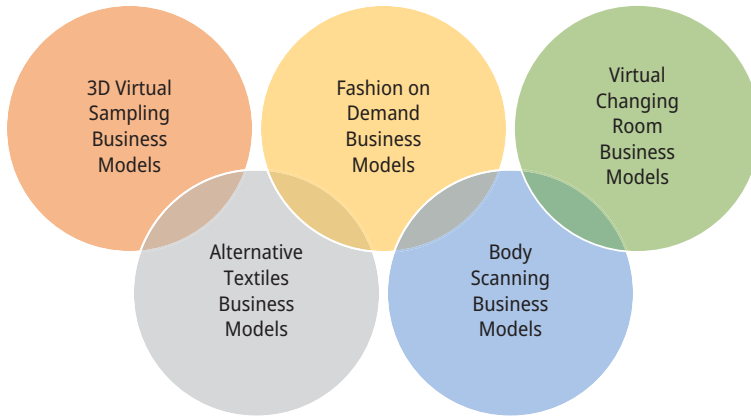
## Sustainable Business Models for Fashion

The fashion sector has witnessed a variety of attempts to implement sustainable business models; relevant buzzwords include: high-quality products, no-season products, second-hand/ pre-loved products, repairing, custom-made, fair trade, renting and exchanging (Pal & Gander, 2018). Generally, high-quality but second-hand clothes can be bought at a lower price (McNeill & Moore, 2015). However, in the custom-made method, a person pays more for a high-quality garment tailored to their body (Nosratabadi et al., 2019; Vincent, 2017). Sustainable fashion business models can look at initiatives such as: (i) using organic, natural and biodegradable fabrics (biodegradable materials are broken down by microorganisms into materials found in nature); (ii) using recycled fibres; (iii) using non-toxic colours; (iv) using zero-waste design and pattern cutting methods; (v) packaging without the use of plastic materials; (vi) applying local or traditional environmental friendly craftsmanship techniques; (vii) producing limited collections that are suitable for more seasons; (viii) producing with circular economy features (such as clothing that can be rented or recycled); and (ix) producing quality clothes, which can later be sold as second-hand.

Nowadays, technology is on the path of significant improvements and has made human life easier (Boons & Lüdeke-Freund, 2013). Hopefully, this development can contribute to sustainable solutions for the fashion industry (Olatubosun et al., 2021). In fact, by using the latest technologies, new opportunities have been discovered for the production of sustainable raw materials and the recycling of worn clothes (Pal, 2017). The following paragraphs present some relevant business models to produce and recycle products to make the fashion industry more sustainable (Figure 19.2).

### (i) 3D Virtual Sampling Business Models

In the past, for the cycle of designing, selling and buying clothes, physical sampling of clothes was necessary. These samples provided the designers and sales teams with a



**Figure 19.2:** Examples of sustainable business models for fashion.

detailed final product plan (Pal, 2017). To produce a final sample of a product, sometimes 10 or more samples were needed, and the samples had to be carefully checked and measured until the design team was satisfied and the production could begin. Physical sampling lengthens the garment and fabric production process, but 3D technology can help. The waste of materials, energy and transportation during the designing and construction phases is significantly reduced. The entire design process, from pattern design to sampling and product display, can be done using 3D virtual design. Another advantage of this technology is reducing the cost of materials and the time required for physical samples. Simultaneously, virtual sampling can help to digitise the clothing production model based on demand and customer orientation.

### **(ii) Alternative Textiles Business Models**

As mentioned, producing various fibres and textiles takes many resources, including water. For example, producing a cotton shirt takes the equivalent amount of water consumed by an individual over 2.5 years. In contrast, synthetic materials such as nylon and polyester consume less water during production but emit dangerous greenhouse gases (Todeschini et al., 2017). Some eco-friendly alternative fibres use fewer resources during their production process and are biodegradable (see Chapter 19 in this book). These natural fibres, including hemp, bamboo and ramie, are good substitutes for cotton, as long as they are ethically and sustainably farmed. Also, alternatives such as Pinatex leather, which is obtained from pineapple leaf fibres, or Muskin leather, which is produced from mushrooms, can take the place of natural leather (Pandit et al., 2020). Thus, such new technology-based business models can help us use these natural fibres and turn them into the fabric.

**(iii) Fashion on Demand Business Models**

In order to reduce the waste of materials and waste caused by the mass production of clothes, some manufacturers have moved to produce products based on customer demand and needs, and this has become possible with e-commerce (Caetano, 2022; Christen, 2018). Manufacturers now can take product orders using virtual space and then start production based on them. In this way, only what has been sold will be produced, reducing overproduction (Papachristou et al., 2022).

**(iv) Body Scanning Business Models**

Another shortcoming of clothing manufacturers is not having the exact size and measurements of their end consumers. They usually produce a collection of clothes in standard sizes, which do not fit every consumer, and therefore will be returned or not sold. In some cases, these products end up in landfills (Berger-Grabner, 2018). But today, with the technology of body scanning with a mobile phone, the remote buyer can send one's body measurements to the manufacturer, and the desired clothes can then be prepared and sent according to the measurements of the applicant. This clothing production method can lower the amount of returned products, and prevent product waste (Coscieme et al., 2022).

**(v) Virtual Changing Room Business Models**

Until recently there was no other option than trying on garments physically, in order to know whether the fit was fine. The need to try garments on posed a problem when online shopping was introduced – but the virtual 3D changing room technology has come up with a solution (Kannaiah & Shanthi, 2015). For instance, the buyer can stand in front of a mirror which is, in fact, computer software, and this software records thousands of information points about the person's body. Then it prepares a 3D image of these points and the desired dress. In this way, the buyer can decide if the garment is suitable for them before purchasing it (Fernandes & Morais, 2021).

## Examples of the Sustainable Fashion Business Models

Creating a sustainable fashion brand is desirable for business success in current markets. Given that how people buy fashion products is changing, focusing on buying green and ethical fashion has become a key consideration almost worldwide. Plenty of clothing manufacturers can help newcomers find organic and ethical fabrics for their clothing. However, there are also other aspects to consider when creating a sustainable fashion business model. These can include:

- (i) **Pricing:** generally, sustainable initiatives such as using sustainable fabric are more expensive. An explanation can be that the processes used to make this fab-

ric do not lead to fast and large production, and substitutes for previously used toxins can be more expensive. Thus, generally, the final product will end up being more expensive. Even though customers are sensitive to higher prices, creating a brand identity that focuses on the benefits will help differentiate the brand in the marketplace (Zhang & Wang, 2021).

- (ii) **Ethical principles:** the act of designing an eco-friendly fashion business model should be based on ethical principles and standards consistent with the target audience. Obtaining certification from eco-friendly associations can benefit the brand identity as a company works to build a loyal customer base (Niinimäki, 2015; Shen et al., 2013).
- (iii) **Transition:** transitioning from a general clothing brand to a sustainable fashion brand is daunting. Such a transformation requires a lot of sacrifices and making hard decisions, but it will be worth it in the long run. To achieve a more sustainable product line, many fashion brands start with their raw materials. It is logical for companies to look for the cheapest materials to protect their profit and pricing, but as it is now, cheap is rarely the most sustainable solution. In fact, the cheaper the textile product, the more likely it is to be produced with unsustainable methods (Jacobson & Harrison, 2022). Even though working with sustainable textile producers may reduce gross profit in the short term, sustainable clothing commands higher prices. Customers are generally willing to pay more for products they know have been sustainably produced.

Well-known companies that have implemented sustainable fashion business models include *Levi's*, one of the world's leading jeans-producing brands. It can take about 8,000 litres of water to make a pair of jeans, from raw fibre to finished product. *Levi's* has accomplished using up to 96% less water to make one pair of pants. This brand also focuses on other sustainable processes to minimise water consumption wherever necessary (Testa et al., 2021). Another example is *Alternative Apparel*, which delivers basic casual-wear collections based on sustainable approaches. The company uses natural cotton and recycled materials to produce t-shirts, hoodies, leggings, etc. Additionally, the brand follows strong packaging and strict ethical standards to support green fashion (Gyde & McNeill, 2021). Moreover, *PACT* is a brand that works with sustainability by certifying its products. It has partnered with Fairtrade USA, Global Organic Textile Standard (GOTS) and SimpliZero to assure good working conditions, working with organic production methods and with lowering its carbon footprint. *PACT* produces women's, men's and children's wear (Pérez-Bou & Cantista, 2022).

In response to the consumer demand for sustainable fashion, several prominent brands have also announced new clothing lines and initiatives focusing on sustainability (Dabas & Whang, 2022). For instance, among several other initiatives and commitments, H&M has set a goal to use only recycled or more sustainable-sourced materials by 2030. Helena Helmersson, H&M's former head of sustainability, who joined as the CEO in February 2020, signalled the fashion retailer's commitment to

taking sustainability seriously. The Levi's Wellthread x Outerknown collection features products made from recycled materials and jackets with detachable hardware to make them easier to recycle. With this collection, they also introduced their cottonised hemp fibre, which they were able to make almost as soft as real cotton with new technology (Testa et al., 2021). In addition, the company's water <Less(R) denim line was created to reduce the amount of water used to produce some of the brand's most popular styles.

Platforms such as Depop, ThredUp and Poshmark, which allow people to buy and sell second-hand clothing, have grown in popularity as sustainability becomes more important to consumers. ThredUp has about 2.4 million listings from more than 35,000 brands and reported a revenue of \$186 million in 2020; the company went public in March 2021. Online second-hand shopping has grown 69% between 2019 and 2021, compared to a 15% decline in the wider retail market, according to online consignment platform ThredUp. According to industry analyst consensus CB Insights, the used clothing market is expected to grow to \$64 billion by 2028. Big retailers are catching on. In August 2020, London-based retailer Selfridges announced a sustainability initiative that includes eco-friendly clothing, a clothing rental service and a thrift store. H&M's Cos brand has also launched its own resale business. Meanwhile, fashion brands such as Anna Sui, Rodarte and Christopher Raeburn have launched sales on the resale platform Depop to attract Gen Z shoppers (Ma & Riggio, 2021).

Additionally, artificial intelligence and advanced technologies may play a role in the quest for sustainability in fashion (Hassan et al., 2022). For example, better demand forecasting can enable more efficient use of materials, reducing the volume of wasted resources – a problem in fashion supply chains. H&M launched an AI division in 2018 to tackle exactly this problem. H&M is using AI in other ways to make its retail operations more efficient and sustainable. The Swedish retail giant relies on algorithms to predict market demand, avoid overproduction of clothing and set competitive prices. The company also uses AI-based predictive analytics to automate warehouses and offer faster deliveries in Europe. Another area these technologies can improve is efficiency, which is currently a significant source of waste in the fashion industry, especially the e-commerce sector. According to reverse logistics company Happy Returns, customers return many clothing and shoes purchased online. With data and AI capabilities, retailers can more effectively match shopping behaviour and customer preferences, potentially reducing the overall number of returns.

Finally, alternative materials – such as plant-based and lab-grown leather – can play an important role in making the fashion industry more sustainable. There are many technology-based efforts in this field. For example, Modern Meadow, a US-based biotech company that has raised more than \$180 million, ferments special types of yeast to grow collagen – a key component of normal leather – and then uses this protein to process the creation of leather material. Bolt Threads is another startup that uses proteins collected from wild mushrooms to create a leather-like fabric called

Mylo. Bolt Threads has attracted the attention of fashion and retail brands, including: Adidas; Kering; Lululemon; and Stella McCartney,

## Discussion and Conclusion

Since World War II, and for many years, fashion was generally divided into just two seasons. Spring/ summer lines were presented in fashion shows in late summer and early fall, while fall/ winter collections were shown in January and February, almost a year before they would hit the stores' shelves. Notably, fast fashion brands, where designs quickly go from sketch to store shelves, have changed this model. Brands like Zara and H&M built their businesses based on speed and agility. When these retailers spot a new trend, they can deploy their ultra-fast design and supply chain systems to bring the trend to market as quickly as possible. This allows fast fashion brands to beat traditional collections in the market. Clothes and accessories that hit the fashion shows in September and February may be seen and replicated by fast fashion brands before the originals hit stores. With the ability to analyse the market in real-time to get the latest styles on the shelves, fast fashion brands can offer a wider variety of clothing styles to meet the preferences of smaller and more targeted customer segments. Therefore, they remain suitable and cheap alternatives for trendy products. Even amid a retail slump and economic uncertainty caused by the Covid-19 pandemic, the owner of Zara reported more than \$23 billion of revenue in 2020, beating analysts' estimates. H&M also posted a remarkable record in 2020, thanks to the rapid return of business (Shabir & AlBishri, 2021).

The rise of fast fashion has changed the game of the industry. To survive, many traditional clothing brands have changed their business models, now offering many more collections a year than before. It is not uncommon for a brand to deliver a new collection each month. On the other hand, fast fashion brands may have 52 weekly mini-seasons per year. For example, Topshop featured about 500 styles a week on its website before its parent company, *Arcadia Group*, went bankrupt (West et al., 2021). What also contributes to the speed of fashion is social media, which accelerates this cycle. Influencer marketing and other social media strategies help new trends move quickly and create fast consumer demand for ultra-affordable fashion (Salamzadeh, 2021; Yakubu et al., 2022). Shoppers respond instantly to this demand thanks to “see now, buy now” tools on platforms like Instagram and Pinterest. TikTok's savvy social media strategies have translated into strong sales for companies like Fashion Nova, PrettyLittleThing and Shein. Fashion Nova is an example of a fast fashion e-commerce brand that has successfully used social media to build its customer base and brand (Ebrahimi et al., 2021; Dana & Salamzadeh, 2021; Salamzadeh et al., 2022). The company has over 19 million followers on Instagram and more than 3,000 famous influencers in the fashion house NovaBabes promoting its clothes. It is reported to have

spent \$40 million on influencer marketing in 2021. Fast fashion brand Boohoo has seen significant results from its investment in influencer marketing, saying its profits doubled after paying celebrities to promote its products on Instagram to fans aged 16 to 24. Shein, in particular, has taken fast fashion market share from established players such as Zara and H&M. The Nanjing-based shopping site has become the world's largest online fashion business, according to market research firm Euromonitor.

Cheap clothing can cause environmental damage, as the rapid production of less durable clothing causes excessive textile waste. Also, low prices encourage consumers to buy more than they need. According to the Environmental Protection Agency, about 12.8 million tons of clothing are sent to landfills annually. According to McKinsey, the global fashion industry emits 2.1 billion tons of greenhouse gases annually. It represents about 4% of total annual global greenhouse gas emissions – more than international flights and ocean shipping combined. According to some estimates, the fashion industry is responsible for 10% of global CO<sub>2</sub> emissions, 20% of global industrial wastewater, 24% of insecticides and 11% of pesticides used. While sustainability issues in fashion are not new, what is changing is how the industry's most influential consumers are beginning to respond. Thus, sustainability has become a critical emerging trend across sectors over the past few years (Claxton & Kent, 2020). According to the NYU Stern Center for Sustainable Business, sustainable market products accounted for more than half of the growth in the consumer packaged goods (CPG) industry between 2015 and 2019, despite only accounting for 16% of the market. In 2021, CPG items marketed as eco-friendly increased their share of US in-store purchases to 16.8%. Consumers are paying attention to the downsides of fast fashion, and socially conscious shoppers have embraced the growing slow fashion movement, which focuses on fewer seasons, fewer products and timeless designs produced sustainably. Fashion shopping app Lyst has seen an increase in sustainability-related keyword searches in early 2020 compared to the previous year, with average monthly searches rising to 32,000 from 27,000 in 2019 (Gubbay, 2021).

The growing concern about sustainability is particularly prominent among younger generations. According to a survey by the Global Consumer Confidence Association, 83 per cent of millennials in the United States value companies that implement programs to improve the environment. Similarly, 73% of Gen Z consumers are willing to pay more for sustainable items per First Insight. Young and growing brands in the fashion industry are making moves to align with this shift in consumer sensibilities. Sustainable activewear brand Girlfriend Collective emphasises transparency, selling items like leggings made from recycled polyester. Swiss company On planned to release fully recyclable shoes in the fall of 2021, paired with a subscription model to further close the recycling loop. Other brands, such as Everlane and Reformation, have also gained popularity with their sustainability and ethical marketing approaches.

Future researchers of sustainable business models for fashion could conduct multiple case studies to illustrate how pioneers move forward and identify, evaluate and exploit entrepreneurial opportunities in this industry. Our focus was mainly on sustainable and ethical fashion; thus, we used relevant definitions to explore the phenomenon. Therefore,

future research might be focused on taxonomies, phenomenologies and case studies according to other conceptualisations. We did not use specific business model frameworks, such as business model canvas. Thus, future studies could use such frameworks to understand the details of their business logic. Finally, most facts and figures are related to developed countries, and the concept is less studied in emerging and developing economies.

## References

- Berger-Grabner, D. (2018). Sustainability in fashion: an oxymoron?. In *Innovation Management and Corporate Social Responsibility* (pp. 171–180). Springer.
- Boons, F., & Lüdeke-Freund, F. (2013). Business models for sustainable innovation: state-of-the-art and steps towards a research agenda. *Journal of Cleaner Production*, 45, 9–19.
- Caetano, L.M. (2022). *The (un) sustainability of fashion industry: fashion-on-demand as solution?* (doctoral dissertation).
- Christen, A. (2018). *To what degree could Swiss millennials' conflicting desire for fashion, brand meaningfulness and sustainability be solved by the fashion-on-demand business model* (doctoral dissertation). Haute école de gestion de Genève.
- Claxton, S., & Kent, A. (2020). The management of sustainable fashion design strategies: An analysis of the designer's role. *Journal of Cleaner Production*, 268, 122112.
- Cooke, P., Nunes, S., Oliva, S., & Lazerretti, L. (2022). Open innovation, soft branding and green influencers: Critiquing 'fast fashion' and 'overtourism'. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(1), 52.
- Coscieme, L., Manshoven, S., Gillabel, J., Grossi, F., & Mortensen, L.F. (2022). A framework of circular business models for fashion and textiles: the role of business-model, technical, and social innovation. *Sustainability: Science, Practice and Policy*, 18(1), 451–462.
- Dabas, C.S., & Whang, C. (2022). A systematic review of drivers of sustainable fashion consumption: 25 years of research evolution. *Journal of Global Fashion Marketing*, 13(2), 151–167.
- Dana, L.P., & Salamzadeh, A. (2021). Why do artisans and arts entrepreneurs use social media platforms?: Evidence from an emerging economy. *Nordic Journal of Media Management*, 2(1), 23–35.
- Dana, L.P., Ramadani, V., Palalic, R., & Salamzadeh, A. (2022). *Artisan and handicraft entrepreneurs*. Springer.
- De Brito, M.P., Carbone, V., & Blanquart, C.M. (2008). Towards a sustainable fashion retail supply chain in Europe: Organisation and performance. *International journal of production economics*, 114(2), 534–553.
- Ebrahimi, P., Salamzadeh, A., Gholampour, A., & Fekete-Farkas, M. (2021). Social networks marketing and Hungarian online consumer purchase behavior: the microeconomics strategic view based on IPMA matrix. *Academy of Strategic Management Journal*, 20(4), 1–7.
- Fernandes, C.E., & Morais, R. (2021). A review on potential technological advances for fashion retail: smart fitting rooms, augmented and virtual realities. *dObra [s]-revista da Associação Brasileira de Estudos de Pesquisas em Moda*, 32(1), 168–186.
- Firdaus, A.Y., & Rahmanillah, A.R. (2022). Social movement of English civil society in the collapse of Rana Plaza Garment in Bangladesh. *International Journal of Arts and Humanities Studies*, 2(1), 103–108.
- Grazzini, L., Acuti, D., & Aiello, G. (2021). Solving the puzzle of sustainable fashion consumption: The role of consumers' implicit attitudes and perceived warmth. *Journal of Cleaner Production*, 287, 125579.
- Gubbay, C. (2021). How environmentalism, nationalism, and civil rights shape corporate social responsibility in the apparel industry.



- Gupta, V., Arora, M., & Minhas, J. (2020). Innovating opportunities for fashion brands by using textile waste for better fashion. In Pandit, P., Ahmed, S., Singha, K., & Shrivastava, S. (Eds.). *Recycling from Waste in Fashion and Textiles: A Sustainable and Circular Economic Approach*, John Wiley & Sons (pp. 101–121).
- Gyde, C., & McNeill, L.S. (2021). fashion rental: smart business or ethical folly?. *Sustainability*, 13(16), 8888.
- Hammer, N., & Plugor, R. (2019). Disconnecting labour? The labour process in the UK fast fashion value chain. *Work, Employment and Society*, 33(6), 913–928.
- Han, J., Seo, Y., & Ko, E. (2017). Staging luxury experiences for understanding sustainable fashion consumption: A balance theory application. *Journal of Business Research*, 74, 162–167.
- Hassan, S.H., Yeap, J.A., & Al-Kumaim, N.H. (2022). Sustainable fashion consumption: Advocating philanthropic and economic motives in clothing disposal behaviour. *Sustainability*, 14(3), 1875.
- Henninger, C.E., Alevizou, P.J., & Oates, C.J. (2016). What is sustainable fashion?. *Journal of Fashion Marketing and Management: An International Journal*, 20(4), 400–416.
- Jacobson, J., & Harrison, B. (2022). Sustainable fashion social media influencers and content creation calibration. *International Journal of Advertising*, 41(1), 150–177.
- Kabir, M.S. (2022). *Consuming fast fashion and sustainability: The role of self-concept, awareness and financial soundness* (doctoral dissertation). University of Huddersfield.
- Kannaiah, D., & Shanthi, R. (2015). The impact of augmented reality on e-commerce. *Journal of Marketing and Consumer Research*, 8, 64–73.
- Khan, R. (2019). ‘Be creative’ in Bangladesh? Mobility, empowerment and precarity in ethical fashion enterprise. *Cultural studies*, 33(6), 1029–1049.
- Khandual, A., & Pradhan, S. (2019). Fashion brands and consumers approach towards sustainable fashion. In *Fast fashion, fashion brands and sustainable consumption* (pp. 37–54). Springer.
- Kim, J., Kang, S., & Lee, K.H. (2020). How social capital impacts the purchase intention of sustainable fashion products. *Journal of Business Research*, 117, 596–603.
- Kozłowski, A., Searcy, C., & Bardecki, M. (2016). Innovation for a sustainable fashion industry: a design focused approach toward the development of new business models. In *Green Fashion* (pp. 151–169). Springer.
- Lohmeyer, N., Schüßler, E., & Kabeer, N. (2022). Social upgrading in the Bangladeshi garment sector Since Rana Plaza: Why some governance matters more than others. In *Economic and Social Upgrading in Global Value Chains* (pp. 385–411). Palgrave Macmillan.
- Ma, C., & Riggio, G. (2021). An examination of the effects on low-income communities by the “takeover” of thrift store clothing by resellers. *Journal of Student Research*, 10(2), 1–12.
- McKeown, C., & Shearer, L. (2019). Taking sustainable fashion mainstream: Social media and the institutional celebrity entrepreneur. *Journal of Consumer Behaviour*, 18(5), 406–414.
- McNeill, L., & Moore, R. (2015). Sustainable fashion consumption and the fast fashion conundrum: fashionable consumers and attitudes to sustainability in clothing choice. *International Journal of Consumer Studies*, 39(3), 212–222.
- Nodoushani, O., Stewart, C., & Kaur, M. (2016). Recycling and its effects on the environment. *Competition Forum*, 14(1), 65. American Society for Competitiveness.
- Nosratabadi, S., Mosavi, A., Shamshirband, S., Zavadskas, E.K., Rakotonirainy, A., & Chau, K.W. (2019). Sustainable business models: A review. *Sustainability*, 11(6), 1663.
- Olatubosun, P., Charles, E., & Omoyele, T. (2021). Rethinking luxury brands and sustainable fashion business models in a risk society. *Journal of Design, Business & Society*, 7(1), 49–81.
- Pal, R. (2017). Sustainable design and business models in textile and fashion industry. In *Sustainability in the textile industry* (pp. 109–138). Springer.
- Pal, R., & Gander, J. (2018). Modelling environmental value: An examination of sustainable business models within the fashion industry. *Journal of cleaner production*, 184, 251–263.
- Pandit, P., Ahmed, S., Singha, K., & Shrivastava, S. (Eds.). (2020). *Recycling from Waste in Fashion and Textiles: A Sustainable and Circular Economic Approach*. John Wiley & Sons.

- Papachristou, E., Dimou, Z., Grammatikopoulou, M., Mpaltadoros, L., & Stavropoulos, T.G. (2022). Personalised fashion on-demand and e-fashion business models: A user survey in Greece. In *Advances in Product Design Engineering* (pp. 83–103). Springer.
- Pérez-Bou, S., & Cantista, I. (2022). Politics, sustainability and innovation in fast fashion and luxury fashion groups. *International Journal of Fashion Design, Technology and Education*, 16(1), 46–56.
- Salamzadeh, A. (2021). How artisans and arts entrepreneurs use social media platforms? *Journal of Organizational Culture, Communications and Conflict*, 25(2), 1–2.
- Salamzadeh, A., Ebrahimi, P., Soleimani, M., & Fekete-Farkas, M. (2021). An AHP approach to identify the barriers of sustainable geotourism development in Iran: an economic view. *Geoheritage*, 13(3), 1–11.
- Salamzadeh, A., Mortazavi, S.S., & Hadizadeh, M. (2022). Social media and digital technologies among pottery makers and in the sewing sector. In *Artisan and Handicraft Entrepreneurs* (pp. 217–238). Springer.
- Shabir, S., & AlBishri, N.A. (2021). Sustainable retailing performance of Zara during COVID-19 pandemic. *Open Journal of Business and Management*, 9(3), 1013.
- Shen, B. (2014). Sustainable fashion supply chain: Lessons from H&M. *Sustainability*, 6(9), 6236–6249.
- Shen, D., Richards, J., & Liu, F. (2013). Consumers' awareness of sustainable fashion. *Marketing Management Journal*, 23(2), 134–147.
- Shrivastava, A., Jain, G., Kamble, S.S., & Belhadi, A. (2021). Sustainability through online renting clothing: Circular fashion fueled by Instagram micro-celebrities. *Journal of Cleaner Production*, 278, 123772.
- Testa, D.S., Bakhshian, S., & Eike, R. (2021). Engaging consumers with sustainable fashion on Instagram. *Journal of Fashion Marketing and Management: An International Journal*, 25(4), 569–584.
- Todeschini, B.V., Cortimiglia, M.N., Callegaro-de-Menezes, D., & Ghezzi, A. (2017). Innovative and sustainable business models in the fashion industry: Entrepreneurial drivers, opportunities, and challenges. *Business Horizons*, 60(6), 759–770.
- Toghraee, M.T., Ahmadi, A., & Salamzadeh, A. (2022). Arts Entrepreneurs in an Emerging Economy. In *Artisan and Handicraft Entrepreneurs* (pp. 137–147). Springer.
- Vincent, A. (2017). Breaking the cycle: How slow fashion can inspire sustainable collection development. *Art Libraries Journal*, 42(1), 7–12.
- Woodside, A.G., & Fine, M.B. (2019). Sustainable fashion themes in luxury brand storytelling: The sustainability fashion research grid. *Journal of Global Fashion Marketing*, 10(2), 111–128.
- Yakubu, B.N., Salamzadeh, A., Bouzari, P., Ebrahimi, P., & Fekete-Farkas, M. (2022). Identifying the key factors of sustainable entrepreneurship in the Nigerian food industry: The role of media availability. *Entrepreneurial Business and Economics Review*, 10(2), 147–162.
- Zhang, C.T., & Wang, Z. (2021). Production mode and pricing coordination strategy of sustainable products considering consumers' preference. *Journal of Cleaner Production*, 296, 126476.



Mizanur Rahman, Nafizur Rahman, Aidin Salamzadeh  
and Léo-Paul Dana

## 20 Strategic Drivers of Corporate Environmental Sustainability

**Abstract:** The fashion industry has a significant environmental impact on a global scale; it employs a large proportion of the world's workers and accounts for a large share of global exports. Based on our findings, proactive and reactive environmental strategies, sustainability orientation, green entrepreneurial orientation, green innovation and circular economy strategies are crucial strategic drivers for the corporate environmental sustainability of the fashion industry. Some recommendations to overcome these challenges are also proposed in this chapter.

**Keywords:** environmental sustainability, fashion industry, strategic drivers, sustainable development

### Context

Negative environmental consequences, such as climate change, underline the need for firms to address these problems since they are significant contributors to them. In recent times, this has presented the relevance of business sectors in formulating a dependable strategy for reducing the pollution they cause. This discussion also applies to the fashion industry since it has considered resources as a “bottomless pit” in recent decades, and manufacturing procedures are mostly about “make and dump.” Such an orientation incentivises sustainability-focused behaviour and necessitates an organisation-wide emphasis on circularity in the manufacturing process (Thorisdottir & Johannsdottir, 2019). However, the fashion industry is one of the most challenging fields to work in when it comes to protecting the environment. It is characterised by short lead times, with global and segmented supply chains (Bruce & Daly, 2011). In 2013, 1,200 people died when a garment factory collapsed in Dhaka. That incident hurt fashion firms and made people more aware of issues related to safety and working conditions. Furthermore, the initiatives initiated by non-governmental organisations (NGOs) like Greenpeace have uncovered numerous violations of environmental and

---


**Mizanur Rahman**, BRAC Business School, BRAC University, Bangladesh, e-mail: mizanmgt@gmail.com

**Nafizur Rahman**, Bangladesh University of Professionals (BUP), Bangladesh,

e-mail: nafizrahman23@gmail.com

**Aidin Salamzadeh**, Faculty of Management, University of Tehran, Tehran, Iran, e-mail: salamzadeh@ut.ac.ir

**Léo-Paul Dana**, Dalhousie University, ICD Business School Paris and Lappeenranta University of Technology

Open Access. © 2024 the author(s), published by De Gruyter.  This work is licensed under the Creative Commons Attribution 4.0 International License.

<https://doi.org/10.1515/9783110795431-020>

human rights by fashion firms and boosted customers' and businesses' concern for sustainability (Macchion et al., 2018).

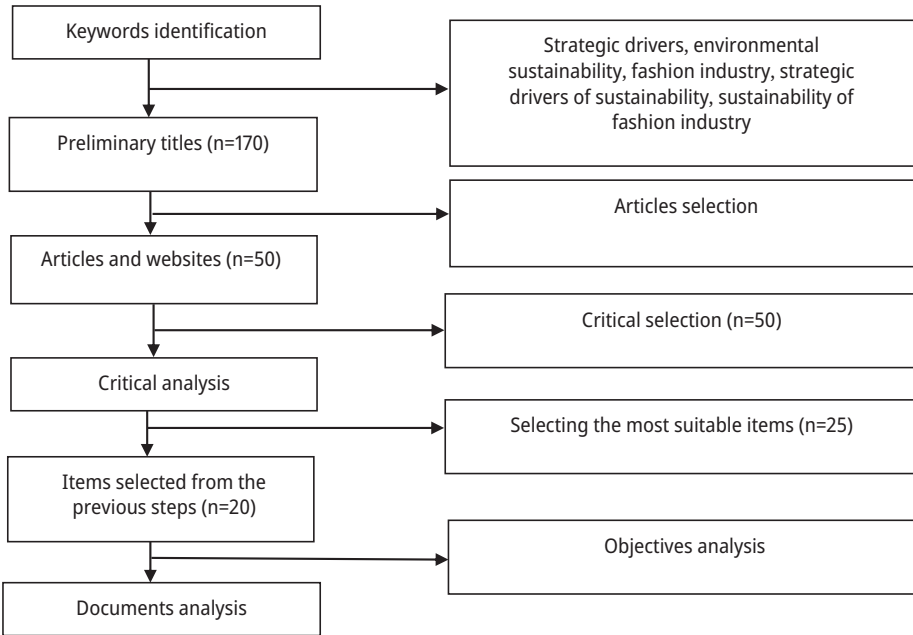
The strategic approaches concerning sustainability rely, first and foremost, on improving the forces that push organisations toward sustainable programs or minimising the barriers that prevent them from being implemented. Firms may be compelled to embrace sustainability due to past incidents that harmed their brand image among customers and their intent to integrate sustainability principles into their business strategy. In the fashion sector, where customer awareness of environmental and social concerns has expanded dramatically, determining how organisational strategies may integrate sustainability principles into operational procedures has become increasingly crucial (Gazzola et al., 2020). Moreover, from a social perspective, the necessity to adopt corporate social responsibility in an organised manner is becoming an essential competitive aspect, particularly for fashion firms with industrial plants in impoverished regions (Macchion et al., 2018).

Many firms take environmental concerns proactively beyond just adhering to environmental regulations. Specific strategies can assist businesses in addressing sustainability concerns in their production processes and supply chains. Globally increasing demand and interest in the environmental sustainability necessitate a deeper understanding of the numerous drivers of organisational actions. In the past few years, environmental literature has documented several technological, financial, human-related and green drivers of environmental sustainability. However, little emphasis has been given to the strategic drivers of sustainability in the fashion industry context. A few studies reported that environmental strategies such as proactive and reactive environmental strategies, sustainability orientation, green entrepreneurial orientation, green innovation, and circular economy strategies are a few crucial strategic drivers for corporate environmental sustainability. However, fashion firms encounter several challenges in implementing these strategies. Although these drivers and challenges are crucial to effective implementation, researchers have provided them with limited specific attention. In addition, earlier research findings are widely dispersed throughout the several domains and settings where environmental sustainability has been studied. These fragmented findings pose difficulties for researchers and practitioners attempting to advance the existing corpus of literature. Thus, this study identifies key strategic drivers of fashion firms' actions aiming at improved environmental sustainability practice. Consequently, in relation to the objective of the chapter, we propose the following two questions:

1. What are the possible strategic drivers encouraging environmental sustainability in the fashion industry?
2. What challenges do apparel firms face while implementing sustainability initiatives, and how can they mitigate them?

## Methodology

This chapter is based on a literature review (Kumar et al., 2022; Salamzadeh & Dana, 2022) and is focused on the current publications relevant to strategic drivers of corporate environmental sustainability in the fashion industry. A method for doing a literature review devised by Mascarenhas et al. (2018) is illustrated in Figure 20.1. We have applied this method to complete this chapter.



**Figure 20.1:** Authors' creation inspired by Hoque et al. (2020) and Mascarenhas et al. (2018).

After considering the characteristics and purpose of this review chapter, the researchers used keywords to search for relevant papers in several databases. These databases included Scopus, Web of Science, Google Scholar, DOAJ, JSTOR and other websites and online resources pertinent to the research. Among the most often used keywords were “strategic drivers,” “environmental sustainability,” “fashion industry,” “strategic drivers of sustainability” and “sustainability of fashion industry”. The initial search for titles using the keywords resulted in the discovery of over 17,000 articles, book chapters and conference papers. Then, the researchers tried to find 170 preliminary articles. After critically analysing these articles, we selected 50 based on individual keywords. After that, based on the combination of all keywords, “strategic drivers of corporate environmental sustainability of the fashion industry,” we selected the most

relevant and suitable 20 articles. After a comprehensive assessment of those 50 articles and websites, we concluded that 20 should be used for the content analysis.

## The Rationale for the Chapter

The fashion industry has a substantial environmental impact, especially in comparison to its global scale; it employs a significant proportion of the world's workforce and accounts for a significant share of global exports (Wong & Ngai, 2021). The manufacturing processes, including the dyeing and polishing stages, require a substantial amount of the use of chemicals and natural resources, and they also have a significant impact on the surrounding environment (De Brito et al., 2008).

Several fashion firms have embraced green by re-configuring their business operations and implementing formal sustainability plans to accomplish 5R (reduce, reuse, recycle, redesign, re-image) (Ho & Choi, 2012). It is worth noting that even fast-fashion businesses, which are infamous for promoting “disposable apparel”, are nowadays more “sustainable” and ecologically sensitive than in the past (Choi & Li, 2015). However, there is a limited understanding of the strategic drivers of the fashion industry's sustainability performance.

## Strategic Drivers of Environmental Sustainability in the Fashion Industry

The fashion industry is subject to various pressures to address environmental sustainability challenges. It is vital to understand how businesses incorporate ecological concerns into their corporate agendas and how these assimilation strategies affect corporate success. Today's enterprises adopt various environmental strategies to reduce their environmental impact and improve their sustainability performance. The environmental strategy entails the scope of an organisation's environmental protection measures within its strategic planning (Chan, 2010). Enterprises' strategic approaches to implementing ecological practices vary from reactive to proactive (Adomako et al., 2021; Chan et al., 2022). Extant literature defines a proactive environmental strategy (PES) as a firm's environmental goals, plans and actions that go beyond just following the law (Ateş et al., 2012, p. 1081). PES is envisioned as a prevention-oriented approach to ecological management since it focuses on implementing proactive environmental measures to avoid pollution (Chan et al., 2022). Proactive fashion firms are usually driven by a sustainable long-term vision and top management commitment allowing the adoption of green product technologies, green building solutions, green logistics management and other sustainability efforts to improve organisations' environmental sustainability (Macchion et al., 2018).

Reactive environmental sustainability (RES) entails business initiatives that depend on end-of-pipe measures (e.g., recycling, waste recovery) to mitigate adverse environmental impacts resulting from the firm's operating processes and products (Baah et al., 2020). It is considered a control-oriented strategy for ecological sustainability since it focuses on correctly treating and disposing of pollutants following their generation using various pollution-control methods (Chan et al., 2022). Prior studies on PES and RES argue that production procedures that solely aim to satisfy environmental standards exhibit a reactive strategy. In contrast, those incorporating additional voluntary sustainable initiatives not required for manufacturing enterprises exhibit a proactive strategy for greening manufacturing procedures and processes (Baah et al., 2020). In the fashion industry, reactive firms are devoting less effort to sustainability in their supply chain (Macchion et al., 2018).

Another crucial strategic factor that drives environmental sustainability in the apparel industry is the firms' sustainability orientation. Sustainability orientation comprises deeply ingrained attitudes and ideas that offer behavioural standards that define a firm's sustainability efforts (Roxas & Coetzer, 2012, p. 464). Adopting a sustainability perspective enables businesses to commit to developing improved sustainability practices and employing the resources required to efficiently produce suitable new green products, resulting in enhanced green innovation performance (Cheng, 2018). Sustainability-oriented firms in the fast-fashion sector incorporate environmental, social and economic issues and practices into their strategy and marketing actions, enhancing their environmental sustainability performance and brand equity (Sun et al., 2014). Additionally, managers of fashion firms must have a green entrepreneurial orientation to attain a sustainable competitive advantage (Pratono et al., 2019). Green entrepreneurial orientation is the propensity to explore possibilities that provide economic and ecological benefits by creating eco-friendly goods and services. Drawing insights from the dynamic capabilities theory, the green entrepreneurial orientation of an organization can be regarded as a critical strategic capability to react to and implement strategic initiatives such as green supply chain management, boosting the firm's performance. Apparel firms with a green entrepreneurial orientation can successfully implement green supply chain practices and enjoy superior triple bottom line (environmental, economic, and social) sustainability performance (Habib et al., 2020). Several strategies allow enterprises in the fashion sector with a green entrepreneurial orientation to contribute to environmental sustainability. Green entrepreneurial orientation addresses ecological concerns by developing environmentally friendly goods and services. These firms enhance workplace safety and health while minimising harmful emissions or poisonous substances. Moreover, green entrepreneurial-oriented fashion firms prioritise customer health and safety, fostering social welfare (Jiang et al., 2018).

Also important are green innovation strategies. A green innovation strategy promotes using raw materials effectively, reducing waste and material disposal expenses (Zhang et al., 2020). Green innovation may inspire businesses to develop novel methods to recycle waste into goods that generate excess revenue. Therefore, influential



green innovation assists firms in increasing their efficiency and bolstering their core capabilities, which may lead to enhanced economic performance.

Green innovation is a valuable resource that can lead to superior sustainability performance among businesses (Wang & Juo, 2021). Business innovation is expanding, and many fashion firms focus on end-of-life management by collecting old clothes and footwear from their customers and reusing them in collaboration or cooperation with other recycling organisations. Given the features of the short fashion supply chain and the rapidly shifting customer demand in the textile and apparel sector, the significance of innovation for fashion businesses is self-evident. However, as the textile and clothing industries continue to expand, pollution issues, including excessive manufacturing emissions of apparel firms, clothing stockpiling and waste produced by fast fashion, garbage dumps, or burning of off-season clothing arise, compelling fashion brands to implement green innovation strategies as soon as possible to resolve the escalating severity of environmental issues (Chen et al., 2021). By decreasing costs and waste, green processes and product innovation reduce apparel firms' negative environmental impact and enhance their social and financial performance.

## Conclusion

This industry has a significant impact on the environment, particularly on a world-wide scale. It is responsible for employing a large percentage of the world's labour force and accounts for a sizeable portion of global exports. Our findings suggest that proactive and reactive environmental strategies, sustainability orientation, green entrepreneurial orientation, green innovation and circular economy strategies are the most crucial strategic drivers for the corporate environmental sustainability of the fashion industries. Yet, research on the challenges of using sustainable practices in the fashion industry is scattered and unclear. Few authors take a systematic and in-depth look at current problems (Barbosa et al., 2020; Hofmann et al., 2022; Su et al., 2021).

Supply chain management is one of the crucial issues for the fashion industry. In the case of sustainable development, the fashion industry has numerous challenges with its supply chains (Hofmann et al., 2022). This challenge includes setting up supply chains that match the business owners' values (Mukendi et al., 2020; Todeschini et al., 2020) and finding qualified suppliers (Mukendi et al., 2020; Štefko and Steffek, 2018). It is also challenging for businesses and the fashion industry to set up and run flexible supply chains that can adapt to new trends (Hofmann et al., 2022; Mukendi et al., 2020).

The fashion industry often struggles due to a lack of resources, which has been widely documented (Beck and Demircuc-Kunt, 2006; Hofmann et al., 2022). Scarce resource endowments and the accompanying managerial concerns are acknowledged

as crucial factors impacting the competitiveness of small fashion enterprises (Vishwakarma et al., 2022; Oelze, 2017). Also, a lack of resources, knowledge and experience are also mentioned as a significant challenge for the sustainable fashion industry (Vishwakarma et al., 2022; Kozlowski et al., 2018). In addition, within this sector, there is no provision for the workforce to receive official training. Only a tiny percentage of businesses make training their staff a priority. Inadequate skills lead to lower productivity, which in turn lowers the quality of the product (Vishwakarma et al., 2022).

Developing a sustainable relationship with customers is another challenge for fashion firms (Hofmann et al., 2022). Due to the vast variations of fashion, it is hard for the fashion industry to predict and match their ideas with what consumers and other stakeholders demand (Todeschini et al., 2017).

Fast fashion is another challenge for the fashion industry (Vishwakarma et al., 2022). Consumers' lack of eco-consciousness is the initial cause of fast fashion (Bhardwaj and Fairhurst, 2010). Since the consumer can purchase a lot of the current fashion clothes for low prices, s(he) does so regardless of whether or not s(he) actually needs them. Because of this, consumers throw away outdated clothing before it can reach the end of its product life.

## References

- Adomako, S., Ning, E., & Adu-Ameyaw, E. (2021). Proactive environmental strategy and firm performance at the bottom of the pyramid. *Business Strategy and the Environment*, 30(1), 422–431. <https://doi.org/10.1002/bse.2629>
- Ateş, M.A., Bloemhof, J., Van Raaij, E.M., & Wynstra, F. (2012). Proactive environmental strategy in a supply chain context: The mediating role of investments. *International Journal of Production Research*, 50(4), 1079–1095. <https://doi.org/10.1080/00207543.2011.555426>
- Baah, C., Opoku-agyeman, D., Abdel, F., & Abdoulaye, M. (2020). Understanding the influence of environmental production practices on firm performance: AA proactive versus reactive approach. *Journal of Manufacturing Technology Management*, 32(2), 266–289. <https://doi.org/10.1108/JMTM-05-2020-0195>
- Barbosa, M., Castañeda-Ayarza, J.A., & Ferreira, D.H.L. (2020). Sustainable strategic management (GES): Sustainability in small business. *Journal of Cleaner Production*, 258, 120880.
- Beck, T., & Demirguc-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking & Finance*, 30(11), 2931–2943.
- Bruce, M., & Daly, L. (2011). Adding value: challenges for UK apparel supply chain management – a review. *Production Planning & Control*, 22(3), 210–220. <https://doi.org/10.1080/09537287.2010.498574>
- Bhardwaj, V., & Fairhurst, A. (2010). Fast fashion: response to changes in the fashion industry. *The international review of retail, distribution and consumer research*, 20(1), 165–173.
- Chan, R.Y.K. (2010). Corporate environmentalism pursuit by foreign firms competing in China. *Journal of World Business*, 45(1), 80–92. <https://doi.org/10.1016/J.JWB.2009.04.010>
- Chan, R.Y.K., Lai, J.W.M., & Kim, N. (2022). Strategic motives and performance implications of proactive versus reactive environmental strategies in corporate sustainable development. *Business Strategy and the Environment*, 31(5), 2127–2142. <https://doi.org/10.1002/bse.3011>

- Chen, L., Qie, K., Memon, H., & Yesuf, H.M. (2021). The empirical analysis of green innovation for fashion brands, perceived value and green purchase intention-mediating and moderating effects. *Sustainability*, 13(8). <https://doi.org/10.3390/su13084238>
- Cheng, C.C.J. (2018). Sustainability orientation, green supplier involvement, and green innovation performance: Evidence from diversifying green entrants. *Journal of Business Ethics*, 161, 393–414. <https://doi.org/10.1007/s10551-018-3946-7>
- Choi, T.M., & Li, Y. (2015). Sustainability in fashion business operations. *Sustainability*, 7(11), 15400–15406. <https://doi.org/10.3390/su71115400>
- De Brito, M. P., Carbone, V., & Blanquart, C. M. (2008). Towards a sustainable fashion retail supply chain in Europe: Organisation and performance. *International journal of production economics*, 114(2), 534–553
- Gazzola, P., Pavione, E., Pezzetti, R., & Grechi, D. (2020). Trends in the fashion industry. The perception of sustainability and circular economy: A gender/generation quantitative approach. *Sustainability*, 12(7), 2809. <https://doi.org/10.3390/SU12072809>
- Habib, M.A., Bao, Y., & Ilmudeen, A. (2020). The impact of green entrepreneurial orientation, market orientation and green supply chain management practices on sustainable firm performance. *Cogent Business and Management*, 7(1). <https://doi.org/10.1080/23311975.2020.1743616>
- Hofmann, K. H., Jacob, A., & Pizzingrilli, M. (2022). Overcoming growth challenges of sustainable ventures in the fashion industry: a multinational exploration. *Sustainability*, 14(16), 10275.
- Ho, H.P.Y., & Choi, T.M. (2012). A Five-R analysis for sustainable fashion supply chain management in Hong Kong: A case analysis. *Journal of Fashion Marketing and Management*, 16(2), 161–175. <https://doi.org/10.1108/13612021211222815/FULL/XML>
- Hoque, R., Ahmed, S. M., Naher, N., Islam, M. A., Rousham, E. K., Islam, B. Z., & Hassan, S. (2020). Tackling antimicrobial resistance in Bangladesh: A scoping review of policy and practice in human, animal and environment sectors. *PLoS one*, 15(1), e0227947.
- Jiang, W., Chai, H., Shao, J., & Feng, T. (2018). Green entrepreneurial orientation for enhancing firm performance: A dynamic capability perspective. *Journal of Cleaner Production*, 198, 1311–1323. <https://doi.org/10.1016/j.jclepro.2018.07.104>
- Kozłowski, A., Searcy, C., & Bardecki, M. (2018). The redesign canvas: Fashion design as a tool for sustainability. *Journal of Cleaner Production*, 183, 194–207.
- Kumar, S., Sahoo, S., Lim, W.M., & Dana, L.P. (2022). Religion as a social shaping force in entrepreneurship and business: Insights from a technology-empowered systematic literature review. *Technological Forecasting and Social Change*, 175, 121393.
- Macchion, L., Da Giau, A., Caniato, F., Caridi, M., Danese, P., Rinaldi, R., & Vinelli, A. (2018). Strategic approaches to sustainability in fashion supply chain management. *Production Planning and Control*, 29(1), 9–28. <https://doi.org/10.1080/09537287.2017.1374485>.
- Mascarenhas, C., Ferreira, J. J., & Marques, C. (2018). University–industry cooperation: A systematic literature review and research agenda. *Science and Public Policy*, 45(5), 708–718.
- Mukendi, A., Davies, I., Glozer, S., & McDonagh, P. (2020). Sustainable fashion: current and future research directions. *European Journal of Marketing*, 54, 2873–2909.
- Oelze, N. (2017). Sustainable supply chain management implementation–enablers and barriers in the textile industry. *Sustainability*, 9(8), 1435.
- Pratono, A.H., Darmasetiawan, N.K., Yudianto, A., & Jeong, B.G. (2019). Achieving sustainable competitive advantage through green entrepreneurial orientation and the role of inter-organizational learning. *The Bottom Line*, 32(1), 2–15. <https://doi.org/10.1108/BL-10-2018-0045>
- Roxas, B., & Coetzer, A. (2012). Institutional environment, managerial attitudes and environmental sustainability orientation of small firms. *Journal of Business Ethics*, 111(4), 461–476. <https://doi.org/10.1007/S10551-012-1217-Z>

- Salamzadeh, A., & Dana, L.P. (2022). A systematic literature review of crisis management in and by small and medium-sized enterprises. *Small and medium sized enterprises and the COVID-19 response*, 1, 38–61.
- Štefko, R., & Steffek, V. (2018). Key issues in slow fashion: Current challenges and future perspectives. *Sustainability*, 10(7), 2270.
- Su, J., Wood, A.M., & Gargeya, V.B. (2021). Sustainable entrepreneurship in the apparel industry: Passion and challenges. *The Journal of the Textile Institute*, 113, 1935–1941.
- Sun, Y., Kim, K.H., & Kim, J. (2014). Examining relationships among sustainable orientation, perceived sustainable marketing performance, and customer equity in fast fashion industry. *Journal of Global Fashion Marketing*, 5(1), 74–86. <https://doi.org/10.1080/20932685.2013.866319>
- Thorisdottir, T.S., & Johannsdottir, L. (2019). Sustainability within fashion business models: A systematic literature review. *Sustainability*, 11(8), 1–26. <https://doi.org/10.3390/su11082233>
- Todeschini, B.V., Cortimiglia, M.N., & de Medeiros, J.F. (2020). Collaboration practices in the fashion industry: Environmentally sustainable innovations in the value chain. *Environmental Science & Policy*, 106, 1–11.
- Todeschini, B.V., Cortimiglia, M.N., Callegaro-de-Menezes, D., & Ghezzi, A. (2017). Innovative and sustainable business models in the fashion industry: Entrepreneurial drivers, opportunities, and challenges. *Business Horizons*, 60(6), 759–770.
- Vishwakarma, A., Meena, M.L., Dangayach, G.S., & Gupta, S. (2022). Identification of challenges & practices of sustainability in Indian apparel and textile industries. In *Recent Advances in Industrial Production* (pp. 149–156). Springer.
- Wang, C.H., & Juo, W.-J. (2021). An environmental policy of green intellectual capital: Green innovation strategy for performance sustainability. *Business Strategy and the Environment*, 30(7), 3241–3254. <https://doi.org/10.1002/bse.2800>.
- Wong, D.T.W., & Ngai, E.W.T. (2021). Economic, organizational, and environmental capabilities for business sustainability competence: Findings from case studies in the fashion business. *Journal of Business Research*, 126, 440–471. <https://doi.org/10.1016/j.jbusres.2020.12.060>.
- Zhang, J., Liang, G., Feng, T., Yuan, C., & Jiang, W. (2020). Green innovation to respond to environmental regulation: How external knowledge adoption and green absorptive capacity matter? *Business Strategy and the Environment*, 29(1), 39–53. <https://doi.org/10.1002/BSE.2349>.



Fanny Adams Quagraine

# 21 An Environmental Sustainability Model for Ghanaian Clothing: A Fashion Cycle Approach

**Abstract:** Sustainable practices are demanded by stakeholders in the fashion industry due to the negative impact of the production and consumption of clothing. Accordingly, there is a call for ensuring that the stakeholders – producers, consumers and government – in the fashion industry become key sustainable agents. This chapter argues that the fashion industry is one of the world's worst pollutants. The industry, therefore, requires the development of a new model. Securing this model is complex given the diverse activities required in the production of clothing. Given this perspective, the chapter examines barriers to sustainable practices in Ghana as well as strategies that the stakeholders in the industry can put in place.

**Keywords:** clothing, fashion cycle, environmentally sustainable model, Ghana

## Introduction

The importance of environmentally sustainable fashion is generally accepted, as researchers have pointed to the importance of creating brands that have little or no harmful effects on the environment. This is the premise of the observation by Cho (2021), that the fashion industry is responsible for the creation of 10% of the human-caused greenhouse gas emissions and 20% of global wastewater, as well as using more energy than the aviation and shipping sectors combined. Globally the fashion industry is expected to grow from \$1.5 trillion USD in 2020 to approximately \$2.25 trillion by 2025, indicating a continuous growth in demand for fashion products (Ikram, 2022) with its resultant negative effects.

Likewise, the United Nations reported that the greenhouse gas emission produced by the fashion industry will increase by more than 50% by 2030 if it is not controlled. Unless sustainable strategies are adopted by stakeholders in the clothing industry, these negative effects will worsen (Napper, Barrett & Thompson, 2020).

Despite these harmful effects of the fashion industry on the environment, the industry is key to economic development (Ikram, 2022), especially for developing economies where tourism and exports of non-traditional products are being used as strategies for economic development. The industry is also vital for job creation. For example, it created a net of 15.8 million new jobs in South Africa (Parschau & Hauge, 2020). In Ghana, the

---

Fanny Adams Quagraine, e-mails: fquagraine@gimpa.edu.gh, amafanny@yahoo.com

fashion industry is a key contributor to the gross domestic product (Amoah et al., 2022). In Accra and Tema, for example, Do The Right Thing Apparel is an exported-oriented clothing business that offers employment to thousands of young people.

Actors in Ghana's fashion industry have come up with innovative technologies to accelerate the fashion industry's green transition (Gaulithy et al., 2022). The industry also contributes to the generation of foreign exchange from the exportation of fashion products.

The importance of the fashion industry to the Ghanaian economy is seen by the government's efforts in its promotion as a foreign exchange earner. Accordingly, technical and vocational education has been revamped with modern infrastructure at both secondary and tertiary levels, to equip graduates with quality demand-driven employable and entrepreneurial skills needed for successful functions in the fashion industry.

As the global population is expected to be 8.5 billion people by 2030, it will increase annual apparel consumption. This calls for the creation of a sustainable fashion industry that aims at developing socially responsible and eco-conscious materials and production practices (Kutsenkova, 2017). This has been embraced by international fashion retailers including Bodice Raw Mango and Stella McCartney, among others, who are highly committed to the transformation of their material sourcing and downstream supply chains to a more sustainable approach (Khandual & Pradhan, 2019).

The negative effects of the fashion industry on the environment have to be understood as strategies that can be used to prevent and minimise negative impacts. This is vital for developing economies that are constrained with resources and therefore have become a recipient of rejected clothing from the factories or those retailers that are not able to sell – “store rejects” and second-hand clothing known as “*Obroni waawu*”, literally meaning “the dead white man” to signify the clothes that came from Europe (D'Adamo et al., 2022; Norris, 2012;).

An appropriate starting point in this conversation is the recognition that fashion is embedded in the environment, with a network of complex activities from the extraction of raw materials to the production, distribution, wearing and disposal of items. Consequently, this study responds to calls for research to be driven toward the creation of sustainable fashion practices (Barrera-Verdugo & Villarroel-Villarroel, 2022; Ikram, 2022).

In paying attention to the Ghanaian context, this chapter examines: (1) the barriers to sustainable clothing in Ghana; and (2) strategies from the perspectives of stakeholders that are key for the creation of a sustainable Ghanaian model for clothing. Securing this model is complex given the diverse nature of the activities involved in the sector.

Accordingly, this chapter draws on the fashion cycle model created by Julie's Bicycle and Centre for Sustainable Fashion (CSF) at the London College of Fashion, University of the Arts London and its concepts of design, make, acquire, use and reuse/disposal. The argument is that combining these perspectives provides a conceptual

framework to understand the creation of environmentally sustainable fashion strategies. This study is part of the discourse which argues that environmental sustainability in fashion takes place through a series of practices (Mazzarella, Storey & Williams, 2019; Radtke, de Almeida & Espartel, 2022).

## Overview of Fashion in Ghana

Ghanaian fashion can be traced back to the pre-colonial era when Ghanaians used the barks of trees and hides of animals to clothe themselves. Fashion generally is a particular style that is popular for a period (Arthur, 2020). It comprises all sorts of clothing items, textiles fabrics, shoes and bags among others. Clothing fashion refers to trendy styles worn by people within a certain period. In this study, the focus is on clothing as it makes up the bulk of imported second-hand items into developing economies (Eppinger, 2022).

Clothing in Ghana is made up of both locally produced and imported ones. Locally produced ones are generally made with kente, cotton and synthetic materials such as polyester and wax print, while the imported ones are mostly made up of synthetic materials. The taste of Ghanaian fashion can be observed in all ethnic groups (Kwaky-Opong, 2014) as each group – Akans, Gas, Ewes and Northerns – has its own kind of colourful kente (see Figure 21.1).



**Figure 21.1:** Different types of Ghanaian kente (photo: Fanny Adams Quagraine).

Kente is used for royalty and special social occasions such as weddings and graduations (Amissah, 2022; Swazan & Das, 2022), funerals, naming ceremonies, puberty rites and other social gatherings, with culture playing an important role in the choice of styles (Buami et al., 2022). The common kente styles worn by females are the *kaba* blouse and “*slit*” (a long wrap skirt) that is designed and sewn by fashion designers.



Ghanaian clothing has undergone a complete overhaul because of globalisation. For example, the colonial period witnessed the introduction of wax prints (see Figure 21.2).



**Figure 21.2:** Dutch wax prints (photo: Fanny Adams Quagraine).

The prints are inspired by African designs and colours to suit the African market taste.

Most of the wax print has names such as “*sika wo ntaban*” which means “money has wings” and it can fly away when it is not well managed. Another name is “*Min Sumor bo tamo sh3*”, which means “I love you like sugarcane”. The wax is versatile and used for various items that are used for all occasions.

Due to the collective nature of the Ghanaian social system, every occasion leads to an assembly of people with different styles. Accordingly, people especially women scramble through the gathering for new designs. It is common for women looking out for uniquely designed flamboyant dresses to either take a picture or request the contact details of the fashion designer. Table 21.1 gives a summary of what some Ghanaian top-class fashion designers do.

**Table 21.1:** Ghanaian top fashion designers.

<b>Name of fashion designer</b>	<b>Fashion activities</b>
Christie Brown	Infuses modernism into the traditional African aesthetic
Kabutey and Sumaiya Dzieror	Created a luxury bridal collection
Abrantie	Uses African print to design dapper shirts, ties and pants
Atto Tetteh	Produces contemporary African aesthetic streetwear brands, for men
Leslie Wiredu	Designs stage and movie costumes

## The Environmental Disaster of the Fashion Industry

While the global fashion industry has various advantages for the Ghanaian economy, it has also become an environmental hazard. The Ghana Watsan Journalists Network (GWJN), a group of journalists interested in the promotion of good environmental and health issues, is creating awareness of the problems associated with poor-quality items that end up in landfill sites and bodies of water. Creating awareness is important as 40% of the 15 million items of second-hand clothing that arrive in Ghana weekly are classed as being of poor quality. This view is illustrated by the position of UN Goodwill Ambassador Roberta Annan: “You can’t take it out. You have to dig. It’s buried. It’s stuck. Some of these clothes are polyester and, I would say, synthetic fabrics that also go into the waterway and choke the fish and marine life there.”

Currently, many materials used in the fashion industry are synthetic. Synthetic materials are chemically made and are the primary cause of plastic microfibers found in bodies of water. Most of these fibres are made of polyester, consisting of plastic that releases carbon emissions. Plastic harms the environment in that it takes a long time to degrade in both the ocean and land. Even worse, when it finally breaks down, it releases a toxic substance that is harmful to marine and land ecosystems. A key concern of such activity is that these plastic microfibers end up in aquatic life, causing many health issues for people who consume seafood.

The fashion industry uses much water. Faded jeans are dipped into blue-dye solutions to brighten their colour. Paa Kofi reports: “we need to get the colour right, to increase its value and get more money for it.” Such activity is dangerous in that fabric dyes find their way to bodies of water.

When synthetic cloths are washed, the fabrics release microplastic elements from their fibres which are disposed into bodies of water. For Ghanaians, clothing is normally used once due to the hot weather, meaning the clothing has to be washed each time it is worn. Studies have found that about 35% of microplastics in bodies of water come from the fashion industry; these become part of the food chain. Microplastics are dangerous to humans when consumed as they can damage cells, inducing inflammation, immune reactions and carcinogenesis (Kumar et al., 2022).

The Kantamanto Market in Ghana’s capital, Accra, is a hub for second-hand clothing. In this market, one finds all kinds of people with different statuses daily hastily sorting the piles of clothes to grab the best bargain. However, 40% of this clothing is considered to be of poor quality. These end up in gutters, bodies of water and landfill sites polluting entire ecosystems.

Likewise, in Accra, the capital city of Ghana, exposure to the negative effects of perineal flooding has been a major concern to city authorities and residents alike. According to Karley (2009), flooding is caused by poor solid waste management practices including clothing waste clogs in major open drains. Thus, rotting wasted clothing blocks gutters and stops the flow of water generated by the rains, resulting in the cre-

ation of life-threatening floods and the spread of water-borne diseases such as malaria, typhoid and cholera.

One way of disposing of waste in Ghana is dumping then at the landfill site. One key site in Ghana is the Kone landfill site. The site is overwhelmed with wasted fashion items mostly from poor quality clothing. This creates sanitation issues for residents living around these sites as they have to breathe in the toxic methane gas created by the landfill sites.

Seldom used clothing can be recycled into new clothes. Once an item of clothing is discarded it is at the mercy of the environment. While clothing made from natural fabrics like cotton and linen is easy to degrade relatively quickly, synthetic fabrics can take many decades to break down.

## Sustainable Fashion

Sustainability as a concept is ostensibly understood (Henninger, Alevizou, & Oates, 2016), making it embedded in context and situation. Sustainable fashion stands in opposition to fast fashion which is known for the promotion of cheaper clothes, high volumes of production, shorter fashion cycles, higher disposal rates and unsafe and unstandardised methods of production (Arrigo, 2020; Mcintry, 2019).

Sustainable fashion is associated with slow fashion as it emerged in response to the negative effect of fast fashion (Henninger et al., 2016). Ertekin and Atik (2015) define sustainable fashion as a complex and difficult balanced approach to fashion production, which fosters long-term relationships, builds local production and focuses on transparency as well as promoting ethical conduct, reduced fashion production and purchasing quality over quantity clothing. Sustainable fashion has a bearing on both the employees and production processes. While it seeks to improve production techniques as well as using organic recyclable raw materials, it also empowers employees with sustainable dealings throughout the supply chain (Chauhan, 2022). Bañon et al. suggested that “sustainability does [not] apply to the physical environment in itself, but rather our human relationship with the world” (2011, p. 180).

Fashion clothing can be said to be sustainable when clothing items are designed, produced, distributed, used and disposed of in ways that lead to social, economic and ecological gains in society. This results in responsible production-consumption processes that reject labour exploitation, fabric wastage, etc. (Mukendi et al., 2020). Although scholars consider sustainable fashion from a practical point of view, the concept is used as an umbrella for many practices (Aakko & Koskennurmi-Sivonen 2013; Fletcher, 2015). Aakko and Koskennurmi-Sivonen (2013) summarise the complexity of fashion sustainable practices to cover taking and returning resources, sourcing materials, treatment of fabrics by using less harmful processes, production methods, societal implications, saving resources, information and transparency.

This chapter adapts the position of Mukendi et al. (2020) that sustainable fashion is a production practice that creates products that are perceived to be more sustainable by the consumer. While there is evidence to suggest that sustainable fashion remains key in environmental sustainability literature, there is an agreement that creating sustainability is a complex process (Aakko & KoskennurmiSivonen, 2013). These complex processes are examined using the fashion cycle approach.

## Fashion Cycle

The fashion cycle refers to the periodic changes and reappearances of fashion (Andreozzi & Bianchi, 2007). In other words, it is a period during which fashion exists, moving through the five stages from introduction through obsolescence. It is also the period in which a fashion clothing trend emerges, peaks and move out of style. This means that fashion clothing moves through five different stages – design, make, acquire, use, reuse, or disposal – during its existence.

Design in fashion can be defined as fashionable or luxury items made by a fashion designer (Watanabe et al., 2022). Designers come out with new styles, textures and combinations of colours. Designers are key in the fashion industry as the choices they make affect the entire supply chain. The design activities begin with research which is aimed at coming up with a concept for an item. This is followed by the development of a pattern – a template for the item. Then the pattern is traced into a fabric and thereafter cut out according to the pre-determined measurements. This results in the coming up of a draft of the final design. Normally, cheap materials are used for these activities. Due to the key role they play in the making of clothing, designers are recognised as having the capacity to champion environmental sustainability practices by selecting and designing with the most appropriate materials and processes. The second activity is the making of the item.

People are always prepared to wear and use fashion items that are in vogue. Once an item is purchased it should be delivered. The massive production of clothing and its delivery to customers negatively affects the environment. For instance, the clothing journey from manufacturers to customers increases the carbon footprint of a product.

The use stage represents the wearing of the clothing designed. The washing/ laundry process, either hand or machine-washing, releases microfibre pollutants that make their way into the food chain and our bodies (Rathinamoorthy & Raja Balasaraswathi, 2022).

In the last phase of the fashion cycle, sales for an item decline due to boredom or distaste for the style. This stage is known as consumer obsolescence as customers discard a style because it is out of fashion. Shakespeare described it as “fashion wears out more apparel than the man” (Crane, 2020). At this stage, people either resell or

dispose their items. Retail stores also put declining styles on sale racks to make room for new styles. When retail outlets are not able to sell these in developed economies, they are sent to developing economies as part of store rejects. At this stage, fashion consumers will have already turned to new styles, thus beginning a new fashion cycle. The advent of globalisation and rapid development in telecommunication has shortened fashion cycles.

## Making Fashion Environmentally Sustainable

To address the objective set for this chapter, to develop a Ghanaian environmental sustainability model using the fashion cycle as a lens, this section provides the responses obtained from interviewing representatives of 30 enterprises including sellers of fabrics, fashion designers, tailors and seamstresses and also 30 customers of fashion.

## Barriers to Environmentally Sustainable Fashion in Ghana

Using the fashion cycle model, the responses obtained in respect of barriers to environmentally sustainable fashion in Ghana are presented below. The responses revealed that various barriers make it very difficult in achieving environmental sustainability in the fashion industry in Ghana.

According to Titi, a problem arising from a small seam allowance is that it becomes impossible to change the measurements of clothes when one gains weight. She added “if it is possible to undo the seams it would be easier to extend the life span of a dress as it can be worn for a long time”. The need to start the clothing process with sustainability was indicated by Lizzy, a fashion designer. She pointed out the need to use high quality but cheap fabrics for the creation of *etoiles*.

Macchion et al. (2018) observed that the dynamic taste for new designs puts a lot of pressure on the fashion industry to come up with new products and this put immense pressure on the designers and producers to escalate their production lifecycles. This is associated with fast fashion. This has led to designers regularly introducing new designs. Ghana is a collective society and therefore every special occasion such as a naming ceremony, knocking, which is asking for a girl’s hand in marriage, engagements, weddings, funerals, graduation, promotion at work, among others is an occasion for an assembly of friends and family members. Most of these ceremonies are celebrated with a specific fabric designed into dresses, gowns, shirts and “kaftan”. It is sad to say that most of this special clothing is worn once and may not be used

again. This view is supported by the view of Nana, a customer: “I had two expensive dresses made for my engagement and a gown for my wedding. I have not worn any of them after then for three years. They are still hanging in my wardrobe”.

The creation of a sustainable fashion brand involves much investment (Kumar & Suganya, 2019), which most producers do not have. For fashion designers, using expensive fabric like cotton makes the design of clothing very expensive as the Ghanaian market is flooded with fast fashion cheaper clothing from Asian countries. In addition, the customers do not have the means to demand very good quality clothing. Ghanaians are very fashion-conscious and are always on the lookout for new trends, but they are challenged by low-income levels. This implies that to meet their fashion needs, most Ghanaians have to turn to second-hand clothing. It is therefore not surprising that Ghana has a lucrative second-hand clothing industry. Kwame, a fashion designer, commented: “I come across various customers who are interested in quality clothing. However, as we say in Ghana, the coins are not there to take them to the clothing store. Their best alternative is to go for the first selection of second-hand clothing which is known as the bend boutique”.

A key issue to address sustainability is the recycling of items. Recycling implies that items produced are to be used and later circulated in the industry in their most usable form. However, most clothing when not in use is left to the environment to decompose. In developing economies most raw material used is not recyclable as the industry lacks the technology for recycling. Furthermore, there is a mindset that it is only the poor that have to recycle their clothing items. The following excerpt illustrates this: “we all dispose of our unwanted clothing just like any other rubbish, into the trash bin they go” (Afua, a customer).

A means of dealing with pollution is to create awareness of its negative effects on the environment. To address this challenge, champions of sustainable fashion such as Christopher Raeburn consider awareness as the first step to sustainability. Similarly, 92 signatories of the Global Fashion Agenda 2020 Circular Fashion System Commitment committed to educating 100% of their design teams in sustainable design principles; however, most key players in the Ghanaian fashion industry are yet to fully embrace this strategy. A key underlying reason may be the lack of policy to compel producers of fashion items to be responsible as consumers are increasingly asking for the industry to address its negative effects on the environment. According to Mensah, a tailor: “Yes, I have heard of sustainable fashion. From where I stand it involves doing more for less. My question is what is the government doing to promote it?”

## Making Clothing Environmentally Sustainable in Ghana

The identification of activities that related to five areas of the fashion cycle – design, make, acquire, use and reuse/ disposal – emerged from the analyses. Additionally, content analyses revealed two activities: (i) the production of sustainable fabrics; and (ii) awareness creation. Neither is highlighted in the fashion cycle model. The point can be made that the production of sustainable fabrics reflects the need of starting the fashion process with sustainability in mind. Awareness creation conceived as an activity of the fashion cycle reflects a strong commitment to the promotion of the value concept in the creation and maintaining sustainability in the supply chain of the fashion process. Table 21.2 shows the environmentally sustainable fashion strategies in Ghana.

**Table 21.2:** Environmentally sustainable fashion strategies in Ghana.

<b>Fashion cycle activities</b>	<b>Example of strategies</b>
Production of fabric	Sustainable fabrics
Design	Sustainable design; multipurpose styles
Process	Change of attitudes; multipurpose styles
Acquire	Affordable quality fabrics; multipurpose styles
Use	Sustainable clothing
Reuse/ disposal	Policy; upcycling; cash back programme; renting clothing
Awareness creation	Social media, education; transparency

## Production of Fabrics

Based on the data gathered, several activities associated with the production of sustainable fabrics were identified. Sustainable fabric is made up of eco-friendly or recyclable materials. As highlighted by Flo (a retailer of fabrics), Nana Ama (a fashion designer) and Kiki (a seamster) the availability of such fabrics is the key to dealing with the negative effect of present fashion clothing challenges on the environment. Nana Ama said: “a Ghanaian proverb says you kill a snake only by cutting its head, these environmentally sustainable challenges can only be addressed when sustainability issues are included at the beginning of the clothing processes. I mean ensuring that materials used are sustainable”.

Consequently, stakeholders can learn from other best practices in the production of such fabrics. For example, bio couture, the use of bacteria to produce materials that can be used to manufacture fabric as it has been accepted by the industry as an environmentally sustainable material. Businesses and researchers are also looking for ways to use materials such as bamboo, hailed as a sustainable fabric as it does not

require much water or pesticides to grow (Borowski, Patuk & Bandala, 2022). Likewise, Ghana can learn from brands such as North Face and Patagonia which are using organic or regenerative cotton that is grown without chemicals such as pesticides and fertilisers with organic fertilisers that can be produced in Ghana. H&M is also using cupro, a material made from cotton waste, while Flocus produces biodegradable and recyclable yarns and fabrics from the fibres of kapok tree pods. As Ghana abandons a lot of natural materials, the government and academics can partner with both local and foreign organisations to engage in such ventures.

The government should provide incentives for research into moving the industry towards sustainable practices. For example, commissioning technical universities to study and develop sustainable fabric and organic dyes and finding solutions to the waste disposal challenge of fashion items. Likewise, the government could commission a research institution to look into Colorifix, Norwich's use of microorganisms which is grown from agricultural by-products for the use of dyes. This is laudable as Ghana has a lot of agricultural products.

## Design

Comments related to the sustainable design of clothing were also extracted from the responses. The underlying point was that designers can champion environmental sustainability practices by selecting and designing with the most appropriate sustainable fabrics and processes. Two activities – sustainable design and multipurpose styles – were mentioned by only consumers as key design activities. Two views worth highlighting for explaining sustainable designs are

“styles that do not require a lot of fabric to make” (Ami) and “I think these are simple, uncomplicated styles that can be worn for various occasions with the addition of some clothing touch-ups like scarfs” (Kwaku).

It also involves designing clothing the “Petit Pli way”. This calls for designing clothing that can grow with the customers, especially for children whose clothing has a short lifespan. For adults, the clothing needs to have an extra seam allowance that can be undone to expand the clothing as one gains weight later in life.

The customers also called for the design of multi-purpose styles. These are styles useful for “many occasions,” as well as being “one-size-fits-all”. The underlying goal for such a style is that it can be worn to various events. It reduces the demand for more fabrics, leading to less clothing being produced with an ultimate reduction in disposed of clothing finding its way to the landfill site. As noted by Maggie: “A dress sewn for church functions should be good for all formal functions like attending an interview, graduation, and the like”.



## Process

With the recognition that consumers are increasingly demanding clothing that is friendly to the environment, fashion designers are interested in the making of sustainable clothing. Literature details that the fashion industry uses these values to express identity. A value in the Ghanaian social structure is to use different clothing to celebrate different occasions. The more ceremonies one has to attend the more clothing he or she has to procure. As mentioned by Esi, a consumer: “we need to change the way we use clothing to depict who we are. The fact that you have different clothing for different occasions does not change your status in life in any way. Dealing with this will go a long way to addressing the sustainability issues we are trying to address.”

In line with this, the consumers called for the making of multi-purpose clothing. Such clothing has versatility and longevity. Versatility enables a consumer to wear one piece of clothing to different events, looking different each time. Some clothing found in the literature that meets the feature of multi-purpose is wrapped dresses, shirt dresses and blouse-to-dress. Nevertheless, these dresses, according to self-concept theory, are expected to enhance consumers’ self-images, identities and values (Legere & Kang, 2020).

## Acquire

In Ghana, acquiring a fashion item comes in a package that is normally made up of single-use plastics/ wrapping, expected to be soon disposed of. This plastic waste has a drastic negative effect on the environment. Both the consumers and producers indicated the need to address this menace. They called for the government to ban the use of single-use plastics/ wrapping with the implementation of the resolution by Heads of State, Ministers of Environment and other representatives from 175 nations at the UN Environment Assembly (UNEA-5) in Nairobi which called for addressing plastic pollution through a legally binding agreement by 2024. A recommendation was hence for the government to enact a policy that makes the production and sale of single-use plastics/ wrapping very expensive.

The importance of acquiring a multipurpose dress was also cited in this stage of the fashion cycle. Adoma said, “everybody especially women need to have at least three multipurpose dresses, with some clothing accessories these dresses become useful for a family gathering, a date or be worn to the office”. However, the low level of income was cited as a barrier to the procurement of quality clothing. Therefore, both producers and customers need to be assisted to achieve this goal. According to Margaret Howell, good quality involves wearing good quality material that gets better with age and is good for the purpose. She added “it is like getting to know a person you like – you don’t just dispense with them”.

## Use

The social judgment theory posits that using a product is dependent on consumer preferences (Quagraine, Dankwa & Kaban, 2021). This is based on the premise that consumers accept and commit to a brand when the brand's personality is congruent with their self-image. Sustainable clothing is ethically made and friendly to the environment (Chang & Watchravesringkan, 2018). Hannah acknowledged the need for some incentives for making sustainable clothing. This includes an incentive for “purchasing sustainable clothing” and “using recycled paper bags for packaging”. In this regard, sellers of clothing items have to invest in sustainable packaging materials that can be recycled and reused.

## Reuse/Disposals

The government is a key stakeholder in the Ghanaian fashion industry and has a role to play in the promotion of environmental sustainability. This can be done with the enactment of policies and the introduction of regulations and incentives aiming at the reduction of the import of second-hand clothing while efforts are put in place to promote the production of affordable recyclable clothing. Taking advantage of these requires importation and local development of recycling technologies.

Upcycling is vital to address the negative effect of fashion on the environment as it prolongs the shelf life of clothing which helps in reducing the resources needed for producing fashion items. Additionally, customers should think of repairing their clothing, donating them to their social group members, or putting them back in the recycling bin to make new clothes as well as buying less clothing to combat negative excessive consumerism. As Patagonia's Chief Product Officer Lisa Williams said, “The most environmentally sustainable jacket is the one that's already in your closet.”

Everybody has searched, identified, and bought desirable clothing but has only ended up wearing it only once or twice. To make something of this item of clothing, one can consider renting it out. Renting clothing rather than buying has also been advocated as a means of creating environmental sustainability. This not only leads to a reduction of fashion waste but also enables a person to wear prestigious clothing. This practice is common in Ghana where funeral clothing for men is rented for the mourning period. Adopting such a strategy has a positive effect on the environment as it results in the usage of less water, saves energy, reduces CO<sub>2</sub> emission and reduces pressure on raw materials and primary production (Pandey et al., 2020).

## Awareness

In fashion sustainable theory, the behavioural reasoning theory has been used to study sustainable consumption behaviours (Qin & Song, 2022). The findings from these studies revealed that there is a knowledge gap about the negative effects of unsustainable clothing behaviour (Leclercq-Machado et al., 2022). For this reason, effective strategies and policies have to be developed to create awareness campaigns (Ikram, 2022; Sinha, Sharma & Agrawal, 2022). Low income for the purchase of sustainable clothing (Wang et al., 2022), unavailability or limited options for sustainable clothing (Sinha et al., 2022; Weissmann & Hock, 2022), non-involvement of consumers in the product development journey (Di Giulio et al., 2022) and lack of sustainable styles (Sinha et al., 2022) are some of the behavioural reasons for not engaging in sustainable consumption behaviours. For consumers to relate to sustainable clothing, the government must implement effective sustainable awareness promotion.

The importance of creating sustainable awareness is noted by Christopher Raeburn, a champion of sustainable fashion who reports that awareness creation is the first step to sustainability. A key strategy advocated by the personality trait theory is word-of-mouth on social media towards sustainable fashion. This is important as Salem and Alanadoly (2020) found that the increasing impact of sustainable behaviours could be resolved by the availability of sustainability concepts on social media. Accordingly, brand champions can be recruited to post blogs and messages about sustainable fashion on social media. For example, customers should also be educated on how to shop for items. This is based on a proposition that humans are responsible for sustainable change as human actions are shaped by the environment (Pan, et al., 2022).

There is a need to create more awareness of the negative effect of the fashion industry on the environment. This calls for the creation of public awareness of the negative effect of climate change and the promotion of sustainable environmental practices at all levels of education and social gatherings.

Schiros, the cofounder and CEO of the startup Werewool, a biomaterial business inspired by nature, develops sustainable biodegradable textiles, using colour and other attributes found in nature. For fashion to be sustainable, Schiros calls for the inclusion of collaboration with traditional artisans and Indigenous communities to produce materials that address the environmental facet of sustainability.

Associated with sustainability is the issue of transparency. Transparency ensures consumers hold brands accountable for their activities and how they affect the environment. Thus, fashion brands are to be ethical in both the management of their operations and human resource. Greenwashing – intentionally deceiving consumers or overselling their efforts to be sustainable – should be outlawed.

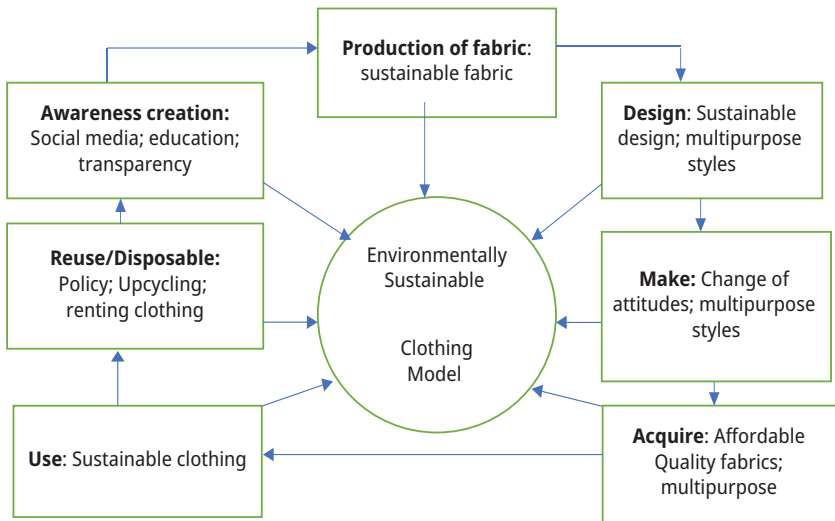
Due to the urgent need to address the negative effects of fashion, stakeholders in the fashion industry need to find viable and sustainable solutions to transition the industry towards a sustainable one in the future. Collaboration among these stake-

holders is key to ensuring the availability of resources and other factors needed for the creation of an environmentally sustainable clothing model in Ghana.

## Conclusion

There has been a call for more research in making fashions environmentally sustainable, against the recognition that the fashion industry is one of the key pollutants of bodies of water. This calls for the creation of a sustainable fashion industry that aims at developing socially responsible and eco-conscious materials and production practices (Kutsenkova, 2017).

It could be argued that the fashion cycle model for sustainable production and consumption of clothing shown in Figure 21.3 represents a relevant set of sustainable activities for clothing.



**Figure 21.3:** Environmental sustainability model for clothing.

This chapter indicates that the key sustainable strategies lie within the activities of producers and consumers of clothing. This is an important practical and theoretical development that is worth pursuing as it may lead to a fuller understanding of what constitutes marketing in SMEs.

## References

- Aakko, M., & Koskennurmi-Sivonen, R. (2013). Designing sustainable fashion: Possibilities and challenges. *Research Journal of Textile and Apparel*, 17(1), 13–22.
- Amisshah, E.K. (2022). Socio-cultural significance of Bonwire kente and Daboya Benchibi. *International Journal of African Society, Cultures and Traditions*, 10(1), 1–10.
- Amoah, J., Belas, J., Dziwornu, R., & Khan, K.A. (2022). Enhancing SMEs contribution to economic development: A perspective from an emerging economy. *Journal of International Studies*, 15(2), 63–76.
- Andreozzi, L., & Bianchi, M. (2007). Fashion: Why people like it and theorists do not. In *The evolution of consumption: theories and practices (Advances in Austrian Economics, Vol. 10)*, 209–229. Emerald Group Publishing Limited. [https://doi.org/10.1016/S1529-2134\(07\)100000](https://doi.org/10.1016/S1529-2134(07)100000)
- Arthur, L.B. (2020). Religion and dress. *Love to Know Website*. <https://womens-fashion.lovetoknow.com/womens-fashion-history/religion-dress>
- Arrigo, E. (2020). Global sourcing in fast fashion retailers: sourcing locations and sustainability considerations. *Sustainability*, 12(2), 1–2, 508.
- Bañon, G.A.J., Guillén Parra, M., Hoffman, W.M., & McNulty, R.E. (2011). Rethinking the concept of sustainability. *Business and Society Review*, 116(2), 171–191.
- Barrera-Verdugo, G., & Villarroel-Villarroel, A. (2022). Influence of product selection criteria on clothing purchase and post-purchase behaviours: A gender and generational comparison. *Plos one*, 17(6), e0267783.
- Borowski, P.F., Patuk, I., & Bandala, E.R. (2022). Innovative industrial use of bamboo as key “green” material. *Sustainability*, 14(4), 1955.
- Buami, E.K., Gbadegbe, R., Kassah, J.K., & Makafui, T.R. (2022). Beads as motifs in African print and contemporary fashion and interior trends. *Journal of Textile Design Research and Practice*, 10(3), 317–333. <https://doi.org/10.1080/20511787.2022.2149157>
- Chang, H.J., & Watchravesringkan, K. (2018). Who are sustainably minded apparel shoppers? An investigation to the influencing factors of sustainable apparel consumption. *International Journal of Retail & Distribution Management*, 46(2), 148162.
- Chauhan, M. (2022). Navigating ‘modernization’ in craft: Artisan-designers in Gujarat, India. *International Journal of Fashion Studies*, 9, 299–316.
- Cho, R. (2021). *Why fashion needs to be more sustainable*. Columbia Climate School Newsletter. State of the Planet Section. <https://news.climate.columbia.edu/2020/12/16/buying-stuff-drives-climate-change/>
- Crane, M.T. (2020). Hamlet and Progress. *Shakespeare Studies*, 48, 161.
- D’Adamo, I., Lupi, G., Morone, P., & Settembre-Blundo, D. (2022). Towards the circular economy in the fashion industry: The second-hand market as a best practice of sustainable responsibility for businesses and consumers. *Environmental Science and Pollution Research*, International, 29(31), 46620–46633. <https://doi.org/10.1007/s11356-022-19255-2>
- Di Giulio, M., Maina, M.A., Mureithi, K., Canepa, L., & Gai, S. (2022). The relationship between marketing and consumer choices. In *Products for Conscious Consumers* (pp. 67–87). Emerald Publishing Limited.
- Eppinger, E. (2022). Recycling technologies for enabling sustainability transitions of the fashion industry: status quo and avenues for increasing post-consumer waste recycling. *Sustainability: Science, Practice and Policy*, 18(1), 114–128.
- Ertekin, Z.O., & Atik, D. (2020). Institutional constituents of change for a sustainable fashion system. *Journal of Macromarketing*, 40(3), 362–379.
- Fletcher, K., & Tham, M. (Eds.). (2015). *Routledge handbook of sustainability and fashion*. Routledge.
- Gaulthry, M.A., Ngomedje, C.N., Pange-Ibinimion, P.B., & Coste-Manière, I. (2022). Sustainable fashion: African visual artist’s contribution to the new paradox discussion – Case of El Anatsui as a sustainable thinking agent. In *Sustainable Approaches in Textiles and Fashion* (pp. 167–182). Springer.

- Henninger, C.E., Alevizou, P.J., & Oates, C. J. (2016). What is sustainable fashion? *Journal of Fashion Marketing and Management: An International Journal*, 20(4), 400–416.
- Ikram, M. (2022). Transition toward green economy: Technological innovation's role in the fashion industry. *Current Opinion in Green and Sustainable Chemistry*, 37(100657), 100657. <https://doi.org/10.1016/j.cogsc.2022.100657>.
- Karley, N.K. (2009). Flooding and physical planning in urban areas in West Africa: Situational analysis of Accra, Ghana. *Theoretical and Empirical Researches in Urban Management*, 4(13), 25–41.
- Khandual, A., & Pradhan, S. (2019). Fashion brands and consumers approach towards sustainable fashion. In *Fast fashion, fashion brands and sustainable consumption* (pp. 37–54). Springer.
- Kumar, P.S. & Suganya, S. (2019). Systems and models for circular economy. In S.S. Muthu (Ed.), *Circular economy in textiles and apparel: processing, manufacturing, and design* (pp. 169–181). Woodhead Publishing.
- Kumar, R., Manna, C., Padha, S., Verma, A., Sharma, P., Dhar, A., & Bhattacharya, P. (2022). Micro (nano) plastics pollution and human health: How plastics can induce carcinogenesis to humans? *Chemosphere*, 298, 134267.
- Kustenkova, Z. (2017). The sustainable future of the modern fashion industry. <https://doi.org/10.33015/dominican.edu/2017.honors.st.02>
- Kwakye-Opong, R. (2014). Clothing and colour symbolisms in the Homowo festival: A means to sociocultural development. *Research on Humanities and Social Sciences*, 4(13), 113.
- Leclercq-Machado, L., Alvarez-Risco, A., Gómez-Prado, R., Cuya-Velásquez, B.B., Esquerre-Botton, S., Morales-Ríos, F., & Yáñez, J.A. (2022). Sustainable fashion and consumption patterns in Peru: an environmental-attitude-intention-behavior analysis. *Sustainability*, 14(16), 9965.
- Legere, A., & Kang, J. (2020). The role of self-concept in shaping sustainable consumption: A model of slow fashion. *Journal of Cleaner Production*, 258, 120699.
- Macchion, L., Da Giau, A., Caniato, F., Caridi, M., Danese, P., Rinaldi, R., & Vinelli, A. (2018). Strategic approaches to sustainability in fashion supply chain management. *Production Planning & Control*, 29(1), 9–28.
- Mazzarella, F., Storey, H., & Williams, D. (2019). Counter-narratives towards sustainability in fashion. Scoping an academic discourse on fashion activism through a case study on the centre for sustainable fashion. *The Design Journal*, 22(sup1), 821–833.
- Mukendi, A., Davies, I., Glozer, S., & McDonagh, P. (2020). Sustainable fashion: current and future research directions. *European Journal of Marketing*, 54(11), 1–2, 22.
- Napper, I.E., Barrett, A.C., & Thompson, R.C. (2020). The efficiency of devices intended to reduce microfibre release during clothes washing. *Science of The Total Environment*, 738, 140412.
- Norris, L. (2012). Economies of moral fibre? Recycling charity clothing into emergency aid Blankets. *Journal of Material Culture*, 17(4), 389–404.
- Pan, C., Abbas, J., Álvarez-Otero, S., Khan, H., & Cai, C. (2022). Interplay between corporate social responsibility and organizational green culture and their role in employees' responsible behavior towards the environment and society. *Journal of Cleaner Production*, 366, 132878.
- Pandey, R., Pandit, P., Pandey, S., & Mishra, S. (2020). Solutions for sustainable fashion and textile industry. In *Recycling from Waste in Fashion and Textiles* (pp. 33–72). Wiley. <https://doi.org/10.1002/9781119620532.ch3>
- Parschau, C., & Hauge, J. (2020). Is automation stealing manufacturing jobs? Evidence from South Africa's apparel industry. *Geoforum*, 115, 120–131.
- Petersson McIntyre, M. (2021). Shame, blame, and passion: Affects of (Un)sustainable wardrobes. *Fashion Theory*, 25(6), 735–755. <https://doi.org/10.1080/1362704x.2019.1676506>
- Ozdamar Ertekin, Z., & Atik, D. (2015). Sustainable markets: Motivating factors, barriers, and remedies for mobilization of slow fashion. *Journal of Macromarketing*, 35(1), 53–69. <https://doi.org/10.1177/0276146714535932>

- Qin, B., & Song, G. (2022). Internal motivations, external contexts, and sustainable consumption behavior in China – Based on the TPB-ABC integration model. *Sustainability*, 14(13), 7677.
- Quagraine, F.A., Dankwa, A.D., & Kabalan, A.A.M. (2021). The social lens of choice of hairstyle among Ghanaian female youth. *Fashion, Style & Popular Culture*, 8(1), 6381.
- Radtke, M.L., de Almeida, S.O., & Espartel, L.B. (2022). What brought me here? Different consumer journeys for practices of sustainable disposal through takeback programmes. *Sustainability*, 14(9), 5003.
- Rathinamoorthy, R., & Raja Balasaraswathi, S. (2022). Investigations on the impact of handwash and laundry softener on microfiber shedding from polyester textiles. *The Journal of The Textile Institute*, 113(7), 1428–1437.
- Salem, S.F., & Alanadoly, A.B. (2020). Personality traits and social media as drivers of word- of-mouth towards sustainable fashion. *Journal of Fashion Marketing and Management: An International Journal*, 25(1), 24–44.
- Sinha, P., Sharma, M. and Agrawal, R. (2022), “A systematic review and future research agenda for sustainable fashion in the apparel industry”, *Benchmarking: An International Journal*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/BIJ-02-2022-0142>
- Swazan, I.S., & Das, D. (2022). Bangladesh’s emergence as a ready-made garment export leader: An examination of the competitive advantages of the garment industry. *International Journal of Global Business and Competitiveness*, 17(2), 162–174. <https://doi.org/10.1007/s42943-022-00049-9>
- Wang, L., Xu, Y., Lee, H., & Li, A. (2022). Preferred product attributes for sustainable outdoor apparel: A conjoint analysis approach. *Sustainable Production and Consumption*, 29, 657–671.
- Watanabe, C., Akhtar, W., Tou, Y., & Neittaaniemi, P. (2022). A new perspective of innovation toward a non-contact society-Amazon’s initiative in pioneering growing seamless switching. *Technology in Society*, 69, 101953.
- Weissmann, M.A., & Hock, R.L.T. (2022). Making sustainable consumption decisions: The effects of product availability on product purchase intention. *Journal of Global Marketing*, 35(4), 269–284.

Md. Saidur Rahaman, Nishath Anjum, Iqbal Hossain Moral and  
Léo-Paul Dana

## 22 Business Models in Bangladesh: Problems and Prospects

**Abstract:** While Bangladesh's garment industry is snowballing, it is beginning to face several problems in various areas. This chapter aims to catalogue the obstacles to sustainability faced by Bangladesh's garment industry and outline possible opportunities. This chapter is qualitative and constructed from secondary sources. The data came from various published sources, including journals, articles, reports, websites and online databases. According to the study, low wages, gender inequality, a dearth of trade unions, fire safety and risk issues and unfavourable working conditions are important issues in Bangladesh. The government, private organisations and factory owners should take responsible measures to guarantee a better working environment with increased satisfaction if the industry is to achieve a satisfactory sustainable position.

**Keywords:** fashion, Bangladesh, business models

### Context

Nearly three million low-income garment workers in Bangladesh have a cumulative impact on foreign exchange of \$34.13 billion per fiscal year (Usman Sabir, 2021). As a result, preserving this industry is crucial to the country's long-term economic growth. The ready-made clothing industry has been a driving force in Bangladesh's economic growth (Paul et al., 2019). Formerly known as a "bottomless basket". Bangladesh has achieved remarkable human and social development despite severe resource constraints, growing its GDP by an average of 6% each year. For whatever reason, in the last decade, Bangladesh's garment industry has rapidly grown to become the country's primary export earner (Ashraf & Prentice, 2019). Rapid industrial development has shown the potential for new job creation and poverty alleviation initiatives. Bangladesh is the world's second-largest exporter of garments. According to the most recent data from the Export Promotion Bureau (EPB), Bangladesh's garment exports

---

**Md. Saidur Rahaman**, Metropolitan University (Bangladesh), e-mail: saidurmgt@gmail.com

**Nishath Anjum**, Metropolitan University (Bangladesh), e-mail: nishath.tonny@gmail.com

**Iqbal Hossain Moral**, Northern University of Business and Technology Khulna (Bangladesh), e-mail: iqbalmgt@gmail.com

**Léo-Paul Dana**, Dalhousie University, ICD Business School Paris and Lappeenranta University of Technology



climbed by 30 percent to \$23.99 billion between July 2021 and January 2022 (BGMEA, 2021; Islam, 2021).

Bangladesh's economy relies heavily on the garment industry, but this sector has come under pressure in recent times (Rahman & Anwar, 2007). Hundreds of garment factory employees in Bangladesh have lost their lives due to fires, which have become all too common in that country's garment industry (Chowdhury et al., 2014). Also, the 2013 collapse of the Savar garment factory, which killed thousands of workers, received widespread media attention in Bangladesh and beyond. The safety and longevity of Bangladesh's garment industry have been called into question by this catastrophe. The vast majority of clothing factory owners do not implement even the most basic safety measures. The lack of a proper policy and a real labour union policy in this industry is a major issue. The manufacturing owners see this as an opportunity to increase profits without increasing investment. This leads them to act corruptly in a series of ways that often culminate in the types of situation mentioned above.

Several regular international buyers of ready-made clothing products have already stated that they will not do business with enterprises that have this culture because of the absence of safety and a suitable workplace environment. In addition, there is a growing demand from purchasing departments for greener goods. Environmental indicators such as life cycle evaluations, water footprints and CO<sub>2</sub> emissions associated with production are increasingly being included in product labelling and posted on company websites. In order to educate their consumers, they reveal details of their manufacturing procedure. However, the bulk of Bangladeshi garment makers and producers are still clueless about the growing need for eco-friendly products (Ansary & Barua, 2015). They have yet to adopt a green strategy or incorporate sustainability metrics into their manufacturing procedures. Thus, the garment sector in Bangladesh is most at risk of losing access to the global market, which might quickly lead to the economic collapse of the country. The purpose of this article is, then, to investigate the difficulties associated with achieving sustainability in Bangladesh's garment sector and to outline potential solutions.

## Historical Development

Bangladeshi textiles, particularly Muslim and Jamdani fabrics, gained worldwide recognition in the past and were worn by the kings and queens of Europe and other nations. The British government in India did not provide significant support to the textile industry and preferred to see England prosper. The manufacturing of ready-made garments (RMGs) is a relatively young industry in Bangladesh, and the coordinated mass manufacturing of them is even newer. Until the mid-twentieth century, customers told tailor exactly what they wanted, and the customers also supplied the fabric. With the exception of infant and toddler wear and men's knit underwear

(*genji*), Bangladesh had essentially no local market for ready-made clothing prior to the 1960s.

It was not until the late 1970s that Bangladesh's RMG industry shifted its attention primarily to exporting. However, the demand for RMG inside the country has been on the rise recently due to rising incomes and shifting consumer preferences. Employment, profits in foreign currency and the sector's contribution to GDP all increased rapidly as the sector expanded. And as the RMG industry has expanded, a new breed of business owners has emerged and established a robust private sector. Women make up a sizable proportion of these company owners. A businesswoman established Baishakhi Garment in 1977; it was one of the first textile firms to place an emphasis on exporting. The RMG industry has expanded greatly during the past 15 years. In 1978, there were only nine factories that made clothes to be exported. Less than a million dollars in export revenue was generated by these plants. Smaller companies produced clothing for both the U.S. and other nations. Reaz Garments, Paris Garments, Jewel Garments and Baishakhi Garments were the names of four of these venerable but outdated manufacturers. Established in 1960 as a small tailoring business in Dhaka, Reaz Garments is now a global leader in the garment industry. It was the first company of its kind. For the first 15 years or so, sales were restricted to residents of the home nation.

In 1973, the company's name was changed to M/s. Reaz Garments Ltd. In 1978, the company sold 10,000 men's shirts to a Parisian firm for 13 million francs. This business pioneered the practise of shipping goods internationally directly from Bangladesh. Desh Garments Ltd. was the first non-equity joint venture in the clothing business, established in 1979. Desh and the Daewoo Corporation of South Korea worked together on technical and marketing issues. The corporation was the first to have exporting as its only focus. Production at the firm began in 1980. It had about 120 workers, three of whom were women who had been trained in South Korea. In 1980, a South Korean company and a Bangladeshi company opened the first clothing factory that they both owned. Bangladeshi partners put up 51% of the capital for the new company, which was called Young ones Bangladesh. It sold its first batch of padded and unpadded jackets to Sweden in December 1980. It is estimated that by the end of 1982, 47 factories were producing clothing. In 1984–1985, there were 587 clothing manufacturers, which was a big change. Nearly 2,900 RMG plants operated in 1999, an increase from the previous year. If you were looking for a place to buy clothes, Bangladesh was one of the top twelve exporters in the world.

## Current Status

Since the 1980s, Bangladesh's garment sector has made steady improvements. Nurul Quader Khan established Bangladesh's clothing industry. He dreamed of improving the country's position. In 1978, he sent 130 trainees to South Korea to learn garment

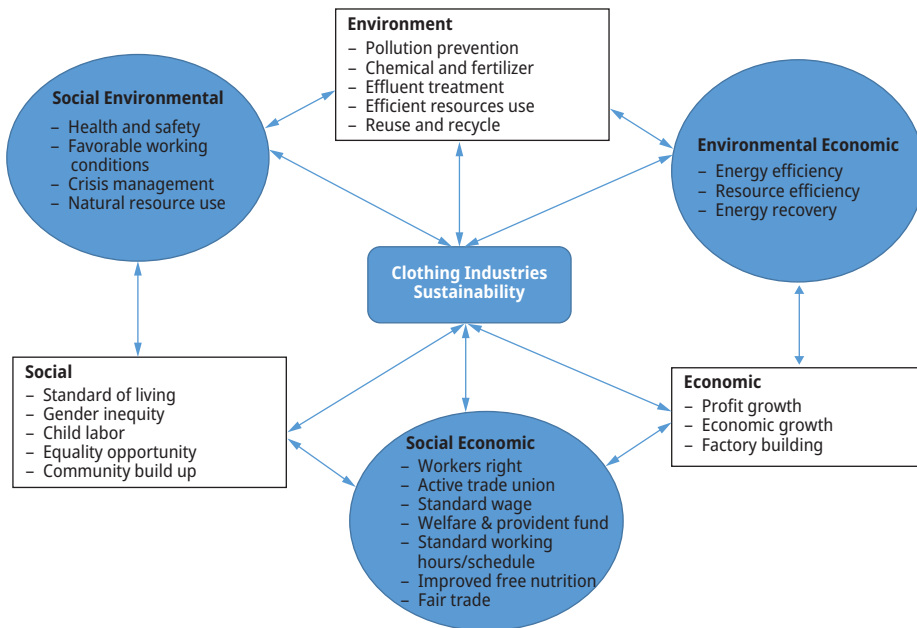
manufacturing. In Bangladesh, he founded the Desh Garment Factory with trainees. At the same time, the late Akter Mohammad Musa of Bond Garments, the late Mohammad Reyazuddin of Riaz Garments, Mohammad Humayun of Paris Garments, Mohammad Fazlul Azim, Engineer of Azim Group, Major (Ret.) Abdul Mannan of Sunman Group, M Shamsur Rahman of Stylecraft Ltd. and AM Subid Ali of Stylecraft Ltd. came forward to enrol their names as pioneers, after which Bangladesh's clothing industry soared. The country has 5,500 woven garment factories, 1,700 knitwear enterprises and 1,300 spinning, finishing and dyeing facilities (Hasan et al., 2020). Currently, 3.5 million women work in the industry. Sixty percent of RMG exports go to the EU, 23% to the US, 4.8% to Canada and 12.1% elsewhere (Zaman, 2021). Bangladesh exports knitwear to 93 countries, with the EU and US being the biggest importers (Abreu, 2015). Despite recent obstacles, the industry has carved itself a niche in the global market and is thriving.

After a bloodless coup, President Hussein Muhammad Ershad implemented the New Industrial Policy (NIP) in 1982, distorting the textile industry, creating export processing zones (EPZs) and encouraging foreign direct investment. The New Industrial Strategy returned 33 jute mills and 27 textile mills to their owners (NPI). Overstock and internal supplies hampered ready-made clothing exports. The knit division has exported shirts, t-shirts, trousers, sweaters and jackets since the 1990s. In 2006, the US and Europe provided 90% of Bangladesh's RMG sector's revenue. Bangladesh was the world's sixth-largest exporter in 2006. Since its beginning, different inspirations have led to the industry's progress and evolution. Child labour was discovered in 1994 and eliminated in 1995. From 1995 until 2005, the WTO Agreement on Textiles and Clothing (ATC) was in place, with industrialised nations committing to export fewer textiles and limited quotas. The 10-year accord gave Bangladesh quota-free access to European markets and preferential quotas for the U.S. and Canada. The MFA quota helped establish, develop and mature the apparel industry. As the quota scheme ended in 2004, many believed it would hurt exports. Bangladesh's 2006 exports accounted for 2.8% of global revenues. In 2007, the U.S. was the leading export market at \$3.23 billion. Bangladesh's exports climbed 43.36 percent year on year to \$15.66 billion in 2010–11, despite the global recession of 2007–2008. Bangladesh was China's second-largest ready-made clothing producer in 2011.

In 2011–12, Bangladesh exported \$19.09 billion in garments. At \$2.42 billion, the US is Bangladesh's largest woven textile market. Bangladesh exported \$5.36 billion in garments to the EU, or half of its total exports. A fire at Tazreen Fashions Ltd. revealed poor fire safety and working conditions. In 2019–2020, garment exports accounted for 84% of total export revenues, which is both heartening and worrying (BGMEA, 2021; Islam, 2021). Bangladesh's ready-made clothing sector has been its biggest source of foreign revenues for 25 years (Das et al., 2018; Rahman, 2021; Zaman, 2021). After the quota system was eliminated, Bangladesh's apparel exports grew 21% per year from 2005 to 2022.

## Sustainability Drivers

The garment industry of Bangladesh lags far behind in terms of sustainability. Many concerns are lacking when the three areas of sustainability are evaluated. Only the economic conditions may have reasonable and good achievements among the environment, social and economic perspectives of Bangladesh's garment industry. The benefit of increased earnings flows straight to the owners in the garment industry. Profits barely cover the wages of the workers. The economic growth of Bangladesh is also reliant on garment exports because garment items account for 80% of the total exports of Bangladesh. So in this regard it can be stated that the garment industry has a significant link with the economic development of Bangladesh. The GDP growth of this country has been consistent since 2000 with an annual growth rate of roughly 6%. In this connection profit sharing with the garment workers is urgently needed to ensure their commitment for the improvement of this sector; this initiative can be one of the most important determinants toward the sustainability of this industry, which is shown in the Figure 22.1.



**Figure 22.1:** Determining factors of clothing industries' sustainability.  
Source: Authors' contribution.

Workers have an extremely low quality of living standards because they are paid the lowest wage. Gender equality in terms of wage and employment status is not properly maintained. Despite the fact that child labour in the garment industry has decreased drastically after the Harkin Bill in the United States in 1992, there are still many children working in small scale informal industries. The majority of them are 12 to 15-year-old female workers from rural areas. There is a lack of strong community development among garment workers. Most of the workers dwell in the slum regions and are socially classified as lower-class individuals.

Vulnerability of the workers' health and safety issues indicate very poor socio-environmental conditions. Fires, building collapses and other threats have surfaced. Many people are killed or wounded every year as a result of workplace risks. Many factories still have very low levels of worker safety. None of the factory authorities take the workers' health into account. They frequently become ill as a result of their working conditions. Crisis management is ineffective as well. Workers are often forced to return to work during "Hartal", a typical practice of political parties calling strikes. Working during Hartal puts their lives in danger because violence and confrontations are common during this period.

Workers' rights, trade unions, fair trade, wages, worker welfare and provident fund increases and working hours are all examples of socioeconomic conditions. All of these have a negative impact on Bangladesh's clothing industry if not well-managed. Workers are unaware of their rights, and there are no measures to educate them. Trade union federations are uncommon, although labour unions are frequently associated with political parties. Union leaders are preoccupied with politics for their own interests without considering the protection of the workers' rights. Therefore, many firms have deducted a fixed amount of money from workers' monthly salary which has been termed as a welfare fund, with this deduction creating an extra burden on garment workers. However, low salaries for garment workers contribute to a poor and unhealthy lifestyle. As long as this dimension will not be taken in consideration, the term sustainability fails to come to pass.

## **Challenges Confronting Sustainable Garments Industry**

### **Gender Inequality**

The employment of women in the workplace is one of the goals of the Sustainable Development Goals (SDGs). The primary components for women's economic development or empowerment are a suitable work position and a source of income. It is nearly impossible to empower women in the economic sector without having a positive work environment for them. However, the Ready-Made Garment sector, on the

other hand, contributes the most foreign revenue to Bangladesh (RMG). The overall number of workers in this sector is estimated to be around 4.2 million, with more than 90% of them being women from the rural areas of Bangladesh. Unfortunately, the working atmosphere in this industry is hostile to women, making it difficult for them to work comfortably, and labour rights and social compliance are violated. Every financial year, women and men work together to earn a huge amount of foreign revenue, which helps Bangladesh maintain a stable GDP. The contribution of women to economic development in Bangladesh cannot be denied. Moreover, their contributions and efforts in the RMG industry are outstanding. Nonetheless, female workers have superior abilities, competency and learning behaviour as compared to their male colleagues.

However, it is a matter of great concern that female employees face sexual harassment, salary disparities and inequitable perks such as maternity leave and daycare, which is both unpleasant and unacceptable (Haque et al., 2019; Hossan et al., 2012). Female workers are not well protected in terms of their safety, security and benefits. Notably, in the RMG industry of Bangladesh, most women are frequently subjected to workplace discrimination and are seen as inferior compared to their male co-workers (Mustafa et al., 2016). Female garment workers being touched inappropriately at work by their superiors accounted for 28% of all sexual harassment occurrences. On public transportation and on sidewalks, over 40% of women were harassed and abused. In addition, one-quarter of the female garment workers said they felt unsafe in the workplace. Along with this, low payment, wage delays, few promotions, poor healthcare, unwillingness to provide maternity leave and a hazardous working environment are all quite frequent occurrences for women workers.

## Fire Safety and Risk Factors

In terms of safety, the Bangladeshi garment industry has one of the worst records in the world. In the clothing sector, fires are fairly prevalent. According to the Bangladesh Fire Service and Civil Defense, the country had 383 industrial fires in 2020, with 273 of those occurring in clothing factories (Barua & Sharmili, 2020).

According to the Bangladesh Institute of Labour Studies, at least 1,841 employees have died in various forms of incidents in the readymade garment business in the last 12 years, including in building collapses and fires (Fardaus Mobarok, 2022). More than 9,595 garment workers have been wounded as a result of the accidents and many of them have lost their jobs (FardausMobarok, 2022). Moreover, the families of the workers who were hurt were not compensated. In the last five years, there have been 5,834 industrial fires with a financial loss of Tk 2.5 billion. According to the Bangladesh Fire Service and Civil Defence, Dhaka division had the most industrial fires, while Sylhet had the least.

## Unfavourable Working Conditions

Workplace conditions and occupational tasks involved in the garment industry induce physical health vulnerabilities of the clothing industry workers. It is found from previous studies that garments workers are facing some remarkable health issues including respiratory problems (Chumchai et al., 2015), musculoskeletal problems (Parimalam et al., 2007), hearing loss (Khan et. al., 2015), skin diseases/problems (Akhter et. al., 2010) and cardiovascular diseases (Fatema et. al., 2014). Additionally, back/joint pain, cough and common cold, headache, loss of sight, hepatitis, fever, diarrhoea and acidity are identified as the most common diseases which result when RMG workers' health statuses become vulnerable. An unhealthy workplace environment and chemical dangers such as dust, smoke, mist, fumes and dusty raw materials have all been identified as contributing to these illnesses and diseases. Furthermore, vulnerable health is caused by a lack of nutritional intake as garment workers are paid low wages which limits their ability to purchase enough nutritional foods which leads to their being underweight and affected by anaemia and iron deficiency.

In addition to physical health problems, many past studies found that garment workers are also sensitive to psychological problems. Trauma, work stress, depression and its associated risk factors such as insomnia, hypertension, heart attack, somatic illness, anxiety, social dysfunction and sleeplessness are some of the most common symptoms of psychological issues identified in the literature. Work-related demands like long working hours, worry about mistakes, time pressure, exposure to harsh language and emotional abuse and physical strain are the primary causes of work stress, which largely promotes psychological vulnerabilities and work-related issues such as job insecurity, lack of job promotion opportunities and part-time work. Furthermore, long working hours, boredom, workplace injury, feeling insecure at work and a lack of acknowledgment have been recognised as key causes of psychological health vulnerabilities among RMG workers.

## Reduced Inequality: The UN Sustainable Development Goal

UN member nations created the Sustainable Development Goals to alleviate poverty, promote peace and prosperity and safeguard the planet (Wright, 2019). These aims were based on the notion that society may attain its goals without suffering. They tackle inequality and boost innovative production and consumption. Bangladesh's clothing sector violates most UN Sustainable Development Goals. Most industry workers are impoverished and cannot fulfil basic demands. Despite worldwide efforts to combat inequality, these actors disregard it. These corporations assign women time-consuming, low-paying duties. They favour less-educated, unmarried, young women because they can be influenced. Equal rights for women must be addressed. They deserve equal opportunity and their pay should reflect their effort and the country's

economy. The UN has applied some of the above garment industry policies to help address the exploitation of women's rights in other developing economies, especially in Africa. According to Brinkmann and Garren (2018), women have equal opportunities in the East African garment industry. The international community's efforts have improved these workers' working conditions, wages and quality of life. Local stakeholders, notably government and union leaders, may address these challenges in the local economy. This industry should encourage responsible manufacturing. Businesses must understand their responsibility for ensuring human rights-compliant product distribution. Globally, responsible consumption is gaining popularity (Lo and Ha-Brookshire, 2018). Using social and mainstream media, consumers may be made aware of the process behind certain items.

## Improved Working Conditions

Bangladeshi garment workers face social and economic challenges. It is important to find long-term solutions to the problems these people face while making clothes for global markets. Thorbeck (2015) says creating shared value is one of the greatest methods to resolve industry stakeholders' issues. This approach protects everyone's interests as a company provides value to its customers. On-the-job training can supplement management's formal education. The management must also consider the health of all stakeholders. Many Bangladeshi garment companies do not care about employee health; worker safety has been ignored in this industry. Affordable housing may improve workers' economic status and quality of life. Another pillar should empower the local community through CSR. Renewable energy sources and responsible water use should be encouraged. Government authorities must commit to addressing the challenges Bangladeshi garment workers face. Industry or individual companies may adopt global best practices. Kramer and Pfitzer (2016) say more than brilliant policies on paper is needed. The targeted group must benefit from their implementation. The government should inspect these companies regularly to ensure that employee interests are protected and that they are paid according to policy.

## Best Practices

Corporate social responsibility is being ingrained in the garment industry's best practices. As worker frustrations are publicised in social and mass media, companies in this industry are becoming more sensitive to sourcing practises. These manufacturers can no longer disregard employee hardship and suffering. Sanders et al. (2019) say ethical sourcing goes beyond reducing waste and protecting the environment. It emphasises always protecting human rights. Most manufacturers' reputations have been



tarnished by media coverage of garment workers' pain and suffering. They must re-think their production strategies.

As companies strive to be ethical, global best practises emerge. According to Stanwick and Stanwick (2015), some of the leading firms in the apparel industry have developed new strategies that focus on human rights, equality and workplace safety. Adidas has embraced ethical sourcing in the apparel industry. The company monitors its entire supply chain to ensure its partners, especially suppliers, do not oppress employees. Patagonia, H&M and Marks & Spencer have adopted these best practises to meet customer demand. Everlene, Polo RL and Levi's also use these methods. These companies are sourcing fashion more sustainably. They believe they can promote ethical sourcing and be profitable. The fashion industry is becoming increasingly concerned about ethical sourcing because of the changing perception of their clients about labour issues. These companies have realised that some of their clients may switch their loyalty to other companies when they realise that some of the practises that the company embraces are unethical. Players in this industry are developing standards that must be observed when sourcing for materials and products. These sourcing standards are meant to address most of the issues that have been raised in the case study about the garment industry in Bangladesh.

## Challenges

Despite the fact that the Bangladeshi garment sector is rapidly expanding, it has already begun to encounter a number of issues in several areas. Many readymade clothing companies begin as local household tailoring outfits. After a period of time, firms begin to receive sub-orders from other major Bangladeshi garment exporting enterprises, eventually transforming into large independent garment manufacturers. Therefore, no industrial building structure or policies are followed from the beginning of the setup. Furthermore, many people come directly from the rural region to work in these small industries, having previously worked in agriculture or having no prior work experience. Because of their lack of skills and the disparity in living styles between village and city areas, these impoverished individuals will be most vulnerable to garment violence and disaster. They are paid less and live in deplorable conditions. At work, they frequently face a slew of issues and harassment. Hasan et al. (2018) claim that they frequently do not receive their salaries, bonuses, or overtime pay on time. Many are even forced to work overtime in factories without being paid for it. Because the majority of workers are unskilled and illiterate, they are unable to join a good trade union and consequently have no influence over policymaking or access to trade union aid.

After a few years of agitation, primarily over wage hikes for 4.4 million workers, the garment industry saw a tranquil and stable climate in 2019. However, since August of the same year, the clothing sector, which generally produces 84% of national exports, has seen a downward trend in shipment. According to figures from the Export

Promotion Bureau, Bangladesh exported garment items worth \$30.14 billion in the first 11 months of 2019, from January to November (EPB). The slowdown in export growth appears to be a reflection of Bangladesh's RMG industry's declining competitiveness (Sarkar, 2020).

The pandemic has exacerbated a downward trend in global garment usage, and we have no idea what the situation will be post-pandemic. Apparel producers likewise have no clue what will happen in the next two to three years because most factories have received orders at less than half of their capacity. In April 2020, exports grew at a negative rate of 85% (The Financial Express, 2020). Given the current circumstances, we must consider certain specific areas of development that will aid in overcoming the mountain of obstacles that the RMG sector has in terms of sustainability.

## Conclusion

The clothing industry in Bangladesh is considered the country's economic lifeline. Since the late 1970s, Bangladesh's garment industry has grown to become the country's single most important export sector, accounting for 80% of total export revenue. This vast industrial sector employs millions of people, most of whom are women. As it is seen as the backbone of the country's economy, it requires high-level attention to ensure future stability and sustainability. Many international buyers are concerned about environmental issues and are asking for more environmentally friendly items. Some clothing companies have already begun to include standard environmental labelling in their products and on their websites. These businesses strive to make their customers concerned by incorporating LCA, water footprints and global warming potentials into their products. Bangladeshi garment manufacturers should adopt these environmental precautions and provide the requested information in the export contract with the buyer. This will improve the product manufacturing process while also promoting a more sustainable approach. There have also been a number of fires and building collapses, all of which pose serious concerns to the future of Bangladesh's garment industry. Due to fire and worker safety concerns, some frequent foreign clients have opted not to purchase any further products from Bangladesh. Many factory owners are not concerned with the garment industry's safety rules. Additionally, there is no proper policy or concrete labour and trade union policy. As a result, factory owners engage in a slew of illicit activities and frequently cause the aforementioned kinds of risks. There are currently significant concerns of losing access to the global market, which could jeopardise Bangladesh's stable economic progress. Workers' rights and standard wage levels should be amended and examined because the garment sector is one of the country's most important drivers of economic growth. In order to establish a satisfactory position for the clothing industry, the government,

private organisations and factory owners must adopt responsible efforts and strive for a better working environment.

## References

- Abreu, M.C.S.D. (2015). Perspectives, drivers, and a roadmap for corporate social responsibility in the textile and clothing industry. In *Roadmap to sustainable textiles and clothing* Springer, Singapore. Editor, Subramanian Senthilkannan Muthu (pp.1–21).
- Akhter, S., Salahuddin, A.F.M., Iqbal, M., Malek, A.B.M.A., & Jahan, N. (2010). Health and occupational safety for female workforce of garment industries in Bangladesh. *Journal of Mechanical Engineering*, 41(1), 65–70.
- Ansary, M.A., & Barua, U. (2015). Workplace safety compliance of RMG industry in Bangladesh: Structural assessment of RMG factory buildings. *International Journal of Disaster Risk Reduction*, 14, 424–437.
- Ashraf, H., & Prentice, R. (2019). Beyond factory safety: labor unions, militant protest, and the accelerated ambitions of Bangladesh's export garment industry conference at which industry leaders and government officials would set out a glittering future. *Dialectical Anthropology*, 43(1), 93–107.
- Barua, A., & Sharmili, N. (2020). Design and implementation of addressable fire detection and alarm system in ready-made garments sector of Bangladesh.
- BGMEA. (2021). Export performance list. BGMEA. <https://www.bgmea.com.bd/page/exportperformance-list>
- Brinkmann, R., & Garren, S. J. (Eds.). (2018). *The Palgrave handbook of sustainability: case studies and practical solutions*. Springer.
- Chowdhury, M., Ahmed, R., & Yasmin, M. (2014). Prospects and problems of RMG industry: A study on Bangladesh. *Prospects*, 5(7), 103–118.
- Chumchai, P., Silapasuwana, P., Wiwatwongkasem, C., Arphorn, S., & Suwan-Ampai, P. (2015). Prevalence and risk factors of respiratory symptoms among home-based garment Workers in Bangkok, Thailand. *Asia Pacific Journal of Public Health*, 27(4), 461–468.
- Das, T., Barua, U., & Ansary, M. (2018). Factors affecting vulnerability of ready-made garment factory buildings in Bangladesh: An assessment under vertical and earthquake loads. *International Journal of Disaster Risk Science*, 9, 207–223. <https://doi.org/10.1007/s13753-018-0177-6>
- Fatema, K., Natasha, K., & Ali, L. (2014). Cardiovascular risk factors among Bangladeshi ready-made garment workers. *Journal of Public Health in Africa*, 5(2).
- Haque, A.U., Nair, S.L.S., & Kucukaltan, B. (2019). Management and administrative insight for the universities: High stress, low satisfaction and no commitment. *Polish Journal of Management Studies*, 20.
- Hasan, I., Islam, M.N., & Khan, S.R. (2020). Ready-made garment industry attractiveness: The case of Bangladesh garments' blue-collar employees. *International Journal of Emerging Markets*. <https://doi.org/10.1108/IJOEM-03-2019-0232>
- Hasan, M.M., Parven, T., Khan, S., Mahmud, A., and Yajuan, L. (2018). Trends and impacts of different barriers on Bangladeshi RMG industry's sustainable development. *International Research Journal of Business Studies*, 11(3), 245–260.
- Hossain, C.G., Sarker, M.A.R., & Afroze, R. (2012). Recent unrest in the RMG sector of Bangladesh: Is this an outcome of poor labour practices? *International Journal of Business and Management*, 7(3), 206.
- Islam, M.S. (2021). Ready-made garments exports earning and its contribution to economic growth in Bangladesh. *GeoJournal*, 86(3), 1301–1309. <https://doi.org/10.1007/s10708-019-10131-0>
- Khan, N.R., Dipti, T.R., Ferdousi, S.K., Hossain, M.Z., Ferdousi, S., Sony, S.A., and Islam, M.S. (2015). Occupational health hazards among workers of garment factories in Dhaka City, Bangladesh. *Journal of Dhaka Medical College*, 24(1), 36–43.

- Kramer, M. R., & Pfitzer, M. W. (2016). The ecosystem of shared value. *Harvard business review*, 94(10), 80-89.
- Lo, C. K., & Ha-Brookshire, J. (2018). Opening: Sustainability and luxury brands. *Sustainability in Luxury Fashion Business*, 1-7.
- Mobarok, F. (2022, April 24). 1,841 workers killed in 12 years. *The Daily Star*. <https://www.thedailystar.net/1-841-workers-killed-in-12-yrs-19973>
- Mustafa, G., Wyns, K., Buekenhoudt, A., & Meynen, V. (2016). Antifouling grafting of ceramic membranes validated in a variety of challenging wastewaters. *Water Research*, 104, 242-253.
- Parimalam, P., Kamalamma, N., & Ganguli, A.K. (2007). Knowledge, attitude and practices related to occupational health problems among garment workers in Tamil Nadu, India. *Journal of occupational health*, 49(6), 528-534.
- Sajib Kumar Paul, ZHANG Luyan, LIU Jiali, LIANG Mingjin, Tian Wei, ZHU Chengyan. Study on automatic weaving of Jamdani saree[J]. *Journal of Silk*, 2019, 56(7):71202-. doi:10.3969/j.issn.1001-7003.2019.07.011
- Rahman, N., & Anwar, J. (2007). The sustainability of RMG as a globally competitive industry: Porter diamond perspective. *Journal of Business Studies*, 28(2). <https://ssrn.com/abstract=1152095>
- Rahman, S. (2021). The Bangladesh garment industry and the global supply chain: choices and constraints of management. *Routledge*. <https://doi.org/10.4324/9781003153238>
- Sabir, U. (2021, January 6). *The rise of Bangladesh's apparel and textile industry*. Inter Press Service News Agency – Business. <http://ipsnews.net/business/2021/01/06/the-rise-of-bangladeshs-apparel-and-textile-industry>
- Sarkar, A., Qian, L., & Peau, A.K. (2020). Overview of green business practices within the Bangladeshi RMG industry: competitiveness and sustainable development perspective. *Environmental Science and Pollution Research*, 17(18), 22888-22901.
- Sanders, L., & Mawson, J. (2019). *The 2019 ethical fashion report: The truth behind the barcode*. Baptist World Aid Australia, Access from, <https://apo.org.au/node/229606>
- Stanwick, P. and Stanwick, S. (2015) 'The garment industry in Bangladesh: a human rights challenge', *Journal of Business & Economic Policy*, 2(4), pp. 40-44.
- The Financial Express (2020), Export earnings witness 82.85pc negative growth in April, access from <https://thefinancialexpress.com.bd/economy/bangladesh/export-earnings-witness-8285pc-negative-growth-in-april-1588919270>
- Thorbeck, J. (2015) 'Share value across the whole fashion supply chain', *Business of Fashion*, Web, Access from, <https://ivypanda.com/essays/sustainability-issues-of-garment-industry-in-bangladesh/>
- Wright CY, Godfrey L, Armiento G, Haywood LK, Inglesi-Lotz R, Lyne K, et al. Circular economy and environmental health in low- and middle-income countries. *Glob Health*. 2019; 15(1):65
- Zaman, S. (2021). *Researching the garment sector in Bangladesh: Fieldwork challenges and responses. Field guide for research in community settings*. Edward Elgar Publishing. <https://doi.org/10.4337/9781800376328.00013>



Hela Ben Miled-Cherif, Florent Pratlong and Léo-Paul Dana

# 23 Entrepreneurial Strategies Towards Responsible Brand Identity: A Comparative Study of Sneaker Companies

**Abstract:** This chapter illustrates the case of two French sneaker companies in Brazil, Veja and Twins for Peace. It shows that responsible and sustainable brands can help consumers increase their awareness and their perceived importance of sustainability and facilitate sustainable consumption behaviour. Considering this, our research asks the question: how can the identity of a responsible brand, through the development of trust, contribute to systemic change not only in production but also in consumption?

**Keywords:** entrepreneurial strategy, CSR, brand identity.

## Introduction

In light of growing interest from stakeholders to societal aspects, companies are now obliged to preserve confidence in integrating the principles of sustainable development to conduct a responsive strategic management imbued with social and environmental responsibility. Nowadays, the green challenge has to be dealt with in order to take into account not only economic concepts such as markets but also the environment and eco-systems: “Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations, 1987, p. 37). Through corporate social responsibility practices, companies can contribute to the requirements of sustainable development. This supposes that companies integrate the economic, social and environmental impacts of their activities in their businesses and in their interaction with their stakeholders (Commission of the European Community, 2002). When the textile and clothing industries aim to promote sustainable development, drivers of change are often linked to eco-materials and ethical issues in production. At present, however, the business models are mainly associated with a large volume of sales and production.

This chapter examines the practices to integrate corporate responsibility in the brand identity of Brazilian companies in the fashion industry, with a particular focus on two brands of shoes founded by French entrepreneurs in Brazil, Veja and Twins

---

**Hela Ben Miled-Cherif**, Sorbonne, e-mail: Hela.Benmiled@univ-paris1.fr

**Florent Pratlong**, Sorbonne, e-mail: Florent.Pratlong@univ-paris1.fr

**Léo-Paul Dana**, Dalhousie University, ICD Business School Paris and Lappeenranta University of Technology

for Peace. Both companies consider the contribution of responsible management in their productive and trade practices differently when reforming their development strategy. Our comparative studies are based on an analysis of secondary data, the study of cultural management practices in Brazil and transcribed interviews with these entrepreneurs, allowing us to study their strategy of responsible innovation. Firstly, on the one hand, we study the brand Veja (a French basketball sneaker business founded in 2004 by Sebastian Kopp and Ghislain Maurillon), for which the choice of basketball sneakers production represents “the symbol of the main North/ South inequality, made in [the] South and [with] scope in the North”. The responsible approach for Veja is to produce ecological and fair sneakers throughout the value chain from production to distribution. Secondly, we study the brand Twins for Peace (created and developed in 2009 by Louis-Felix de Fenoyl with Alexandre and Maxime Mussard). This approach of Twins for Peace is based on social marketing being turned to their relationship with the community, as evidenced by their partnership with the Jean-Félicien Gacha Foundation (with their trade policy illustrated by the “Buy One, Give One”).

This chapter is organised as follows. The next section discusses sustainable development in entrepreneurial corporate strategy. In the following, we consider the expression of stakeholders in the value creation process and trust towards a responsible brand identity. The subsequent section develops a comparative study of the cases of responsible strategy in the Brazilian fashion sneaker industry, seen with Veja and Twins for Peace.

## **Manifestations of Sustainable Development in Corporate Entrepreneurial Management**

The concept of sustainable development is a normative interpretation from the 1987 Brundtland Report, focusing on economic development that meets the needs of the present without compromising the ability of future generations to meet theirs. Two concepts are inherent to this notion: the concept of “needs”, and in particular the essential needs of the poor who should be given the highest priority, and the idea of limitations imposed by the state of technology and our social organisation on the environment’s ability to meet our current and future needs.

Firms integrate the principles of sustainable development renewing the content of its social responsibility. Transposed at the managerial dimension, this notion is reflected in the responsibility of the company, developed by the work of Bowen (1953). The company must act as a law-abiding member of society, respecting two principles:

- a social contract (called the “macro” approach), by which the existence of the company is accepted by society and part of the company’s behaviour must respect the laws of society

- a moral agency (called the “micro” approach) whereby the company must adopt methods and exemplary behaviour consistent with the values of society

Adapted to the corporate world, sustainable development is reflected in the implementation of the triple bottom line (Elkington, 1999) in the form of three fundamental principles: economic, meaning expressing the search for prosperity and economic efficiency with respect for fair competition; social, meaning expressing the inclusion of a social equity and diversity objective; and environmental, meaning reflecting the environmental protection and the preservation of long-term resources. The exercise of an economic activity at the intersection of these three dimensions is a source of tension for the company, although in the end these tensions areas are places of growth opportunities and therefore risk. Operating a gradual implementation of sustainable development requires managers to integrate risk reduction to support the process of creating financial value for the shareholders and to lead to creation of sustainable value for all the various stakeholders (see Table 23.1).

**Table 23.1:** Sustainable development: transforming risks into opportunities.

<b>Reduction of risks</b>	<b>Transforming risk into opportunity</b>
– Cost of a brutal adaptation to regulation	– Customer loyalty
– Opinion movements	– Creating new markets
– Legal proceedings	– Strengthening the pride of employees
– Ethical crises	– Increased confidence in the financial sector
– Loss of its “licence to operate ”	– Cost reduction (cutting waste, energy efficiency, biodiversity . . .)

Sustainable development is like a projection of corporate behaviour in the field of ethics, oscillating between a lack of response and a proactive strategy (Sharma and Vredenburg, 1998). According pressure criteria more or less markedly in sectors and depending on the attitude of perception opportunity/ constraint of sustainable development, the company is implementing responsive programs of action to change its practices and engaging itself in a collective voluntary approach.

A way of expressing sustainable development strategies within the company is seen in the Corporate Social Responsibility of Enterprise (CSR), which refers to different interpretations within the meaning of responsibility (Capron and Quairel-Lanoizelee, 2007): “accountability” and “responsibility”. On the one hand, accountability focuses on transparency of the business (without requiring exemplary behaviour or facing the consequences of its actions). On the other hand, responsibility requires the company to have confidence in voluntary responsive approaches. These different forms of a sustainable approach facilitate the expression of responsible strategies and brand identity.



The managerial extension of sustainable development is for the company to develop its corporate social and environmental responsibility by seeking to draw the outlines of a global responsibility, which greatly expands the concept of performance in space (by multiplying the dimensions managed simultaneously) and in time (by moving a time horizon to the long term). The integration of sustainable development in the company's management then favours the emergence of a socially responsible organisation, whose conditions are necessary for developing trust with stakeholders and value creation (Usinier and Roger, 2000). It is established through the partial or total remission of interests of the company. Sustainable development is thus akin to a distrust in confidence conversion mechanism. First, it is an institutional trust because the company's reputation is based on the respect for social commitments. Then, it promotes trust with all parties by the play of the recess. Finally, it is a relational trust gradually established by the anticipation of ethical behaviour of the company based on its experience and its interaction with all partners.

## The Conceptual Formalisation of Trust Towards Social Responsibility Strategy

The normative integration of sustainable development in the brand identity gradually leads to the expression of constructivist approaches and action postures, which leads to a new framework of values and ethical beliefs. The conceptualisation of this notion of social responsibility leads to various formulations as it is regarded within the meaning of "Corporate Social Responsibility" (or CSR1) or "Corporate Social Responsiveness" (or CSR2). The CSR1 model questions the implicit ethical motivations of corporate responsibility (CED, 1971 Steiner, 1975). The responsibility of the company has expanded beyond the traditional economic responsibility (produce, use, etc.); at an intermediate level is social and ecological responsibility, considering laws and values that constrain the company's business. At the final level, responsibility and discretionary shares represent the philanthropic commitment from the company which is added to its brand identity. The CSR2 model strives to understand the capabilities of the company and its ways to respond to expectations and societal pressures (Frederick, 1978). This pragmatic view of responsibility assumes that the company uses the mechanisms, procedures and governance models to create a climate of confidence for its brand identity with stakeholders. This dimension is linked to the nature of organisational responsiveness, identified as the company's response processes meet the different social responsibilities and various social issues.

Carroll (1979) proposes a synthesis of the two models in order to define the concept of corporate social performance (CSP) of the company, an organisational configuration that corresponds "to economic, legal, ethical and discretionary expectations that society grants companies at a given time". Wood (1991) also considers that these

components are the result of policy commitments, codes of conduct, internal processes and consequences observable at the institutional level.

The liability of the company is based on a principle of legitimacy, by which society delegates to the company the license to operate its activity, which leads to the compliance with legal standards and stakeholder expectations. The company thus participates in an explicit or implicit return to morality or ethics. This reference to sustainable development identified a set of common values and shared appears that appear crucial to establish the necessary confidence in the image of the company. The corporate social responsibility is therefore the expression of a symbiotic relationship between sustainable development and brand identity seen in the sense of recognising a “faith in the moral integrity or benevolence of others” (Ring and Van de Ven, 1994). This co-dependent relationship between sustainable development and brand identity is based on reciprocity and mutual enrichment. Social and environmental corporate responsibility emanates from this deliberate effort made to preserve the quality of the relationship with its partners. Some questions appear regularly for the company on how to develop a sustainable image with our partners/ clients or simply how to create a climate of trust. This translates to the company by the recognition of a liability that is not solely limited to its financial profitability but also a focus on its identity.

Sustainable development is then an expression for trust, based on shared responsibility between contractors. It leads to the company’s empowerment strategy, a dynamic source of confidence in inter-professional relationships (as defined by Delarue and Berard, 2007). Different comparisons may then arise between sustainable development and brand identity:

- From uncertainty to the precautionary principle: sustainable development incorporates a preventive approach to reduce actual or hypothetical risks of any irreversible actions on the environment or society. It helps in that sense to assume a better reaction or corporate behaviour, with greater or lesser degree of uncertainty, according to acceptable rules (Bernoux and Servet, 1997).
- From ethics to the honesty principle: sustainable development is based on a just, equal and reasonable treatment of the different partners of the company, considering moral and optimistic representation. It participates to voluntarily recognise and protect the rights and interests of those engaged in a shared effort or an economic exchange with the company (Hosmer, 1995). The action is in line with a common interest despite the economic motivations that would lead to different behaviour (Granovetter, 2002).
- From connectivity to the prevention principle of opportunism: sustainable development integrates dimensions fundamentally linked and interdependent with economic, social and environmental areas. It reflects the proximity of the business to the identified challenges and the good opinion of partners, avoiding opportunistic behaviour in the context of short-term uncertainty and long-term dependence (Gulati, 1995).

## Expanding a Company's Trust and Performance Towards a Sustainable Brand Identity

### The Expression of the Expectations of Stakeholders

A socially responsible business has to face the most diverse expectations of economic social actors “whose collective behaviour can affect directly the future of the organisation but which is not under the control of the organization” (Freeman and Emshof, 1981). Theoretical conceptualisation of these stakeholders is necessary to “rethink our representation of the business” (Freeman, 1984). A distinction can be proposed between stakeholders who are, on one hand, contractual actors (involved in the economic process of value creation), or, on the other hand, implicit actors (located around the business). These groups express a constellation of cooperative or competitive interests to the company (Martinet and Reynaud, 2004).

The corporate responsibility requires reconciliation of divergent interests of stakeholders. The inclusion of these expectations depends on the weight of each vis-à-vis part with the company in terms of dynamic criteria (as set by Mitchell et al., 1997): the power refers to the ability (expressed or potential) of a player to influence corporate decisions; the legitimacy of a group corresponds to its recognition and social acceptance; the urgency is the feeling of the company itself for a specific request requiring an urgent attention. The perception by the manager of the attributes of each stakeholder then leads the company to position itself at the heart of a set of relationships with partners. Integrating these expectations then prompts the company to engage in a sustainable brand identity, based on a voluntary decision calling for an understanding of the roles and expectations of each party (Ring and Van DE Ven, 1994). Trust is essential in building strong relationships (Augustin and Jagdip, 2005). It can be viewed as leverage of brand credibility, which in return may reinforce the consumer's confident belief of trust towards the company. For instance, it encourages brand loyalty (preference, repeat purchase, service and store, commitment and allegiance). It also strengthens an ongoing emotional relationship and reliability through a responsible and engaging consistent strategy (Ashley and Leonard, 2009) and “between exchange partners (. . .) leads to a long-term relationship” (Houston and Gasenheimer, 1987, p. 10).

It follows two philosophies of action, clearly differentiated by their operating procedures and their designing objectives:

- a utilitarian vision (“business”), which considers CSR as a tool in the company's service. The inclusion of stakeholders is here a prerequisite for economic and financial performance of the company to let all interests converge.
- a normative vision (“ethics”), which fixes CSR as an ideal. The company is here subject to legal obligations regarding the stakeholders because it is accountable to the society in which it registered its development and growth.

Following this reconciliation of different interests, this sustainable brand identity helps the company to develop several forms of trust with stakeholders, within the meaning of expectations shared by the parties involved in relationship contributions-incentives (Zucker, 1986): the interpersonal trust (placed by individuals in the company); the organisational trust (developed during the business relationship with the expression of benevolence and respect for rules by the company); and the institutional or systemic trust (attributed to the collective sharing among stakeholders through a normative and social construct). The sustainable development helps to restrict opportunistic behaviour of partners and to prevent abuse and disappointment of partners.

Hence, the sustainable brand identity is comparable to a specific investment with respect to the company's responsibility. It introduces a trust scheme with stakeholders following the identification of their needs, the definition of commitments to them and the implementation of actions to address them. This leads to an altruistic dimension to assume reciprocal cooperation and loyalty between the company and its stakeholders' community. This trust takes the form of an "anticipation of the fact that the expectations of partners are not disappointed" (Nooteboom et al., 1997). The positive behaviour of the responsible company is then built into the learning and co-creation relationship, which is guaranteed given the stakeholders' skills (credibility and capacity) and morality (honesty and reputation). It is in this sense that sustainability is linked to brand identity, which expresses the firm belief (Dwyer et al., 1987; Guibert, 1999; Sako, 1992) here *vis-à-vis* its stakeholders. This sustainable brand identity leads to the emergence of a dyadic relationship between the company and its stakeholders. Trust between these two poles interacts, appearing not only as a state or feeling but more the result of a cognitive learning process.

This confidence of stakeholders in the business, conversely, is at the interface of the expression of reason and emotion. Along the line of McAllister (1995), the sustainable brand identity is positioned between emotional confidence attached to emotion-related intentions and cognitive confidence attached to reason based on skills. The expression of a responsible brand, which now incorporates the societal aspects to the business strategy, is established according to the rational confidence scheme (based on the assessment of risk to environmental and social transformations) but especially to the affective confidence (based on the inherent benevolence of principles to the improvement of welfare). This process prompts the gradual defining of the responsible brand identity of the company with respect to its stakeholders, built incrementally through the democratic participation and emergence of new modes of co-creation.

## Looking for Stakeholder Value Creation and Responsible Brand Identity

The benefits of sustainable brand identity in the mechanisms of the company are identified with stakeholders in several ways: reducing transaction costs (Dyer, 1997) related to the establishment of relationship contributions-incentives; close relationships for better quality and quantity of exchanged information (North, 1990); or increasing the potential for value creation (Arino et al., 2001). The integration of stakeholders in the brand identity leads to the emergence of a sustainable framework, where the company is seen as a “community of practice”. The manager is then rooted and involved in the development of the company. The value creation is directed by partners of the company, moving the analysis of the sources of competitive advantage towards a greater emphasis on societal variables. It identifies the accountability and provides an integrating framework for each company to guide its decisions and actions towards sustainable development.

This search for stakeholder value is identified through a logical orientation of the actions of the company: redefinition of business strategies in order to include the triptych of sustainable development, economic, social and environmental, in all divisions (marketing, brand identity, purchasing, product design, advertising) and all operations worldwide; redesigning processes, products and services; active partnership in the development and implementation of international agreements and conventions; full recognition of the “right to know” and the precautionary principle; definition of indicators for sustainable development following consultation with stakeholders in order to compare performance (environmental, economic and social) within and between industrial sectors; implementation of sustainability reports including international standards; social audits and transparency, considering openness and active contribution, in order to promote dialogue with all stakeholders.

The integration of sustainable development requires broadening the consultation process and decisions by the company. This will expand a sustainable brand identity with stakeholders to implement practices and idiosyncratic procedures based on a multidimensional rationality. The company then acquires ethical codes, process standardisation and certification standards made by experts to strengthen the bond of its identity with stakeholders. The actual achievement of the stakeholder value depends on the investment relationship between the company and stakeholders. Its sustainable identity is then an idiosyncratic relational asset, a source of sustainable competitive advantage. The creation of common routines and sharing of societal interests enhance the brand identity value (Ivens, 2006) with: “solidarity” (anticipating the stability of cooperation over time); “flexibility” (by agreeing on a mutual adjustment principle to the circumstances); and “sharing” (formally or informally exchanging information). This concept of corporate responsibility needs to be questioned in the fashion industry,

which is characterised by a dynamic concept and interwoven culture where fashion products are more responsive to desires and the needs than responsibility.

The anatomy of fashion brands (Fionda and Moore, 2009) is based on critical conditions to define the brand products, “including product and design attributes of quality, craftsmanship and innovative, creative and unique products”. In addition, since the 80s, there has been a growing awareness for ethical fashion by both firms and consumers over “ethical sourcing and apparel production” (Shen et al., 2012). Today the social and environmental responsibility challenges the fashion brands, which are more oriented towards ethical fashion, defined as “fashionable clothes that incorporate fair trade principles with sweatshop-free labour conditions while not harming the environment or workers by using biodegradable and organic factors” (Joergens, 2006). Then, strategies of innovation appear based on the concept of “Design for Sustainability” (Spangenberg et al., 2010), which is a management method for fashion companies to improve their profit margins, the quality of their products, market opportunities to environmental performance and social benefits.

## Two French Brands of Sneakers Located in Brazil

Gillham (2010) suggests different methods to collect evidence for case studies: documents, records, interviews and participant observations. In this research, to answer our research questions, interviews and documents appear to be the best method; observation is not a viable option because of safety and financial concerns. Green marketing assumes the evolving concern of society for the natural environment and a relationship between the economy, companies, competitors, society and the ecosystem. Green marketing is the extension of the traditional marketing concepts to the magic triangle.

Consider the Veja brand. The brand Veja in France and Vert in Brazil – with a different name because Veja is already used in Brazil for a newspaper – was created by the two co-founders Sebastien Kopp and Ghislain Maurillon in 2004, two young graduates from HEC business school and the university Paris-Dauphine. In 2002, they decided to visit large international firms (Carrefour, Pinault-Printemps-Redoute, EDF-GDF, General Electric, etc.) to study their vision of sustainable development to get some ideas for themselves. However, they found no valuable initiatives. They then decided to work for a fair-trade brand Alter Eco created by Tristan Lecomte and found a worthwhile idea, the relation between small producers of the south and consumers of the north. This was a relationship that was only economic and social, so they decided to create a project from the beginning with an environmental, social and economic responsibility: a brand of sneakers different from other sneaker brands on the market. The sneaker is “the symbol of inequality between the north and the south, made in the south and worn in the north”, according to Sébastien Kopp. The name Veja

means “look around you”. The main idea was to create a brand which respected principles of fair and ethical trade all along the value chain, from production of raw materials to distribution. Today, 28 people are employed by Veja in Paris, with eight in Brazil. Sneakers are sold in 25 countries. With its brand identity, Veja is associated with the protection of the environment and sustainable development, while reminding Brazilian people that it is a French brand of sneakers. The brand sells more than 120,000 pairs of sneakers per year, with a turnover of 7.5 million euro in 2015. The sneakers were sold for men, women and children. Models include Volley, Taua, Grama, Felicite and Memory. The brand has since decided to extend their product range to bags and accessories. It is sold in Europe, the United States and Brazil.

Observations of Veja:

- Raw material: the two co-founders began without a benchmark or marketing study because they did not want to waste money. They decided to go to Brazil because they found three main raw materials, cotton, natural rubber and ecological leather, to make sneakers.
- Agroecological cotton: sneakers are made with cotton provided by two cooperatives in the northeast region of Brazil, in Ceara, in the south of Brazil, and in Parana. In the cooperative of Ceara, 30 producers manage their natural resources with Esplar, a local NGO, such as cotton, through agroecological production and an adequate use of the land. In the south, Veja helps farmers to convert to organic agriculture. Exchanges with two cooperatives respect the rules of fair trade. Veja decides to set prices with producers which are sufficiently high and stable so that they can earn a living, invest and grow. This price corresponds to real costs of production and to the needs of the producers in terms of education and food while also helping them to expand (Dugast, 2006). The weaving of cotton to make canvas sneakers is also done in Brazil.
- Natural rubber: shoe soles are manufactured with rubber. The rubber comes from the state of Acre in the north of Brazil in the rainforest. Hevea trees are tapped to harvest latex in order to produce rubber. It is produced by *seringueiros* in the reserve of Chico Mendes, living in harmony with nature. Veja fixed the right price with them, 30 to 60% above market price, in order for them to also live decently and reinvest in their farms. These right prices encourage producers to protect the rainforest and not to give in to the temptation of deforestation, thus reducing the financial attractiveness of deforestation. Currently, Veja requires the expertise of agricultural engineers in order to increase yields and to transform rubber locally in the forest in order to preserve it. As opposed to synthetic rubber, natural rubber is a renewable as well as biodegradable resource.
- Ecological leather: leather is produced in Brazil. To offer sneakers with ecological leather requires an environmental approach for this purpose; Veja has moved

from chrome tanning which pollutes water and soils to vegetal tanning with acacia extracts.

– Manufacturing: sneakers are produced in the south of Brazil in the Porto Alegre area, where employees have decent living conditions and good working conditions that are comparable to Europe. Factories ensure global labour standards as laid out by the International Labour Organisation (ILO). Employees have a good salary above the average level of Brazilian salaries, and this is coupled with an annual share in profits (Dugast, 2006). To produce models for babies (up to 18 months old), Veja collaborates with a Brazilian NGO called Villaget. It integrates socially disadvantaged young people in Porto Alegre, teaching them how to design shoes. They combine a school course with work experience at school and in the association where they learn design, modelling and how to make shoes. These young people have drawn the baby sneakers and are now in charge of designing and making the entire collection.

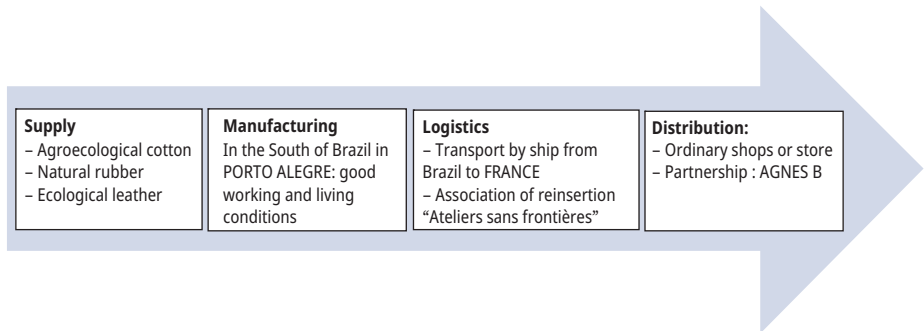
– Transport, logistics and distribution: the sneakers are transported by ship in port containers to France because it is a less polluting means of transport than plane (Dugast, 2006). For storage and distribution the company collaborates with an association called “*ateliers sans frontières*”. This association helps people whose lives have been shattered. It participates in a collective effort that seeks to enable victims of social exclusion to have a way to reinsert themselves into society (such as victims of drug-abuse, those with alcohol problems and those who have served prison sentences). This involves a one-or two-year-contract. With social workers, they help people find a job, a home and to go back to a normal life. They manage all logistics (packaging, storage, until final distribution). Packaging is made from recycled paper. Sneakers are not distributed in specialised fair trade shops such as Magasins du Monde but in well-known fashion stores such as the Galleries Lafayette and Printemps. In order to spread the brand, they have signed partnerships with fashion brands like Agnes B and Comptoirs des Cotonniers. Their business model is centred on a real, sustainable, responsible and innovative approach from raw material to final distribution and they sell their sneakers at the same price as competitors, between 70 and 120 euro. They do not advertise but build their reputation on word of mouth. They continue to innovate by allowing an evolution in their business model. They have created a newspaper with no advertising in order to highlight a new ecological initiative focusing on aesthetic facets thanks to the best photographers and designers. Enercoop, a *coopérative d'intérêt collectif*, is a partner, bringing together producers and consumers of green electricity. They also have a collaboration with Greenpeace, Biocoop, Hespul, Lecler, les Amis de la Terre and La Nef to create a new kind of shopping centre, a place for slow shopping, where only sustainable brands are distributed. People can discover innovation without necessarily buying something, thumbing their nose at our consumer society. Their buildings in Paris are powered by 100% renewable electricity provided by Enercoop.



Veja's business model is based on the value chain of Porter and Kramer (2006) and has established a competitive advantage over its rivals by elimination of marketing expenditure and paying the right price for raw materials in order to support Brazilian producers: a real sustainable approach. The value chain of Veja is shown in Figure 23.1 and its organisation in Figure 23.2.



**Figure 23.1:** Social and responsible innovation; value chain; supporting activities.



**Figure 23.2:** Social and responsible innovation: value chain: principal activities.

The media and consumers are highly sensitive to ethical issues in the fashion industry. Growing consumer consciousness and demand are making long-term profits from sustainable fashion brands. Tham (2010) suggests integrating respect for the planet and humans at cultural, product and organisational levels in the fashion industry. The aim is to have a positive customer and media perception, with fashion companies implementing sustainable strategies (Fan and Lo, 2012). The identity of the Veja brand revolves around responsible and sustainable innovation. In order to determine brand identity as it is conceived by firms and perceived by consumers we use the Kapferer tool (1992).

Secondly, let us consider the case study of the Twins for Peace brand. Twins for Peace is a luxury brand of sneakers for women, men and children, created by Maxime and Alexandre Mussard and Louis Felix de Feynol in 2009. Twins for Peace have continued their French lifestyle brand by promoting humanitarian values through their shoes and recently clothes and accessories. It is a brand that is sold on their internet website and only in one own shop in Paris in the Marais area. They have made a partnership with the Jean-Félicien Gacha Foundation in Cameroon, created in 2002 to help educate and provide occupational skills to local villagers. Thanks to women savoir-faire in beadwork, Twins for Peace created and produced an exclusive line of hand-made sneakers, with each pair representing 50 hours of work and sold for around 300 euros to help women be able to live from their income. Other models of sneakers were made in Portugal with basic raw materials coming from Italy. However, they decided in 2016 to take their raw material from Brazil and move their manufacturing there also. The brand of Twins for Peace is based on “Buy One, Give one”, which gives one pair of sneakers to poor children in Brazil and other under-developed countries for every pair of shoes sold. This is a for-profit business with a non-profit mission and philanthropic component, with the business model called a one-for-one movement (Sanchez-Hernandez, 2015). The company was started after Maxime Dusard witnessed the extreme poverty among villagers in Brazil, and saw that they could not even buy a pair of shoes for their children. He started to provide a pair of shoes for a child in need for every pair of shoes purchased, and the brand initiated the Shoe Project in partnership with humanitarian organisations, with the shoes produced locally and ethically by local producers. The firm donates the type of shoes needed in the community, which can range from sneakers to rain-boots. At this point five countries are involved: Brazil with *Gol de Letra* and *Projeto Alavanca* partnerships, Mozambique in partnership with *Cruzada por los Ninos* and *SOS enfants*, Colombia in partnership with the first lady of Colombia, India in partnership with Magic Bus and ambassador actress Freida Pinto, and Cameroon in partnership with the Jean-Félicien Gacha Foundation. The future aim is to donate shoes to children worldwide. The business model is innovative. The cost of providing the shoes to children in need is included in the shoe price, between 110 euro and 300 euro. The customer became the benefactor, enabling Twins for Peace to become a sustainable organisation. At the same time, consumers who purchase one-for-one have the chance to feel good, look good and do good, all at the same time. In this model the firm can turn profit and educate consumers to help children in need by providing them with a pair of shoes. This is very important because in impoverished countries people live in areas with unsafe terrains. A lack of paved roads can cause injury to children walking barefoot, who can contract a range of soil-transmitted diseases. Moreover, in many nations, shoes are required to attend school. Owning shoes provides a child with the opportunity to be educated, leading to higher school attendance. Solidarity and charity became a state of mind.

Twins for Peace makes a profit incorporating philanthropy into its business strategy. Maxime Dussard travels to the different impoverished countries to give the shoes himself to increase brand awareness all around the world. The company relies essentially on word-of-mouth, viral marketing and social networks for its marketing efforts. Twins for Peace develops a brand identity towards a sustainable ethical fashion strategy. Here, the business model of Twins for Peace is drawn on resource-based theory (Barney, 1991), emphasising the role of resources and capabilities in forming the basis of competitive advantage. The resource is the financial assets that the firm possesses that can help the firm to reinvest and share profits with children in developing countries. This model has been completed by the new and original one-for-one movement business model. Black Mycoskie is the Founder and Chief Shoe Giver of Toms, and the person behind the idea of One for One, a business model that helps a person in need with every product purchased. The model is that for every pair of shoes Toms sells it donates a pair of shoes to a child in need on behalf of the customer. The business can be qualified as practising philanthropic capitalism. The company makes a profit but incorporates philanthropy into its business strategy. The company's vision is to create a better tomorrow by taking compassionate action today.

The difficulty is in creating a for-profit business with a strong philanthropic component. Time will tell whether the brand will succeed. Probably the biggest criticism is that Shoes makes people in poor countries dependent upon the good will of others rather than creating opportunities for them to better themselves. Many social entrepreneurs and philanthropists of today believe that the best way to create sustainable change is through education and job creation. Twins for Peace take this into account in the Partnership with humanitarian organisations in the Shoes Project, for example with the Jean-Félicien Gacha Foundation in Cameroon. Microfinance can be another solution. It provides small loans to low-income individuals to start their own businesses and get people out of poverty.

A further criticism has been the fact that Twins for Peace has manufacturing locations in Portugal. However, to face that criticism, the brand planned to take raw materials from and produce their shoes in Brazil. The brand will constantly have to balance the financial aspects of its for-profit business with the humanitarian elements of its philanthropic organisation.

Since Twins for Peace is for-profit, the company faces the same risks as other for-profit companies, particularly as this relates to the supply chain. It is necessary for the brand to monitor business activities such as factory compliance, sustainability, finances and even its Shoe Drop operations to maintain appropriate business conduct. Shoes must never be complacent because it has built philanthropy into its business and thus must innovate constantly. Although consumers tend to like purchasing from a philanthropic organisation, they appear to be more financially supportive when they get something in return. In the case of Twins for Peace, it is a pair of unique shoes. However, with consumer tastes constantly changing, looking for new designs

and products, the brand must remain proactive in managing the risks of outdated styles and design plague in the fashion industry to maintain its current success rate.

## Integrated Responsible Brand Identity

These French brands reflect two different visions of integration of responsible practices in the fashion industry. Veja has a sustainable responsible management by reforming productive, financial and commercial practices but also in the organisation of the firm. For example, their buildings in Paris are also provided by Enercoop with 100% renewable electricity. For Twins for Peace it is now social innovation and responsibility, planning to develop a more sustainable approach from the raw materials to manufacturing. From these two approaches of strategy, it can be evaluated how these brands' attitude to promoting a responsible brand influences their entrepreneurial responsible identity. As suggested by Louis and Lombart (2010), brand identity includes all the elements that form the existence of a brand, using Kapferer's brand identity prism (Kapferer 1992; 2008) as a framework. This concept consists of six external and internal characteristics of the brand. The external features include the physical facets of the brand, the brand/ consumer relationship and consumer reflections on the brand or product. The internal characteristics refer to cultural values, the image the brand projects (the brand's self-image), the consumer's mental representation of the brand and brand personality.

The brand's physique component, as defined by Kapferer (2008), refers to what the brand is and does. It is the most tangible component of brand identity. The personality component contributes to ascribing human characteristics to a brand, to project the most appropriate personality to consumers. These characteristics can be evoked by the brand's conditions of creation and production, as well as the logo, advertising and the retail shopping environment (ambient, design, social components, etc.).

The two different brands Veja/Vert and Twins for Peace have different brand entrepreneurial identities and two different visions of social responsibility. A brand can contribute to consumer loyalty and trust (Ross and Harradine, 2011). The relationship facet "defines the mode of conduct that most identifies the brand" (Kapferer 2008, p. 185). The reflection refers to the perceived client type and the buyer or user that the brand seems to be addressing. Culture involves the values that inspire the brand and reflect the corporate culture. This facet supposes an alignment between organisational culture and brand values. Self-image focuses on the fact that consumers partly evaluate brands in terms of how the product might enhance their self-image through brand consumption. Consumers demonstrate consistency between their values and the things they buy. All these facets are interrelated and brand identity results from consistency between these facets.

The six components of Kapferer's identity prism were developed using internal documents and publicly available secondary sources such as documents, records, interviews of co-founders and observed comments on social media (Facebook, Twitter, Instagram, etc.). Virtual contents contribute to the building of relationships and the sharing of content and interests in a brand for identification with a brand identity (Fournier and Avery, 2011). This is the reason why brands with a sustainable orientation must focus all their marketing strategy on these aspects. It can be a powerful tool used to convince consumers that the brand is sustainable but without wasting money on marketing. The products should be able to impress consumers, prompting them to spread the word to others without constant marketing from the company.

## Conclusion

A strategic approach should support the brand to provide a responsible, sustainable and social brand identity that consumers can perceive through general communication and social media. This brand identity must be constructed through real facts in order to maintain and strengthen consumer trust in the brand. It is a condition of long-term performance of the brand. A focus on the Brazilian fashion market helps then to consider the responsible brand identity through the two polar cases: (i) Veja with a strategy of eco-sustainable fashion engaging in environment-related practices with the specific aim of reducing environmental damage during the production process; and (ii) Twins for Peace with a strategy of socially responsible fashion focusing on improving issues related to communities, including working conditions. The table below (Table 23.2) provides a synthesis.

**Table 23.2:** Synthesis of the two different strategies of Veja and Twins for Peace.

<b>Veja</b>	<b>Twins for Peace</b>
Native sustainable	Consumer culture
Value chain of PORTER	Resource-based View of BARNEY
	One for one movement
What for sustainability?	How for sustainability?
What business are we in?	What are we able to make with it?
Exploration strategy	Exploitation strategy
Corporate social responsibility	Corporate social responsiveness
Open innovation	Social innovation
Eco-sustainable fashion	Socially responsible fashion
Creativity	Innovation
Design-design = process	Concept = ideas

Through these two strategies, we find two innovations in responsible practices: on the one hand, the entrepreneurial brand Veja has implemented a Corporate Social Responsibility policy (where CSR is a legal obligation to stakeholders, their vision is ethics-oriented and responsibility is seen as an ideal); on the other hand, the entrepreneurial brand Twins for Peace is focused on Corporate Social Responsiveness (where CSR is a tool, their vision is utilitarian and business-oriented and responsibility includes stakeholders as a condition for the company's economic performance) with a philanthropic vision. This brand wants to help children for the long term, through the development of education programs and accessibility to healthcare.

Product differentiation should be of high quality to justify a high price. For this shoe market, we can add original Brazilian fabrics and a French touch for a fashion product. Firms can choose between the two different strategies. Entrepreneurial companies that decide to adopt a native-sustainable brand identity can follow Veja's process. However, the brand identity also has to be perceived and adopted by consumers concerned with sustainability and social responsibility.

The sustainable brand orientation serves here as a mediating factor between entrepreneurial development and business performance to exploit new market opportunities (Reijonen et al., 2014). Therefore, the responsible strategies towards brand identity in Veja and Twins for Peace provide examples of entrepreneurial activities sharpening their growing realisation of the importance of sustainability and ethics that enhance entrepreneurial brand value.

## References

- Ashley, C., Leonard, H.A. (2009). Betrayed by the buzz? Covert content and consumer-brand relationships. *Journal of Public Policy and Marketing*, 28(2), 212–220.
- Augustin, C., Jagdip, S. (2005). Curvilinear effects of consumer loyalty determinants in relational exchanges. *Journal of Marketing Research*, 42(1): 96–108.
- Arino, A., Torr, J., & Ring, P.S. (2001). Relational quality: Managing trust in corporate alliances. *California Management Review*, 44(1), 109–131.
- Barnett, M.L., Jermier, J.M., & Lafferty, B.A. (2006). Corporate reputation, the definitional landscape. *Corporate Reputation Review*, 9(1), 26–38.
- Barney, J.B. (1991). Firm resources and sustained competitive advantage. *Journal of Management* (17), 99–120.
- Basdeo, D., Smith, K., Grimm, C., Rindova, V., & Derfus, P. (2006). The impact of actions on firm reputation. *Strategic Management Journal*, 27(12), 1205–1219.
- Bernoux, P., Servet, J.-M. (1997). *La construction sociale de la confiance*. Association d'économie financière: Paris, p. 484.
- Bowen, H. (1953). *Social Responsibilities of the Businessman*. New York: Harper & Brothers.
- Capron, M., & Quairel-Lanoizelee, F. (2007). *La responsabilité sociale d'entreprise*. Collection Repères, La découvertes (eds).
- Caroll, A.B. (1979). A three-dimensional conceptual model of corporate performance. *Academy of Management Review*, 4(4), 497–505.

- Commission of the European Communities. (2002). *Communication from the commission concerning corporate social responsibility: A business contribution to sustainable development*. Commission of the European Communities.
- Delarue, H., Berard, C. (2007). Dynamiques de la confiance dans les relations interorganisationnelles. *Revue Française de Gestion*, 175(6), 125–138.
- Daniels fund ethics initiative, University of New Mexico. <http://danielsethics.mgt.unm.edu>
- Dugast, Y. (2006). Veja, les baskets équitables – Décryptage d'une réussite. *Interdépendances* (63).
- Dwyer, F.R., Schurr, P.H., & Oh, S. (1987). Developing buyer-seller relationships. *Journal of Marketing*, 51(2), 11–27.
- Dyer, J.H. (1997). Effective interfirm collaboration: How firms minimize transaction costs and maximize transaction value. *Strategic Management Journal*, 18(7), 535–556.
- Elkington, J. (1999). *Cannibals with Forks: Triple Bottom Line of 21st Century Business*. Oxford: Capstone Publishing
- Emshoff, J., & Freeman, R. (1981). Stakeholder management: A case study of the U.S. Brewers Association and the container issue. *Applications of Management Science*, 1, 57–90.
- Fan, D., & Lo, Ch. K.Y. (2012). A tough pill to swallow? The impact of voluntary occupational health and safety management system on firms' financial performance in fashion and textiles industries. *Journal of Fashion Marketing and Management*, 16(2), 128–140.
- Fionda, A.M., & Moore C. (2009). The anatomy of a luxury fashion brand. *Journal of Brand Management*, 16, 347–363.
- Fournier, S., & Avery, J. (2011). The uninvited brand. *Business Horizons*, 54(3), 193–207.
- Frederick, W.C. (1978). From CSR1 to CSR2: The maturing of business-and-society. Working paper, Graduate School of Business, University of Pittsburgh.
- Freeman, R.E. (1984). *Strategic management: A stakeholder approach*. Pitman.
- Gillham, B. (2010). *Case study research methods*. Bloomsbury Academic.
- Granovetter, M. (2002). *La construction sociale de l'entreprise*. Huault (dir).
- Guibert, N. (1999). La confiance en marketing: fondements et applications. *Recherche Applications en Marketing*, 14(1), 1–19.
- Gulati, R.R. (1995). Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Academy of Management Journal*, 38(1), 85–112.
- Hosmer, L. (1995). Trust: the connecting link between organizational theory and philosophical ethics. *Academy of Management Review*, 20(2), 379–403.
- Houston, F. S., Gassenheimer, J. B. (1987). Marketing and exchange. *Journal of Marketing*, 51(4), 3–18.
- Ivens, B.S. (2006). Norm-based relational behaviours: Is there an underlying dimensional structure? *Journal of Business and Industrial Marketing*, 5(2), 11–32.
- Joergens, C. (2006). Ethical Fashion: Myth or future trend? *Journal of Fashion Marketing and Management*, 10(3), 360–371.
- Kapferer, J.N (1992). *Strategic Brand Management*. Free Press and Kogan Page.
- Kapferer, J. (2008). *The New Strategic Brand Management: Creating and Sustaining Brand Equity Long Term*, 4th Edition. London: Kogan Page.
- Kumar, V., & Christodopoulou, A. (2014). Sustainability and branding: An intergrated perspective. *Industrial Marketing Management*, 43(1), 6–15.
- Lacziack, G.R., & Murphy, P.E. (2012). Stakeholder theory and marketing: Moving from a firm-centric to a societal perspective. *Journal of Public Policy & Marketing*, 31(2), 284–292.
- Lombard, C., Louis, D. (2010). Impact of brand personality on three major relational consequences (trust, attachment, and commitment to the brand). *Journal of Product and Brand Management*, 19(2), 114–130.
- McAllister, D. (1995). Affect and cognition based trust as foundation of interpersonal cooperation in organization. *Academy of Management Journal*, 38(1), 24–59.

- Martinet, A.C., & Reynaud, E. (2004). Entreprise durable, finance et stratégie. *Revue Française de Gestion*, 152(5), 121–136.
- Mitchel, R., Agle, B.R., & Wood, D.J. (1997). Toward a theory of stakeholder identification and salience: Defining the principles of who and what really counts. *Academy of Management Review*, 22(4), 853–886.
- Nooteboom, B., Berger, H., & Nooderhaven, N.G. (1997). Effects of trust and governance relational risk. *Academy of Management Journal*, 40(2), 308–338.
- North, D.C. (1990). *Institutions, institutional change and economic performance*. Cambridge University Press.
- Peattie, K. (1995). *Gron Marknadsföring-Att möta den gröna utmaningen*. Pitman Publishing.
- Porter, M.E., & Kramer, M.R. (2006). Strategy and society: The link between competitive advantage and cooperate social responsibility. *Harvard Business Review*, 84(12), 76–92.
- Reijonen, H., Pardanyi, S., Tuominen, S., Laukkanen, M., & Komppula, R. (2014). Are more growth-oriented SMEs more likely to adopt market and brand orientations? *Journal of Small Business and Enterprise Development*, 21(2), 250–264.
- Ring, P., & Van de Ven, A. (1994). Developmental processes of corporative inter-organizational relationships. *Academy of Management Review*, 19(1), 90–118.
- Ross, J., Harradine, R. (2011). Fashion value brands: The relationship between identity and image. *Journal of Fashion Marketing and Management*, 15(3), 306–325.
- Sako, M. (1992). *Price, quality, and trust. Interfirm relations in Britain and Japan*. Cambridge University Press.
- Sanchez-Hernandez, I. (2015). An empirical study assessing the still unknown one for one movement. *Sociedade, Contabilidade e Gestao*, 10(2), 157–169.
- Sharma S., & Vredenburg, H. (1998). Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. *Strategic Management Journal*, 8(19), 729–753.
- Shen B., Wang, Y., Lo, Ck., & Shum, M. (2012). The impact of ethical fashion on consumer purchase behavior. *Journal of Fashion Marketing and Management*, 16(2), 234–45.
- Spangenberg, J.H., Fuad-Luke, A., & Blincoe, K. (2010). Design for sustainability (DFS) the interface of sustainable production and consumption. *Journal of Cleaner Production*, 18(15), 1485–1493.
- Steiner, G.A. (1975). *Business and Society* (2ème éd.). Random House.
- Tham, M. (2010). Languaging fashion and sustainability – towards synergistic modes of thinking, wording, visualising and doing fashion and sustainability. *The Nordic Textile Journal*, 1, 14–23.
- United Nations. (1987). *Report of the world commission on environment and development. Our common future*. [http://conspect.nl/pdf/Our\\_Common\\_Future-Brundtland\\_Report\\_1987.pdf](http://conspect.nl/pdf/Our_Common_Future-Brundtland_Report_1987.pdf)
- Usunier J.-C. (2000). *Confiance et Performance: Un essai de management comparé France-Allemagne*, Librairie Vuibert.
- Wood, D.J. (1991). Corporate social performance revisited. *Academy of Management Review*, 16, 691–718.
- Zucker, L.G. (1986). Production of trust: Institutional sources of economic structure. In M. Staw & L.L. Cummings (Eds.), *Research in organizational behavior* (pp. 53–111). JAI Press.





Pramit Banerjee and Naman Sharma

## 24 Human Resources and Thinking about Sustainability

**Abstract:** In the fashion sector, there is a high degree of labour involved by human resources; hence, managing such resources is daunting. This is the focus of this chapter.

**Keywords:** fashion, human resources, sustainability

### Role of Human Resources (HR) in the Fashion Sector

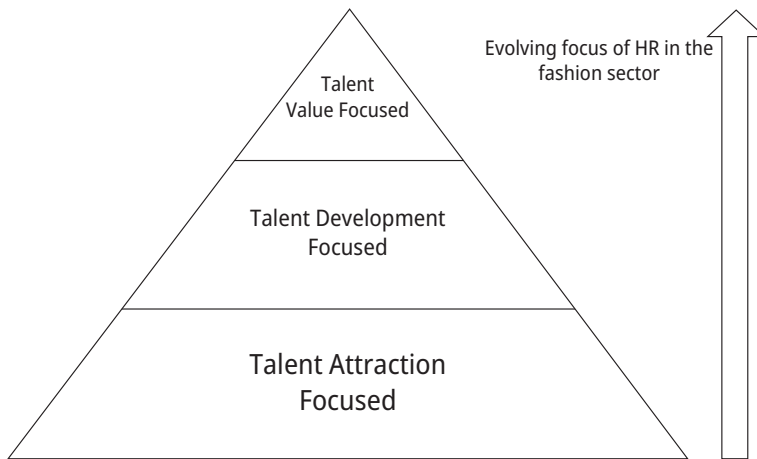
In the textile industry, the role of HR is a key factor in integrating all the other functions in the organisation to ensure that the people factor is kept intact through best practices of selection, retention and development of the employees of this sector (Kiron, 2013). Through a survey across five firms involved in the apparel industry in Sri Lanka, it was found that the business managers in the organisations are confident in stating that HR planning among the HRM function has a significant effect on the marketing and the production of the items and in turn positively influences the profitability of the apparel firm (Athambawa & Nisthar, 2014). Some of the key considerations that HR in the fashion and retail sector need to make are the segmentation and assignment of work for the staff in terms of education, skill level, managing the rotational shifts of the employees who would be working for long hours at a stretch, their intention of leaving the firm, monitoring the employees in terms of skill development for behaving with customers appropriately and the exact staffing levels in the firm as the demand fluctuates as per the market needs (Choudhary, 2022). Some of the strategies the HR managers need to implement in the apparel and textile industry are the need to create a sensitive and competitive policy for compensation with frequent bonuses and appreciation for employees, ensuring the work environment is healthy and supportive for employees so that all the safety and security measures are in place for the employees involved at the bottom of the pyramid and that they can continuously learn and upgrade their skills (Gordon, n.d). Joshi (2007) highlighted that the role of HR in the textile and fashion industry will be even more challenging rather than just becoming a middle man because they need to understand the emotional pain points of the employees involved in their laborious duty, provide them with the support as and when needed in terms of leave, compensation and bonuses and thus motivate

---

**Pramit Banerjee**, Indian Institute of Foreign Trade, e-mail: banerjee.pr91@gmail.com

**Naman Sharma**, Indian Institute of Foreign Trade, e-mails: naman@iift.edu, namanshandilya@gmail.com

them to take up challenging roles by upskilling them so as to sustain a skilled and innovative workforce in the future. Kabra (2021), while highlighting the need for more flexibility for the employees in the fashion industry, has pointed that the well-being of such employees should be given due importance as in such hard-working sectors this area is unnoticed by HR, and they need to be prepared for the future to enhance the overall experience of the employees in the recruitment phase as well as the time they are employed in the firm. Pike (2015) reported that while some firms in the fashion sector are competing to get the best talent, other firms are focusing on the approach of better employer branding, setting up a better culture in the organisation for a better employee experience overall, which is a more strategic technique. Tagra (2022) mentions in a thought-provoking article how the HRs of tomorrow in the apparel industry need to upskill and advance themselves in the event of the technological advancements so that they can, in turn, influence the employees in the sector to take up challenging roles which are more tech-savvy and thus track the performance of the employees who are utilising the best practices of technological usages and reward them accordingly. The above literature already gives us a sense that focusing on just the attraction of employees or developing talent will not be enough in the fashion industry, and that the HR managers need to focus on the value generation for the human resources employed in this sector. Through the evolving literature, the authors have philosophised a framework which would explain the growing literature in this matter and serve as a guide for the HR managers involved in this sector.



**Figure 24.1:** Evolving focus of HR.

The above Figure 24.1 shows the diagrammatic view of the evolving focus of the HR managers in the fashion sector. Although previously the focus was on the attraction of key talent with niche skills to fulfil the demands, followed by the development of the skills in those employees, the focus now shifts to the value generation for the em-

ployees, thus focusing on the way the employees can imbibe the culture of the technological era while adhering to the sustainable practices which will, in turn, generate value for the organisation.

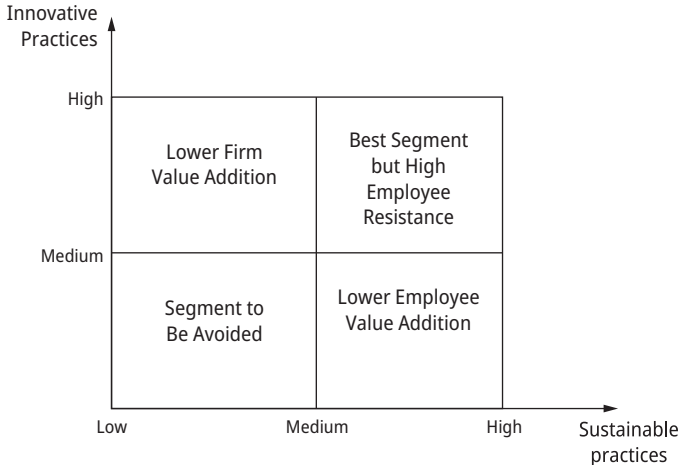
## **Sustainable Practices in the Fashion Industry**

The fashion industry is one of the fastest growing industries in the world, expected to grow to about \$2.25 trillion by 2025 (Centobelli et al., 2022). The developing economies such as India and Bangladesh from Asia are playing a vital role in the same industry (Dana, 2000; Dana et al., 2020). However, the fashion industry opens up much discussion and debate on its operations and functions. Sustainable fashion has been a critical point of discussion among industry experts, academia, researchers and consumers. According to UNCTAD (2020), the fashion industry uses approximately 93 million cubic metres of water every year, leading to a regional scarcity of drinking water in several countries of the world. This industry is also responsible for at least 20% of water waste worldwide (WRI, 2017). While the ecological impact needs to be kept in check, sustainable fashion also considers product-related issues, production and other processes, business activities and stakeholders involved in these activities. The aim is to achieve an industry status that champions carbon neutrality, social justice, animal rights and ecological integrity.

## **How HR can Contribute to Sustainability**

Sustainable practices are one of the key focus areas in recent times. They will be more so as we leap on towards another industrial revolution in the textile and fashion industry. The thrust towards sustainable practices in the fashion industry in Bangladesh has put the focus of the business leaders on the viability of technological solutions through the empathetic approach towards both the environment and the employees (Parker et al., 2011). Bhandari et al. (2022) showed through a survey involving the professionals of sustainable sourcing in the fashion and luxury brand sector that sharing of knowledge among co-workers and the tendency to resist upgrading the skill levels were two of the most critical challenges faced by HR professionals in the sectors while they try to adopt the culture of sustainable practices in the organisations. Gazzola et al. (2020) highlighted the gender and other diversity differences towards the sustainable practices in the fashion sector, where it was found through an online survey in Italy that it is women who were more inclined toward the sustainable practices of the fashion sector than men. There was no significant difference among GenZ or any other generation in terms of perception towards sustainable practices of these firms. The sustainability integration in the supply chain of the luxury fashion brands has been explained through a

model wherein the strategic components are broken down into three sub-components – the product, consisting of the supervisory role of the product, the management of the chemicals, the production, consisting of the clean ways of production and harnessing zero waste technologies, and the supply chain network, where the traceability can be tracked as to how the sustainability is being practiced across the network (Karaosman et al., 2020). Through a data analysis approach across the Brazilian fashion industry, it was seen that the eco-innovations concerning the product and the process are more prominent there than the eco-innovations of the organisations, which indicates that the organisations need to further focus on sustainable and green practices across functions like human resources, marketing and supply chain management (mac Lennan et al., 2021). Also, the two reasons people are hesitant to follow the practices of the circular economy when it comes to the fashion industry are the people from Italy who are economically weaker only tend to buy second-hand clothes and they are outdated concerning the fashion style of the current generation (Gazzola et al., 2020). As seen from the above literature, there is a certain set of behaviours that the employees in the fashion sector exhibit, some of which will be beyond the control of the HR managers, while the HR managers can influence some if they can inculcate sustainable values within the organisations and make the employees aware of the fact that both innovation and sustainable practices will be the key to the road ahead. The authors come up with the below scenario by depicting it through a matrix.



**Figure 24.2:** Sustainability matrix in the fashion industry.

As shown in Figure 24.2, there is a dilemma for the HR managers between enabling the organisation's sustainable culture and inspiring the employees to take up innovative practices. The best possible solution for HR will be to coach and mentor the employees to adhere to the highly sustainable practices that benefit the firm and create a

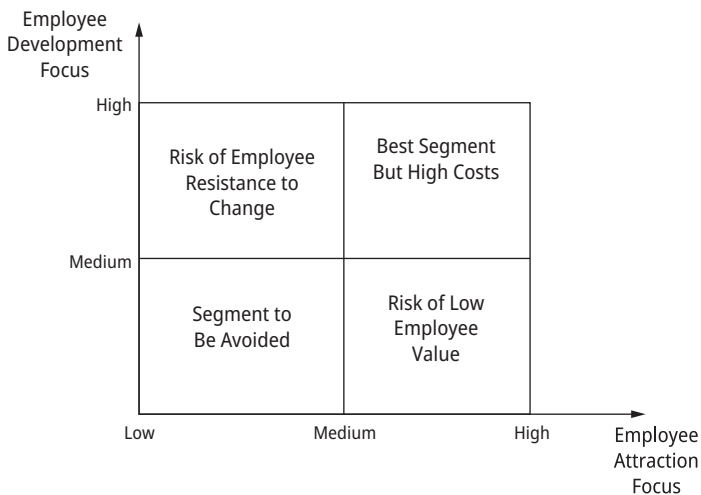
culture of continuous innovation that adds value to the employees. However, this comes with very high resistance from the employees as they are not very agile in adopting the best practices seen in the literature. 'If the focus of an organization is more on sustainable practices, in that case, there is less value addition from employees, on the other hand if the organization focuses more on innovative practices, then there is a lower firm value addition. It is thus suggested that HR will have to play a key role in managing the optimal level of innovative practices harnessed by the employees in a way that caters to sustainable practices. The HR can do this through frequent interaction with the line managers and even employees to understand the procedures they are adopting in light of the recent technological upgradation, which may benefit all stakeholders. In this regard, HR will first have to understand the technological practices and the processes well to investigate whether the organisation is remaining compliant as per the laws of the land, following sustainable practices and, if required, changing the policies accordingly.

## Major Roadblocks for HR

In generating value for the employees in the organisations, HR will face many hurdles, some of which may exist now in the fashion sector. The qualitative study across the apparel firms in Bangladesh shows that employees in the industry are hesitant to learn new technologies as they have a wrong understanding of these despite the ushering in of the fourth industrial revolution in the country (Alam & Dhamija, 2022). Some of the challenges for HR in this context or the textile industry include the employee selecting the organisation to work for as some of the recent factors employees are attracted to are the ethical and sustainable approaches of the firm (Anhäuser & Klobucar, 2020). In India, in the textile industry, which employs quite a large number of people (followed by the agriculture sector), the HR department faces a herculean task in terms of finding the right talent who are appropriately skilled, bridging the learning gap of the employees whose educational level is not high who struggle to catch up with the latest technological developments (Critical HR Challenges in the Textile Industry | Talentpro India, n.d.). Also in India, the fashion and textile industry generate a large amount of employment opportunities. However, the potential labour as well as industry severely lacks the required skill with respect to quality of cotton textile, knowledge of different machines, soft skills to manage the shop floor, personnel and latest technology adoption in this sector, which is critical for the workforce to function efficiently (Human Resource and Skill Requirements in the Textile Industry: Study on Mapping of Human Resource Skill Gaps in India till 2022, 2022).

In order to mitigate the impediments in the textile industry, HR needs to remain strong and manage political and labour unrest taking place in unwanted situations with care and empathy so that employee sentiments are not hurt while at the same

time adhering to the sustainable and innovative policies of the organisations being implemented (Textile Today, 2019). A theoretical framework has been proposed which integrates the HRD 4.0 practices which has an influential effect on both the technical as well as the managerial skills of employees through enhancement of practices such as setting up a continuous culture of IR 4.0 trainings, implementing awareness programs for IR4.0 and adoption of such technologies, leveraging the digital medium for training and enhancing the capability of HR to mitigate the financial constraints and resistance to change from employees (Alam & Dhamija, 2022). HR in the fashion industry need to identify the proper channels of recruitment, focus on developing internal talent through training and maintain a harmonious relationship throughout the talent management process (Anhäuser & Klobucar, 2020). While there seem to be enough challenges for HR already existing, the main challenge would be optimising employee attraction and employee development with the rising cost of attrition and quality time and cost of training (Sharma & Singh, 2016). This would be embedded given the sustainable practices that the employees would be adhering to, which would pose an even bigger challenge due to resistance shown by employees and the risk of low-value addition to the employees.



**Figure 24.3:** Employee maintenance matrix.

As shown in Figure 24.3, there is a focus on employee attraction as well as the development of the employee through internal learning programs showing the levels of both in the corresponding quadrants. The segment to be avoided is the part with little focus on both. The ideal quadrant will be to have a high attraction for the employee and a high learning and development culture for employees in the minimized on. However, it comes at a very high cost considering the sustainability practices. The

compliance sub-department within the HR department in the garments segment needs to cater to the social security and safety of the employees working in such sectors and present the same to the appropriate legal authority in case of audits so that the organisation remains compliant to the regulations of the land (Job Responsibilities of Garments HR Compliance Department – ORDNUR, n.d.). Hence, there should be an optimal level of balancing both the acquisition of highly skilled talent as well as the development of talent so that the risks related to resistance to change by employees and the risk of lower employee value generation can be minimized. This is where HR in the future will have to focus towards the generation of employee value in view of cost-effective innovative and sustainable practices.

## HR Leveraging Technology

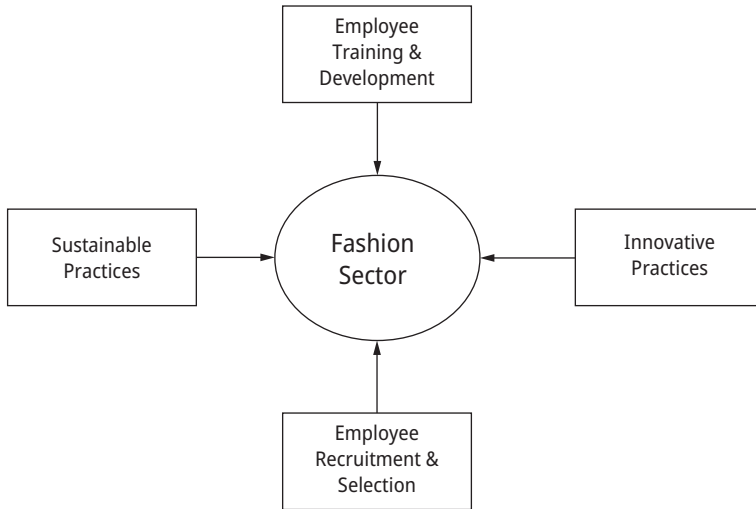
With the advent of the technological revolution in the textile and apparel industry, HR managers are now compelled to make judicious use of the technologies to ensure that the firm is operating efficiently from the perspective of human resources. The technological advancements and the ushering of the IR 4.0 in the textile and apparel industry have been modelled through the six principles of IR 4.0 and three components, which highlight the practices of digital manufacturing, applications of IoT, cloud, augmented reality, 3D printing and control remotely through mobile technologies and smart devices (Bertola & Teunissen, 2018). Kumar (2017) has given an insight as to how crucial technology and its adoption is going to be for the HR managers involved in the garment industry as HR will now need to shift the focus of integrating the human factors into the technological upsurge and add more value to the business by imbibing robust and efficient process control systems within the human resource information management systems by leveraging the latest technologies (Jain et al., 2021).

Rather than fearing the loss of jobs through the replacement of unskilled or semi-skilled workers by the machines in the fashion sector, the key focus should be on how to utilise the latest technologies of IR4.0 in the firms as there is a huge opportunity for employment in the sector which will also boost the productivity of the firms, thereby a win-win situation for all parties (Rees, 2019). While the employee is either hesitant to learn the latest technologies or readily adopt the new technologies at work, it is one of the key roles of HR to understand the existing behaviour of the employees in the fashion sector to adopt technological practices and make them aware of the benefits of such usage. In order to have a view at a more granular level, the HR managers will have to use the IoT, Cloud and Analytics solutions which will share the real-time data on the states of the employees at work and as and when necessary. HR will be able to connect in person with the employees for any issues or doubts regarding the technological usage at work by the employees.



## Proposed Model for Sustainability Through HR in the Fashion Sector

The above sections have raised curiosity among the authors about integrating innovative practices and sustainability with the HR practices in the fashion industry.

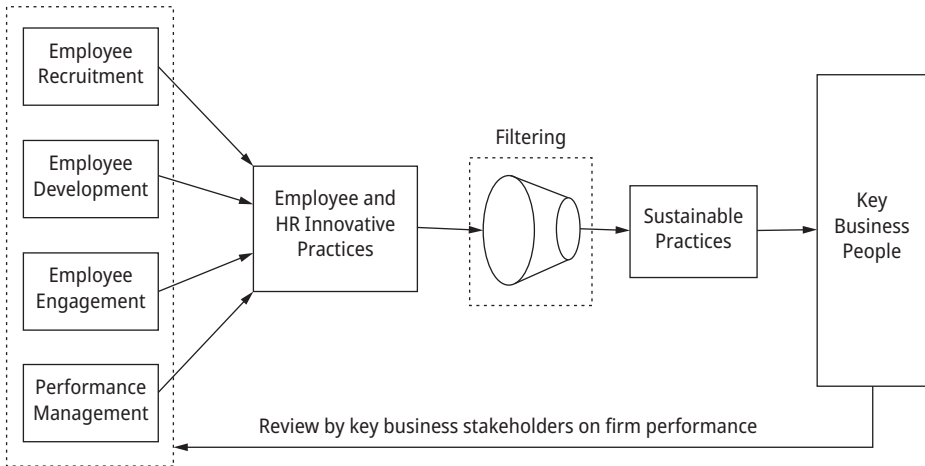


**Figure 24.4:** HR sustainability model for the fashion industry.

The above Figure 24.4 shows the integration of the primary challenges of HR in its operations along with the innovative and sustainable practices in the firms involved in the fashion sector. However, to understand exactly how this may be possible through robust process management implemented by HR, it is worth going through the literature briefly in this regard. Bailey (1993) through the review of the existing practices in the apparel industry, suggested a more collaborative approach for human resources in the industry, including more involvement and commitment from employees rather than only focusing on the technological influence and harnessing the automation capabilities, thus, a more strategic approach of the HRM department instead of just incremental innovative practices of technology applications. Through the case of Gap Inc., it has been highlighted by a CSR framework that managing the entire stakeholders for a firm in the fashion sector is one of the key considerations of the CSR team which helps in enhancing the brand image of the firm, thereby improving the attraction of the employees, improving their motivational levels, creating a harmonious relationship among the stakeholders and better financial performance, to name some benefits (Arrigo, 2013). Asaduzzaman (2020) has highlighted the ill practices of the HR department in the ready-made garments industry in Bangladesh which

have resulted in a disturbance in the sector and also the profit margin taking a hit when compared to neighbouring countries, thus further necessitating the growing importance of the strategic HRM function among the business drivers within such industry. In one of the surveys across the employees of textile and clothing MSME firms of Serbia, which included responses from employees and managers, it was revealed that owners of the firms set the targets for improvements in business processes linked to the employees and the human resource management practices are positively impacting the initiatives for the improvement in business processes which in turn benefits the firms' operations and employee satisfaction (Dobrosavljević & Urošević, 2020). Researchers have tried to model the relationships between creativity, innovation, competency of employees, potential of the markets and the performances of the SMEs (Dana et al., 2020; Dana et al., 2022). It has been found that there is a strong and direct influence of creativity on the performance of firms. This is derived from competency development for the employees, which positively affects innovation and creativity. Still, the market potential does not in any way influence such firms' creativity, innovation, or performance (Harini, 2020; Sharma 2021). Lake (2007) has shown through the experimentation approach among the two garment factories of India that while one factory focused on cutting costs, incentivising and bonuses, this resulted in higher attrition and more absenteeism among the workforce. In contrast, the other factory, which focused on the development of skills, balance in work and life and encouraging employees to take up challenging roles, showed a lower turnover rate and better employee attendance rate. In one of the job openings for a human resource manager in the fashion sector, it was cited that managing the relationship with the employees, providing them with proper benefits as per their needs and developing talent in such a labour-intensive sector would be some of the key duties of the manager (Human Resources Manager, Fashion & Accessory Brands at Richemont in New York, NY, USA | Vogue Business Talent, 2020). A framework has been proposed for the firms which implement person service systems and how HR plays an important role in the co-creation of value by integrating the human capital with the satisfaction level of the employees in the fashion sector (Adam, 2018). The above literature shows that the gap lies in integrating the existing HRM practices in the fashion, textile and apparel industries with the sustainable and innovative practices that the firm needs to follow, thereby ensuring that the HR process is very effective and efficient in such sectors. Given the above, the authors have come up with a conceptual framework which will guide the strategic HRM departments in the fashion that they may consider when implementing the process in the future.

The above framework (Figure 24.5) has been proposed by the authors, which shows the process from a very high level as to how the HR in these fashion sectors can re-orient themselves to incorporate innovative and sustainable practices, when taking into account the view of both the employee and the HR which can further be enhanced through reviews and feedback from the key business stakeholders. As seen from Figure 24.5, the different sets of talent management practices by HR as circled in



**Figure 24.5:** Conceptual framework.

a dashed rectangular box are to be oriented in such a manner that they invoke the innovative practices by both the employee and HR so that they can co-innovate and come up with best practices for the fashion firms. This will ensure that the employee's voice is heard to a large extent. Furthermore, HR can implement specific innovative technological solutions within its processes to cater to the needs of such employees. The authors have added two more facets – employee engagement and performance management – as they have not been covered much in the literature. They feel that they can also be incorporated in the future to make the framework more robust and reliable.

Further to this, only those innovative practices of employees and HR which are sustainable and thus benefit the organisation and the environment are to be considered. Therefore, the filtering mechanism should be in place to eradicate those innovative practices which only focus on the efficiency and profitability point of view and not the overall perspective of the welfare of employee, the firm and the environment at large. Finally, these specific sustainable practices, whether they impact the profitability of the firm or what is their impact, will be reviewed by the key business stakeholders who may review the implications and the process and provide feedback to HR, who in turn may further re-orient themselves to cater to the business needs as well. Throughout this process, technology will play a crucial role in enabling HR to implement the best practices by capturing the relevant data and adapting to the change. Thus, HR will play a critical role in implementing innovative and sustainable practices, keeping the key business stakeholders, employees and environment in mind.

## Conclusion

The chapter introduces the concept of sustainable fashion and the fashion industry and explores the relationship of HR with the core sentiments of carbon-neutral fashion industry. We explained the evolving core focus of HR concerning the industry and further explained the major roadblocks that are faced. After a careful analysis, the chapter proposes a conceptual framework for reviewing key stakeholders on a firm's performance, addressing the approach that aims to translate employee/ HR practices into sustainable practices for the fashion industry.

## References

- Adam, M. (2018). The role of human resource management (HRM) for the implementation of sustainable product-service systems (PSS) – An analysis of fashion retailers. *Sustainability (Switzerland)*, 10(7). <https://doi.org/10.3390/su10072518>
- Alam, S., & Dhamija, P. (2022). Human resource development 4.0 (HRD 4.0) in the apparel industry of Bangladesh: A theoretical framework and future research directions. *International Journal of Manpower*, 43(2), 263–285. <https://doi.org/10.1108/IJM-06-2021-0372>
- Anhäuser, S., & Klobucar, H. (2020). *New challenges for HR in the textiles industry | Textile network*. <https://textile-network.com/en/Business/New-challenges-for-HR-in-the-textiles-industry>
- Arrigo, E. (2013). Corporate responsibility management in fast fashion companies: The Gap Inc. case. *Journal of Fashion Marketing and Management*, 17(2), 175–189. <https://doi.org/10.1108/JFMM-10-2011-0074>
- Asaduzzaman, M. (2020). An analysis of human resource management (HRM) practices ready-made garments industry in Bangladesh. *International Journal of Progressive Sciences and Technologies (IJPSAT)*, 18(2), 75–82. <http://ijpsat.ijshst-journals.org>
- Athambawa, S., & Nisthar, B. (2014). The influence of human resources planning in business transformation of apparel industries: Experiences of five organizations in Eastern Province of Sri Lanka. In *Proceedings of the Second Annual Research Conference 2013 on Emergence of Novelty in Business Management*, 78–84. <http://ir.lib.seu.ac.lk/handle/123456789/752>
- Bailey, T. (1993). Organizational innovation in the apparel industry. *Industrial Relations*, 32(1), 30–48. <https://doi.org/10.1111/j.1468-232X.1993.tb01017.x>
- Bertola, P., & Teunissen, J. (2018). Fashion 4.0. Innovating fashion industry through digital transformation. *Research Journal of Textile and Apparel*, 22(4), 352–369. <https://doi.org/10.1108/RJTA-03-2018-0023>
- Bhandari, N., Garza-Reyes, J.A., Rocha-Lona, L., Kumar, A., Naz, F., & Joshi, R. (2022). Barriers to sustainable sourcing in the apparel and fashion luxury industry. *Sustainable Production and Consumption*, 31, 220–235. <https://doi.org/10.1016/j.spc.2022.02.007>
- Centobelli, P., Abbate, S., Nadeem, S.P., & Garza-Reyes, J.A. (2022). Slowing the fast fashion industry: An all-round perspective. *Current Opinion in Green and Sustainable Chemistry*, 100684.
- Choudhary, S. (2022). *Industry specific HR roles: Fashion and retail – The Best of Planet-I*. <https://blogiimindore.com/2022/02/07/industry-specific-hr-roles-fashion-and-retail/>
- Critical HR Challenges in the textile industry | Talentpro India*. (n.d.). <https://www.talentproindia.com/2020/02/26/critical-hr-challenges-in-the-textile-industry>
- Dana, L.P. (2000). Creating entrepreneurs in India. *Journal of Small Business Management*, 38(1), 86.

- Dana, L.P., Sharma, N., & Acharya, S.R. (Eds.). (2020). *Organising entrepreneurship and MSMEs across India* (Vol. 11). World Scientific.
- Dana, L.P., Sharma, N., & Singh, V.K. (Eds.). (2022). *Managing human resources in SMEs and start-ups: International challenges and solutions* (Vol. 5). World Scientific.
- Dobrosavljević, A., & Urošević, S. (2020). The impact of human resource management on business process improvement: An analysis within the MSMEs of the textile and clothing industry. *Bizinfo Blace*, 11(2), 19–32. <https://doi.org/10.5937/bizinfo2002019d>
- Gazzola, P., Pavione, E., Pezzetti, R., & Grechi, D. (2020). Trends in the fashion industry. The perception of sustainability and circular economy: A gender/generation quantitative approach. *Sustainability (Switzerland)*, 12(7), 1–19. <https://doi.org/10.3390/su12072809>
- Gordon, J. (n.d.). *Human resources strategies for the textile industry*. <https://smallbusiness.chron.com/human-resources-strategies-textile-industry-78153.html>
- Harini, S. (2020). Leveraging SMEs performance of sustainability: Creativity and innovation based on HR competency and market potential in the era of IR 4.0. *International Journal of Entrepreneurship*, 24(1). *Human resource and skill requirements in the Textile Industry: Study on mapping of human resource skill gaps in India till 2022*. (2022). [www.nsdindia.org](http://www.nsdindia.org)
- Human resources manager – Fashion & accessory brands at Richemont in New York, NY, USA | Vogue Business Talent*. (2020). <https://www.voguebusiness.com/talent/jobs/human-resources-manager-fashion-accessory-brands-richemont-2072>
- Jain, G., Sharma, N., & Shrivastava, A. (2021). Enhancing training effectiveness for organizations through blockchain-enabled training effectiveness measurement (BTEM). *Journal of Organizational Change Management*, 34(2), 439–461. <https://doi.org/10.1108/JOCM-10-2020-0303>
- Job responsibilities of garments HR compliance department – ORDNR*. (n.d.). <https://ordnur.com/apparel/job-responsibilities-garments-hr-compliance-department>
- Joshi, A. (2007). *Role of HR (HRM) in textile – free textile industry articles – Fibre2fashion.com – Fibre2Fashion*. <https://www.fibre2fashion.com/industry-article/2322/role-of-hr>
- Kabra, Y. (2021). *Emerging recruitment trends in the fashion industry, HR News, ETHRWorld*. <https://hr.economictimes.indiatimes.com/news/trends/emerging-recruitment-trends-in-the-fashion-industry/83680966>
- Karaosman, H., Perry, P., Brun, A., & Morales-Alonso, G. (2020). Behind the runway: Extending sustainability in luxury fashion supply chains. *Journal of Business Research*, 117, 652–663. <https://doi.org/10.1016/j.jbusres.2018.09.017>
- Kiron, I.M. (2013). *Importance of Human Resource Management (HRM) in textile industry*. <https://textilelearner.net/human-resource-management-in-textile/>
- Kumar, A. (2017). Role of Technology in Garment Industry for Enhancement the Efficiency of HR Management: Opportunities & Challenges. *Globus*, 8(2).
- Lake, H. (2007). *Steering towards the high road: A Study of human resource management in two Indian garment factories*. <https://www.iza.org/publications/dp/3227/steering-towards-the-high-road-a-study-of-human-resource-management-in-two-indian-garment-factories>
- mac Lennan, M.L.F., Tiago, E.F., & Pereira, C.E.C. (2021). Technological and non-technological trends in fashion eco-innovations. *Innovation and Management Review*. <https://doi.org/10.1108/INMR-12-2020-0177>
- Parker, E., Hammond, L., Higginson, H., & Williams, D. (2011). *Steps towards sustainability in fashion: Snapshot Bangladesh*. <https://ualresearchonline.arts.ac.uk/id/eprint/2754>
- Pike, H. (2015). *Fashion companies need to rethink their HR function | BoF*. <https://www.businessoffashion.com/articles/workplace-talent/the-strategic-importance-of-hr>
- Rees, D. (2019). *Can technology transform the fashion industry? – HR ASIA*. <https://hr.asia/top-news/can-technology-transform-the-fashion-industry>
- Sharma, N. (2021). Using positive deviance to enhance employee engagement: an interpretive structural modelling approach. *International Journal of Organizational Analysis*, 30(1), 84–98.

- Sharma, N., & Singh, V.K. (2016). Effect of workplace incivility on job satisfaction and turnover intentions in India. *South Asian Journal of Global Business Research*, 5(2), 234–249.
- Tagra, D. (2022). *Contemporary HR in apparel industry: Time to go beyond 'Human Resilience' department | Apparel Resources*. <https://in.apparelresources.com/business-news/sustainability/contemporary-hr-apparel-industry-time-go-beyond-human-resilience-department>
- What are the roles of an HR in textile industry?* (2019). <https://www.textiletoday.com.bd/roles-hr-textile-industry>



Vijay Pereira, Daicy Vaz and Arup Varma

## 25 Workers' Rights

**Abstract:** This chapter discusses the rights of workers. It focuses on Bangladesh, China, India, and Vietnam.

**Keywords:** workers, employees, fashion, sustainability

### Overview of the Fashion Industry

The fashion industry is fast growing, vibrant and thriving. Indeed, fashion brands have been competing with each other to top the chart of best fashion brand globally. As per The Vou (Meyer, August 26, 2022), Nike with a brand value of \$33.1bn is ranked first, followed by Gucci (\$18.1bn) and Louis Vuitton (\$15.1bn). Other brands in this list of the top 100 are Zara, Prada, Burberry, Adidas, H&M and Michael Kors, to name a few. The fashion industry has evolved to modern day fashion where importance is given to style, fabric, comfort and uniqueness and is influenced by gender, geographical locations, climatic conditions, occasions, cultural preferences, financial and economic considerations, personal and occupational attributes (Hasan, May 19, 2022). As one might imagine, these aspects demand diversity in clothing, but sustainability and innovation (Hasan, May 19, 2022) are now the key for survival of fashion brands. Although the industry did take a huge hit during the pandemic due to multiple lockdowns, it quickly revived and regained business by 2021 (Forrest, April 8, 2022). One outcome of the Covid-19 pandemic is that people have become more health conscious and have begun fitness routines due to which brands related to sportswear are predicted to see 25% more sales between 2021 and 2025 (Forrest, April 8, 2022). Also, as per a report by Deloitte (June 10, 2020), e-commerce is expected to increase up to 68% in India and 64% in China for garments, footwear and accessories.

Typically, a brand gains its fame from its product quality and design. This responsibility solely lies in the hands of production teams located in different parts of the world. In this chapter, we look at the working conditions at the manufacturing sites which are mostly located in emerging countries. We further highlight the rights of workers employed in the textile manufacturing industry. We also reflect upon past incidents that have led to revision of labour laws. Having analysed the current scenario in terms of worker rights at the manufacturing industry, we provide implica-

---

**Vijay Pereira**, NEOMA Business School, Reims, France, e-mail: vijay.pereira@neoma-bs.fr

**Daicy Vaz**, NEOMA Business School, Reims, France, e-mail: Daicy.vaz@neoma-bs.fr

**Arup Varma**, Quinlan School of Business, Loyola University Chicago, United States, e-mail: avarma@luc.edu



tions for the governments, NGOs, local authorities, policymakers, supra-national organizations, and employers in textile industry so that the workplace can become more inclusive and liberal for employees.

## Outsourced Locations in Emerging Markets

An important feature of the industry is that most of the international brands import textile and readymade garments from emerging countries, specifically Bangladesh, India, Vietnam, China, Pakistan, Nepal, Turkey, Indonesia, Cambodia, Morocco, Brazil, Malaysia and Thailand. Among these emerging markets, China is the largest exporter of clothing employing more than eight million people and earning an export revenue of USD 150 billion (Asia Garment Hub, 2020). Bangladesh stands second in exports, contributing to 80% of Bangladesh's export income and employing close to four million people (Majumdar & Sinha, 2019). Vietnam stands third (Majumdar, Shaw & Sinha, 2020) employing 2.5 million people (Majumdar et al., 2020). Relatedly, the Indian textiles and clothing sector is expected to grow from at present 200 billion USD to 350 billion USD by 2024 which currently employs approximately 45 million people (Baseline Study, 2020). One of the main reasons for brands to outsource production to emerging countries is cheap labour, where low skilled labour is abundant and needs employment. Further, the textile manufacturing sector is one of the largest employers. Owing to the lower labour cost and abundant workforce in countries such as Bangladesh and India, most readymade garments are manufactured here.

Most successful businesses follow a business model which encompasses lower manufacturing costs thus yielding a higher return on sales. Relatedly, the textile supply chain includes the process of fibre, yarn and fabric production whereas the clothing supply chain includes wet processing and clothing manufacturing (Majumdar et al., 2020). In this connection, research by López et al. (2021) highlights the transformation in manufacturing, logistics and distribution sections through digital integration in the supply chain of two major brands i.e., Zara and H&M. It is learnt that the manufacturing units in Bangladesh and India use computer aided design, automated fabric spreading, laser cutting machinery, digital marker making software and semi-automated sewing machines (López et al., 2021). These technological changes have been incorporated due to pressure from the retail side demanding an end-to-end digital supply chain. However, skilled and semi-skilled operators are required for operating these machines. Complex and higher value-added garments are mostly manufactured in India and need workers to upskill whereas this requirement is limited in Bangladesh as they mostly deal with mass-scale production (López et al., 2021). Furthermore, Bangladesh now has now diversified in manufacturing complex garments made from synthetic fibres, however, the country needs further diversification (Berg, 2021). The textile manufacturing sector in Bangladesh also contributes towards sustainability by recycling production waste

through the Circular Fashion Partnership. Here, it should be noted that more than 1,500 companies have been certified by the Global Organic Textile Standard (Berg, 2021).

## A Glance at the Workplace Conditions

A survey conducted in 2018 in the RMG sector of Bangladesh by ILO (2020) highlighted that 92% of the surveyed firms had upgraded technology for sewing, knitting, cutting and finishing units as compared to 2010. Further, 86.9% of the female workers and 84.5% of the male workers expressed job satisfaction responding to factors like timely salary and overtime payment, festival bonus, regular weekly leave, etc. Also, benefits of being employed in the RMG sector included decrease in family's financial crises, improvement in standard of living (food & clothing), affordability in terms of education and healthcare etc. As per ILO (2015), in India, child labour was not evidenced in Bangalore and NCR region. The majority of the workforce were women in the southern region (Bangalore) and men in the northern NCR. Employees were flexible to quit their jobs with one month notice period but were unable to, due to low skills and job opportunities available to them outside this sector. Workers are provided with ESI (Employees' State Insurance) and provident funds.

Generally, the labour force employed in textile manufacturing units are uneducated or less qualified with minimal knowledge and are therefore unable to secure employment in any other industry. This is a key reason behind most youngsters joining the textile industry at an early age and continuing to work in the same industry under all circumstances. The survey by ILO (2020) further highlighted the following:

- 1) Women constituted 60.5% and men 39.5% of the workforce in different sections of manufacturing i.e., sewing, knitting, cutting, finishing, dyeing, packaging and printing, washing and embroidery
- 2) 29.1% of female workers were uneducated
- 3) Both male and female workers had an average age between 15 and 29 years
- 4) This was the first employment for 95% of the female employees
- 5) Women employed in low pay scale jobs account for 83.8% compared to men (67.7%)
- 6) 95% of the line supervisors were male
- 7) Societal barriers are higher for women, preventing their entry into the RMG sector, and they are usually employed through community or family networks
- 8) 20% of women employees quit their job in the RMG sector owing to management issues such as low salary and poor working conditions
- 9) 61.7% (men and women) are subjected to workplace harassment leading to resignations.

Furthermore, one must note that male workers are trained to operate new machinery owing to digital and technological transformation and are encouraged to move on to automated manufacturing processes whereas women are left behind to work in the sewing process which has a lower level skill level requirement (López et al., 2021). These facts raise concerns regarding the work environment and unfair treatment of employees. It is quite evident that workers are deprived of fair pay and are also traumatised with excess work hours and stress. The textile manufacturing industry exploits workers by paying meagre wages, forcing employees into long work hours (sometimes physically locked in factories), not providing them with legitimate work contracts, depriving them of social and health benefits, leave, pensions and denial of worker rights (Unseen, February 8, 2022).

The management of these firms claim to be paying minimum wages but these minimum wages are often between one half to one fifth of the required living wage (Charpail, 2017). When it comes to working hours, employees are required to work around the clock (up to sixteen hours a day) and the entire week (Choudhury & Rahman, 2017). Moreover, the workers are at the risk of losing their jobs if they refused to work as demanded by their employer (Leech, January 26, 2022). These are a few reasons why the European Parliament termed the work environment at the textile manufacturing industry in Asia as “slave labour” (Charpail, 2017). Most workers are not happily employed in this industry due to high production targets, lower wages and unfavourable working conditions and verbal abuse by supervisors.

Additionally, in Bangladesh, 90% of the labour force is made up of women living in rural areas (Islam et al., 2016). Child labour is mostly practiced in this country, e.g., the “Sumangali scheme” (Charpail, 2017) is offered to unmarried young girls wherein the amount is collected for “dowry”. Within the organisation, workers are not allowed to form employee unions and are threatened of being fired or physically attacked (Charpail, 2017). Recently, in 2020, Uzbekistan eliminated forced and child labour in cotton hand picking (Charpail, 2017). In India, instances have been reported wherein workers were suspended and harassed (forced to resign or fired) if absent at work or if found talking to any member from the labour union and protesting in favour of their rights (Nagaraj, 2018, Feb 03). Though there are labour laws in the Indian constitution, these laws are not totally implemented in the textile industry (Reuters, June 24, 2016). Gopinath Parakuni (General Secretary of Cividep) has noted that the industry is now moving towards a “piece rate” (wages based on per piece completion) which is mounting higher pressure on textile workers (Reuters, June 24, 2016).

For most employees, their job helps in repaying loans, gaining access to education and basic necessities such as food and shelter. But when the Covid-19 pandemic struck worldwide, leading brands withdrew their orders from manufacturing firms and delayed their payments (Donaldson, 2020). Many of these brands failed to pay fabric costs (72.1%) and production costs (91.3%) to suppliers from Bangladesh (Anner, 2020). Additionally, since the lockdown was announced by the government, millions of

workers faced unemployment across the South Asian countries (Wazir Advisors, 2020; Economic Times, 2020; Wright & Saeed, 2020).

## How Safe are the Manufacturing Sites?

Though the fashion industry is lucrative and creative, it is not a pleasant space for employees in manufacturing units. In terms of safety, huge risks have been identified by auditors. The work environment is extremely harsh. Most of them work in enclosed spaces with limited ventilation and in hazardous atmospheres. Massive deaths have been recorded in incidents related to the collapse of Rana Plaza, fire eruption in Tazreen Fashions in Bangladesh and sand inhalation in Turkey's denim factory (Charpail, 2017). Table 25.1 below lists out major accidents that have led to a huge number of deaths in the textile manufacturing units. These accidents have mostly been due to negligence from management.

**Table 25.1:** Major accidents in textile manufacturing work sites since 2000.

Year	Location	Description	Loss	Source
September 2016	Tampaco Foils	Boiler blast	22 dead, 16 injured	Schumacher, 2016
October 2014	Mega Yarn Dyeing Mills Limited	Fire	1 dead, 5 injured	Donaldson, 2014
October 8, 2013	Palmaal Group,	Fire	10 dead	Asif, 2017
May 9, 2013	Tung Hai		9 dead	Asif, 2017
April 24, 2013	Rana Plaza, Bangladesh	Building collapse	1,129 dead, 2,515 injured	Asif, 2017
February 2013	Smart Garments	Factory fire	9 dead	Asif, 2017
November 24, 2012	Tazreen factory, Bangladesh	Factory fire	122 dead, 200 injured	Asif, 2017
September 11, 2012	Ali Enterprises, Pakistan	Factory fire	Approximately 300 dead, over 60 injured	Theuws et al., 2013
December 3, 2011	Eurotex	Factory fire	2 dead, 64 injured	Asif, 2017
December 14, 2010	Sportswear (Hameem Group)	Factory fire	29 dead, 11 injured	Asif, 2017
February 25, 2010	Garib and Garib	Factory fire	21 dead, 50 injured	Asif, 2017

**Table 25.1** (continued)

Year	Location	Description	Loss	Source
March 2, 2006	KTS Textile Factory, Bangladesh	Factory fire	63 dead, 150 injured	Hasan, Mahmud & Islam (2017)
March 6, 2006	Saiem Fashions, Bangladesh	Factory fire	3 dead, 50 injured	Asif, 2017; Muhammad, A. (2011).
February 25, 2006	Phoenix Building	Building collapse	22 dead, 50 injured	Asif, 2017
2005	Spectrum factory, Bangladesh	Building collapse	64 dead, 80 injured	Ansary & Barua, 2015
2005	Shan Knitting and Processing	Fire	28 dead, 100 injured	Hasan, Mahmud & Islam (2017)
November 26, 2000	Chowdhury Knitwear and Garments Factory, Bangladesh	Factory fire	45 dead, more than 100 injured	Hasan, Mahmud & Islam (2017)
2000	Globe Knitting, Bangladesh		12 dead	Muhammad, 2011
2000	Macro sweater, Bangladesh		23 dead	Muhammad, 2011

Note: Here we have listed the incidents that were caused due to internal fires or building collapses only. In no way do we consider this to be an exhaustive list of incidents that have occurred. In some cases, false fire alarms have resulted in deaths due to stampede and we have not considered such incidents. Please refer to “Fire and Other Safety Incidents in the Bangladesh Garment Sector” that lists all incidents (with description of causes) between November 24, 2012 and November 19, 2019 in the garment sector of Bangladesh.

One of the accidents which drew immediate and wide attention globally was the collapse of Rana Plaza, which was a nine storeyed building. Upon investigation, it was found to have a license of only up to five floors (Ansary & Barua, 2015). A day prior to the collapse, officials had warned of cracks in the building and ordered closure until further notice. Despite opposition from factory workers, owners demanded presence on the day (Ansary & Barua, 2015), showing the helplessness of workers. The incident with Ali Enterprises in Pakistan was similar, where the three storeyed building was constructed employing over 1,500 workers whereas legal permission was only for a ground floor with a maximum of 250 workers only. From the incident investigation of Ali Enterprises, it was learnt that SA8000, “A social certification standard for socially responsible employment practices, based on the auditing of workplaces” (Theuws et al., 2013, p. 24) was awarded to Ali Enterprises three weeks before the incident but the claims on the report were false, such as availability of clear fire exits, fire extinguisher training imparted to workers etc. (Theuws et al., 2013). From the incident investigation

of the fire at Tazreen Fashions Limited, it was found that automated fire systems were not available. Also, the ground floor was used for storage, gates were locked, staircases were narrow and workers were not trained to use fire extinguishers and much more (Theuws et al., 2013). All of this points to non-compliance in terms of safety training, building construction and working conditions, resulting in too many workers cramped up in too little space. Sadly, it seems that audits are conducted and complied just for records and not in practice.

An increasing number of incidents especially in Bangladesh sent shock waves across the world and brought these safety issues to the attention of management of brands who are located internationally. Furthermore, beyond this, there is a health risk to workers engaged in the denim dyeing process due to nitric-per-oxide and nitrous fumes which can harm the respiratory system (Asif, 2017).

## Responsibility of Various Stakeholders

### Governments

In 1978, Bangladesh had only nine garment factories (Asif, 2017). Later, Bangladesh entered into the Multi Fiber Agreement (MFA) with the World Trade Organization from 1974 to 2004 (Elahi et al., 2019). However, Bangladesh was exempted from the cap of 6% yearly export tariffs and quotas on exports from developing countries to developed countries (Ansary & Barua, 2015). During this time, Bangladesh opened opportunities for foreign investors and the number of garment factories increased from 50 to 4,200 (1980s to 2004). From 2005 onwards, Bangladesh's garment sector saw tremendous growth and 90% of total imports in EU are clothes exported from Bangladesh (Elahi et al., 2019), but at the cost of poor working conditions, labour exploitation and backlash from labour unions (Elahi et al., 2019).

Currently, the Department of Inspection for Factories and Establishments (DIFE) in Bangladesh is responsible for monitoring the safety of the RMG sector but Barua, Wiersma and Ansary (2018), Rahman (2019) and Bair, Anner and Blasi (2020) claim that this responsibility has not been carried out well due to a limited skilled workforce and resources. During the Covid-19 pandemic, vaccinations for these workers was also as important as any other basic necessity but remained largely unavailable. Neither the government of Bangladesh nor the Western and European countries took the lead to provide vaccinations as a matter of urgency (Ullah, 2021). In December 2013, after the Rana Plaza incident, the government of Bangladesh increased the minimum wages of the garment workers to 5,300 Taka (US\$66.49) from the previous 3,000 Taka introduced in 2010 (US\$39/month) (Elahi et al., 2019). Though the wages were increased, they are still less compared to China (ranging between USD 154 and USD 230 per month) and Cambodia (USD 80.27) (Elahi et al., 2019). A study by Park-Poaps,

Bari and Sarker (2020) showed that export orientation and global competition in pricing had a negative impact on technology adoption in Bangladesh. Furthermore, the depreciating currency of Bangladesh is another major challenge to the factory owners who need to spend huge amounts of money in raw materials, machinery repair or replacement. Moreover, the electricity crisis has worsened working conditions and operation productivity with frequent power shutdowns (Asif, 2017).

In Vietnam, during the pandemic, when 84.8% companies reported financial issues, the Vietnamese government released financial support packages for tax relief, credit extension and improved social security (2.64 bn USD) (Boquen, August 23, 2022), and similar relief packages were also announced in Pakistan (Asghar et al., 2020) and Cambodia (Zulkarnaen et al., 2020). A special move towards reducing these labour issues was taken by the UK government on October 29, 2015, demonstrating responsibility on behalf of businesses (PwC, 2019). The UK Modern Slavery Act (Section 54) requires UK businesses recording more than £36 million annual turnover to show proof of slave free goods and services (Unseen, February 8, 2022). Such initiatives encourage brands and employers on the manufacturing side to promote employee welfare.

## Multinational Companies (MNC)

After the collapse of the Rana Plaza building, two agencies, Accord and Alliance, were hired collectively by many major brands in the European and western countries to monitor occupational health and safety (OHS) of these workers in 2013 (Shiina, 2015). These two agencies helped immensely in identifying and resolving safety concerns in many textile factories across Bangladesh. The RMG sustainability council also played a major role in preventing unsafe workplaces (Berg et al., 2021).

In relation to MNCs, from a business point of view, research conducted by Majumdar et al. (2020), showed that:

- (i) Any disaster in China will impact the textile and clothing industry in other manufacturing countries: for this reason, manufacturing units must not be reliant on raw material from one country alone. They need to have multiple sources for incoming raw material or develop them in-house. This is also applicable to machinery or spare parts for which countries are heavily dependent on China. The Covid-19 pandemic was an eye-opener in this regard.
- (ii) Brands have the upper hand when it comes to price, payments and bargaining power and the manufacturers bear the blow of cost cutting and low margin profits: brands and manufacturing units must come to an agreement of sharing profit and loss. Considering that the production workforce is already employed on low wages, brands must share costs towards order cancellations. Management of production companies must levy heavy cancellation charges and secure advance payments so that they are able to pay their workers despite any undue circumstances. These conditions must be specified in the contract/ agreements. Majumdar et al.

(2020) also call for strict regulations where the brands are held accountable and liable for costs of clothing under manufacturing in case of order cancellations.

## UN, ILO and WTO

The role of United Nations Industrial Development Organization (UNIDO) is primarily to promote inclusive and sustainable development. The International Labour Organisation (ILO) is involved in promoting labour rights and strengthening policies. The World Trade Organisation (WTO) intervenes in resolving trade issues and monitoring trade policies. It is of the utmost importance then that these internationally accepted organisations, of which emerging countries are members, must intervene in ensuring that the governments have minimum wages capped to the standard of living. They must also ensure that the manufacturing companies adhere to policies of inclusive workplaces.

Clearly, it is extremely important to have correct policies and strict regulations with respect to employing workers since child labour exists in cotton picking in China and India (Chen, June 29, 2019; Stewart, January 25, 2021) and G20 countries import garments worth 127.7 billion USD which are produced by forced labour, with the highest amount imported by the US (Global Slavery Index, 2018). “BetterWork”, a collaborative programme between the International Labour Organization (ILO) and the International Finance Corporation (IFC), engages 1,700 factories across nine countries reaching out to 2.4 million employees. This programme is aligned towards securing contracts, compensation, health and safety as per ILO labour law and has recorded significant improvement in terms of profitability and better working conditions in industries. The program coordinators work closely with the workers’ unions, governments and brands (BetterWork, 2022).

## Regional Players

Many NGOs offer major support to workers and the worker unions, as they fight for the rights of employees. One such organisation is the Fair Wear Foundation (FWF) which has collaborated with governments, brands, unions and NGOs and is working towards improving working conditions for workers in the clothing industry (Charpail, 2017). Ali, Rahman and Frederico (2021) through their study in one of the factories in Bangladesh have argued that the government and NGOs are requiring the manufacturers to implement stable HR policies, compliance certificates and employee training programs. Also, during the pandemic, the government had announced a financial package and clarified that financial packages will be not applicable to organisations who lay off workers. Of course, as we noted above, the NGOs also strongly supported labourers.



## Consumers

A study by Stringer, Mortimer and Payne (2020) showed that ethical practices in the fashion industry have a positive impact on consumers who are concerned about the environment, and animal and worker welfare. Relatedly, Rousselot (April 25, 2019) has called for the re-use and re-sale of clothes and poses the thought-provoking question “who made my clothes?” because manufacturing of clothes involves modern slavery and is ranked second after gadgets according to the Global Slavery Index (2018). As responsible consumers, it is our duty to only engage with brands that do not involve child labour and work abuse in any section of the supply chain. Consumers must globally adopt “Reduce, Rewear, Recycle, Repair, Resell” (Hill, August 22, 2022) to reduce the impact on the planet and animals, thereby promoting sustainability.

## What are Worker’s Rights? Are the Workers Protected under Labour Rights?

### India

According to Human Resource (July 19, 2021), private employees are entitled to employment agreement, fair pay and bonuses (8.33% to 20% of wage), paid maternity leave (up to 26 weeks for first two children, 12 weeks for third child), rights against discrimination and sexual harassment (up to three years of imprisonment if found guilty), right to leave (minimum of 12 days a year for 240 working days), right to provident fund and gratuity, and appropriate work hours (nine hours per day, 48 hours per week) and overtime. The labour market in Tirrupur and Coimbatore has transformed and is focused towards recruitment of unmarried women through labor agencies, providing them with valid work contracts and accommodation (Arnold, 2021).

### Bangladesh

Employees in Bangladesh’s industries are protected by the Bangladesh Labour Act (2006) and the labour rules were revised in 2015. As per the Labour Act (2006), work periods are regulated to eight hours per day and 48 hours per week. Workers are allowed to work for extra periods of 10 hours per day and 60 hours per week; however, the employee must be given 24 hours of rest between two shifts. Further, the labour law clearly states that an inspection officer can serve an order to the employer in cases of dangerous equipment or buildings demanding rectification. Child labour is strictly not permitted whereas an adolescent is only allowed to work with a certificate of fitness. However, the adolescent is not allowed to work between 7 p.m. and 7 a.m. Also, women employees

are not allowed to work (without her consent) between 10 p.m. and 6 a.m. Maternity benefits are provided to women employees such as eight weeks of leave after giving birth. Employee safety is considered the primary responsibility of the employer. Workplaces have to be safe and free from non-hazardous and combustible material. Casual, sick and annual leave are included in the work contracts along with the right to public holidays and are considered as paid leave. The employer is bound to terminate an employee's work contract in case of disobedience or unacceptable behavior.

## China

As per the Labour Law of the People's Republic of China, wages cannot be less than the minimum wages defined by the state, with the wages readjusted as per the minimum wages required to support the employee and his/ her dependents. The state is obliged to provide workers with social insurance. Employers are obliged to pay employees 150% of the wages in case of extra working hours, 200% on off-days and 300% if asked to work on public holidays. Labourers also have the right to refrain from work and report the employer in case of unsafe working conditions. Juveniles (between the age of 16 and 18 years) are also protected against working in mines and hazardous environments. Female employees are entitled to a minimum of 90 days of maternity leave and are also prohibited from engaging in physical work, extended work and night shifts while breastfeeding.

## Vietnam

As per Civil code 2015, Boquen (2022, Aug 23) states that minimum wages in Vietnam vary across different regions i.e., 191 USD in Hanoi and Ho Chi Minh cities, 167 USD in Can Tho, Da Nang and Haiphong, 146 USD in rural areas such as Bac Ninh, Bac Giang and Hai Duong, and elsewhere it is 131 USD. As per law, workers are allowed to work for a maximum of eight hours per day and forty-eight hours per week. Overtime is restricted to 12 hours per day, forty hours per month and two hundred hours per year. Payment for extra work hours is similar to that in China and maternity leave is granted up to six months.

## Implications

1. Garment factories must be inspected on a regular basis to check for compliance on safety and health. Fire and emergency exits must be clear and workers must be educated/ trained on use of fire extinguishers (Asif, 2017; Kan, 2012)

2. Governments must intervene in increasing garment worker wages to standard living wages. These wages must be in line with the international standards and cover living expenses of the worker and their families.
3. Garment workers must be insured during the work period and every employee must be given a work contract duly signed by the employee and employer. In the case of uneducated workers, a legal team must ensure legal contract terms stated in the contract.
4. Governments must introduce a cap on overtime hours to protect the health of employees. This will prevent employers from engaging workers more than 14 hours a day.
5. Labour and trade unions must work towards ensuring worker rights and justice to every worker irrespective of gender and age.
6. Child labour must not be allowed in any circumstance. Special audits must be conducted to ensure the same.
7. Though labour laws are well defined in all countries, they are often not followed. Governments and related organisations must ensure that workers are not exploited, especially women and children.
8. Brands must be held responsible for violation of labour laws even in the manufacturing sites. This way, brands will be obliged to only work with legitimate manufacturing partners.

## References

- Ali, M., Rahman, S.M., & Frederico, G.F. (2021). Capability components of supply chain resilience for readymade garments (RMG) sector in Bangladesh during COVID-19. *Modern Supply Chain Research and Applications*, 3(2), 127–144.
- Anner, M. (2020). Abandoned? The impact of Covid-19 on workers and businesses at the bottom of global garment supply chains, research report by Pennstate Centre for global workers' rights. [https://www.researchgate.net/publication/340460592\\_Abandoned\\_The\\_Impact\\_of\\_Covid-19\\_on\\_Workers\\_and\\_Businesses\\_at\\_the\\_Bottom\\_of\\_Global\\_Garment\\_Supply\\_Chains](https://www.researchgate.net/publication/340460592_Abandoned_The_Impact_of_Covid-19_on_Workers_and_Businesses_at_the_Bottom_of_Global_Garment_Supply_Chains)
- Ansary, M.A., & Barua, U. (2015). Workplace safety compliance of RMG industry in Bangladesh: Structural assessment of RMG factory buildings. *International Journal of Disaster Risk Reduction*, 14, 424–437.
- Arnold, C.E. (2021). Labour recruitment systems in global production networks: The ruralisation of labour regimes in south India's garment and textile industries. *Journal of Contemporary Asia*, 1–23.
- Asghar, N., Batool, M., Farooq, F., & ur Rehman, H. (2020). COVID-19 pandemic and Pakistan economy: A preliminary survey. *Review of Economics and Development Studies*, 6(2), 447–459.
- Asia Garment Hub. (2020). People's Republic of China. <https://asiagarmenthub.net/agh-countries/china>
- Asif, A.K.M.A.H. (2017). An overview of sustainability on apparel manufacturing industry in Bangladesh. *Science Journal of Energy Engineering*, 5(1), 1–12.
- Bair, J., Anner, M., & Blasi, J. (2020). The political economy of private and public regulation in post-Rana Plaza Bangladesh. *ILR Review*, 0019793920925424.

- Bangladesh Labour Act. (2006). <https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/76402/110637/F-1265526237/BGD76402%20Eng.pdf>
- Barua, U., Wiersma, J.W.F., & Ansary, M.A. (2018). Safety in RMG sector: Performance and progress of DIFE after Rana Plaza. In J.W.F.E. Wiersma, M.A. Ansary & R. Ahsan (Eds.), *Safety in Garment Industry, Five Years after Rana Plaza* (pp. 2–11).
- Baseline Study. (2020). Technical textiles industry in India, opportunities and challenges. Ministry of Textiles. [http://texmin.nic.in/sites/default/files/Baseline\\_Survey\\_Technical\\_Textiles\\_Sector\\_20042022.pdf](http://texmin.nic.in/sites/default/files/Baseline_Survey_Technical_Textiles_Sector_20042022.pdf)
- Berg, A., Chhaparia, H., Hedrich, S., & Magnus, K.H. (2021). *What's next for Bangladesh's garment industry, after a decade of growth? McKinsey & Company*. [https://www.iafnet.com/2016\\_01\\_22/wp-content/uploads/2021/06/Whats-next-for-Bangladeshs-garment-industry\\_McKinsey-Highlighted.pdf](https://www.iafnet.com/2016_01_22/wp-content/uploads/2021/06/Whats-next-for-Bangladeshs-garment-industry_McKinsey-Highlighted.pdf)
- BetterWork. (2022). *The Programme*. <https://betterwork.org/about-us/the-programme>
- Boquen, A. (2022, August 23). *The complete guide to Vietnam labor law*. Horizons. <https://nhglobalpartners.com/vietnam-labor-law>
- Charpail. (2017). *Inhumane working conditions. Sustain your style*. <https://www.sustainyourstyle.org/en/whats-wrong-with-the-fashion-industry#anchor-working-conditions>
- Chen, P. (2019, June 29). *Child labor still plagues India and China*. InTouch. <https://www.intouch-quality.com/blog/child-labor-still-plagues-india-and-china>
- Choudhury, S., & Rahman, M.H. (2017). Labor unrest in the ready-made garment industry of Bangladesh: Causes and consequences. *European Scientific Journal*. <https://doi.org/10.19044/esj.v13n34p87>
- Deloitte. (2020). *Apparel 2030 2025: What new business models will emerge?* Deloitte Digital. <https://www.deloittedigital.com/content/dam/deloittedigital/us/documents/blog/blog-20200610-apparel-trends.pdf>
- Donaldson, T. (2014). *1 killed, 5 injured in Bangladesh factory Fire*. Sourcing Journal. <https://sourcingjournal.com/topics/compliance/1-killed-5-injured-in-bangladesh-factory-fire-td-18703/>
- Donaldson, T. (2020). *Gap Inc. halts summer and fall orders as COVID-19 threatens business*. Sourcing Journal. <https://sourcingjournal.com/topics/sourcing/gap-inc-pauses-summer-fall-factory-orders-covid-19-coronavirus-204313/>
- Economic Times. (2020, April 14). *Covid-19 impact: 1 crore job cuts likely in textile industry without govt support, says CMAI*. <https://economictimes.indiatimes.com/industry/cons-products/garments/-textiles/lockdown-1-crore-job-cuts-likely-in-textile-industry-without-govt-support-says-cmai/article-show/75125445.cms?from=mdr>
- Elahi, S., Hosen, M.D., Nizam, M.E.H., Ali, S.B., & Shifat, R.I. (2019). Comparative analysis in RMG industries before and after Rana Plaza incident in Bangladesh. *J Textile Eng Fashion Technol*, 5(4), 202–211.
- Fire and other safety incidents in the Bangladesh garment sector. (n.d.). Solidarity Center. <https://www.solidaritycenter.org/wp-content/uploads/2019/04/Bangladesh-2019-Safety-Incident-Chart.April-18-2019.pdf>
- Forrest, F. (2022, April 8). *Covid two years on: Expert analysis of top 10 global apparel companies*. Just Style. <https://www.just-style.com/analysis/covid-two-years-on-expert-analysis-of-top-10-global-apparel-companies/>
- Global Slavery Index. (2018). *Highlights*. <https://www.globallslaveryindex.org/2018/findings/highlights/>
- Hasan, M.M., Mahmud, A., & Islam, M.S. (2017). Deadly incidents in Bangladeshi apparel industry and illustrating the causes and effects of these incidents. *Journal of Finance and Accounting*, 5(5), 193–199.
- Hasan, M.M. (2022, May 19). *How has the fashion industry changed over time?* Textile Details. <https://textiledetails.com/how-has-the-fashion-industry-changed-over-time>
- Hill, M. (2022, August 22). *The 5 R's of fashion: Reduce, rewear, recycle, repair, resell*. Good On You. <https://goodonyou.eco/5rs-of-fashion>
- Human Resource. (2021, July 19). *8 rights for private employees by the Indian labour laws*. <https://www.whatishumanresource.com/8-rights-for-private-employees-by-the-indian-labour-laws>
- ILO. (2015). *Insights into working conditions in India's garment industry*. [https://www.ilo.org/wcmsp5/groups/public/@ed\\_norm/@declaration/documents/publication/wcms\\_379775.pdf](https://www.ilo.org/wcmsp5/groups/public/@ed_norm/@declaration/documents/publication/wcms_379775.pdf)

- ILO. (2020). *Understanding the gender composition and experience of Ready-Made Garment (RMG) workers in Bangladesh*. [https://ilo.org/wcmsp5/groups/public/asia/-ro-bangkok/-ilo-dhaka/documents/publication/wcms\\_754669.pdf](https://ilo.org/wcmsp5/groups/public/asia/-ro-bangkok/-ilo-dhaka/documents/publication/wcms_754669.pdf)
- Islam, S., Rakib, M., & Adnan, A. (2016). Ready-made garments sector of Bangladesh: its contribution and challenges towards development. *Asian Development Studies*, 5(2), 50–61.
- Kan, C.W. (2012). Occupational safety and health management system in textile industry—A continual improvement approach. In *RMUTP International Conference: Textiles & Fashion* (pp. 3–4).
- Labour Law of the People's Republic of China. (n.d.). <https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/37357/108026>
- Leech, F. (2022, January 26). *'They slap us to force us to work': Why the Bangladeshi garment industry is still in a COVID crisis*. Euronews.green. <https://www.euronews.com/green/2022/01/26/they-slap-us-force-us-to-work-bangladeshi-garment-industry-covid-crisis>
- López, T., Riedler, T., Köhnen, H., & Fütterer, M. (2021). Digital value chain restructuring and labour process transformations in the fast-fashion sector: Evidence from the value chains of Zara & H&M. *Global Networks*, 22, 684–700.
- Majumdar, A., & Sinha, S.K. (2019). Analyzing the barriers of green textile supply chain management in Southeast Asia using interpretive structural modeling. *Sustainable Production and Consumption*, 17, 176–187.
- Majumdar, A., Shaw, M., & Sinha, S.K. (2020). COVID-19 debunks the myth of socially sustainable supply chain: A case of the clothing industry in South Asian countries. *Sustainable Production and Consumption*, 24, 150–155.
- Meyer, M. (2022, August 26). *Top fashion brands in the world – Top 100 In 2022*. The VOUE. <https://thevou.com/fashion/top-fashion-brands>
- Muhammad, A. (2011). Wealth and deprivation: Ready-made garments industry in Bangladesh. *Economic and Political Weekly*, 23–27.
- Nagaraj, A. (2018, February 3). *In India's textile industry, labour unions are facing employers' wrath for demanding their rights*. Scroll.in. <https://scroll.in/article/867230/in-indias-textile-industry-labour-unions-are-facing-employers-wrath-for-demanding-their-rights>
- Park-Poaps, H., Bari, M.S., & Sarker, Z.W. (2020). Bangladeshi clothing manufacturers' technology adoption in the global free trade environment. *Journal of Fashion Marketing and Management: An International Journal*.
- Press, C. (2018, July 23). *Fashion identified as one of five key industries implicated in modern slavery*. Vogue Australia. <https://www.vogue.com.au/fashion/news/fashion-identified-as-one-of-five-key-industries-implicated-in-modern-slavery/news-story/4cbd8bdc1168f3925bc8cbc96b1f6e6e>
- PwC. (2019). *Helping your business to conduct a modern slavery 'health-check'*. <https://www.pwc.co.uk/assets/pdf/modern-slavery-health-check.pdf>
- Rahman, S. (2019). Post-Rana Plaza responses: Changing role of the Bangladesh Government. In S.B. Saxena (Ed.), *Labor, Global Supply Chains, and the Garment Industry in South Asia: Bangladesh After Rana Plaza* (pp. 131–148). Routledge.
- Reuters. (2016, June 24). *India's new deal for textile workers could add to risks*. Fashion Network. <https://www.fashionnetwork.com/news/India-s-new-deal-for-textile-workers-could-add-to-risks,707340.html>
- Rousselot, F. (2019, April 25). *Fashion production is modern slavery: 5 things you can do to help now*. The Conversation. <https://theconversation.com/fashion-production-is-modern-slavery-5-things-you-can-do-to-help-now-115889>
- Schumacher, E. (2016, September 10). *Factory boiler blast at Tampaco Foils Bangladesh packaging plant kills dozens*. DW. <https://www.dw.com/en/factory-boiler-blast-at-tampaco-foils-bangladesh-packaging-plant-kills-dozens/a-19541729>

- Shiina, Y. (2015, July 15). *Two years since Rana Plaza: Why the accord and the alliance are all the more relevant*. Rights Wire. <https://rightswireblog.org/2015/07/15/two-years-since-rana-plaza-why-the-accord-and-alliance-are-all-the-more-relevant>
- Stewart, T. (2021, January 25). *Child labor and forced labor in cotton production – is there a current WTO mandate to identify and quantify the distortive effects?* WITA. <https://www.wita.org/blogs/child-labor-forced-labor-cotton>
- Stringer, T., Mortimer, G., & Payne, A.R. (2020). Do ethical concerns and personal values influence the purchase intention of fast-fashion clothing? *Journal of Fashion Marketing and Management: An International Journal*.
- Theuws, M., van Huijstee, M., Overeem, P., & van Seters, J. (2013). Fatal fashion analysis of recent factory fires in Pakistan and Bangladesh: A call to protect and respect garment workers' lives.
- Ullah, A.A. (2021). Covid-19: The role of global clothing brands/retailers in vaccinating and providing financial aid to the RMG workers in Bangladesh. *Middle East Journal of Business*, 16(2), 5–11.
- Unseen. (2022, February 8). *Modern slavery in fashion*. <https://www.unseenuk.org/modern-slavery-in-fashion>
- Wazir Advisors. (2020). *Report on impact of Covid-19 on Indian textile industry*. <https://wazir.in/textile-apparel-insights/industry-report>
- Wright, R., & Saeed, S. (2020). *Bangladeshi garment workers face ruin as global brands ditch clothing contracts amid coronavirus pandemic*. CNN Business. <https://edition.cnn.com/2020/04/22/business/bangladesh-garment-factories/index.html>
- Zulkarnaen, W., Erfiansyah, E., Syahril, N.N.A., & Leonandri, D.G. (2020). Comparative study of tax policy related to COVID-19 in ASEAN countries. *International Journal of TEST Engineering & Management*, 83(2), 6519–6528.



# Index

- accountability 295
- adventure yarns 17
- African Growth and Opportunity Act (AGOA) 104
- Africa's fashion industry
  - Afrocentrism and Indigenisation 63–64
  - colonial era 58–59
  - dinner preparation 56
  - dressed to sell 55
  - dressed to shop, Aneho, Togo 54
  - mother and child, Addis Ababa, Ethiopia 57
  - porter, Mombasa, Kenya 55
  - post-colonial era 59–60
  - precolonial era 53–58
  - professions 52
  - railroad station, Johannesburg 57
  - religion and cultural orientation, entrepreneurship 60–63
  - sustainability 65–66
- Afrocentrism 63–64
- AI-based predictive analytics 244
- animal-skin clothing 60
- apparel enterprises, India
  - COVID-19 impact 71–72
  - data source 74–75
  - dependent variable 77
  - entrepreneurs' response, support mechanisms 83–84
  - Guwahati city, Assam 74
  - hypotheses 74
  - identified themes 78
  - independent variables, tolerance and VIF 85
  - informal and formal manufacturing sector 69–70
  - job loss and financial hardships 70
  - methodology 76–78
  - qualitative analysis 78–82
  - social safety nets 84
  - sustainability 72–74
- ARCH. *See* autoregressive conditional heteroscedasticity (ARCH)
- artificial intelligence (AI) 204, 207–208, 217, 244
- artisanal loom 8
- ateliers sans frontières* 303
- autoregressive conditional heteroscedasticity (ARCH) 110, 121
- Awassi sheep, Negev Desert
  - finishing 19
  - shearing 17
  - spinning 18
  - weaving 18
- bamboo 232
- Bangladesh
  - current status 281–282
  - garment industry 279–280, 289
  - historical development 280–281
  - resource constraints 279
  - sustainability drivers 283–284
  - sustainable garments industry 284–289
- Bangladesh Labour Act (2006) 336
- bast fibre crops 234
- behavioural reasoning theory 274
- bend boutique 269
- blockchain technologies 143, 150, 152–153
- bottomless basket 279
- brand identity 297, 308
- business innovation 256
- business models
  - Bangladesh 279–290
  - cross-disciplinary 150
  - evolution 303
  - sales and production 293
  - SCT technologies 150
  - Twins for Peace 306
  - Veja's brand 304
  - volumes, sales and production 136
- The Business of Fashion* (Neve) 135
- campaign organisations 190
- Carbon Disclosure Project (CPD) 194
- carbon-neutral fashion industry 323
- carbon-neutral fibres 232
- carding machine 5
- child labour 282, 330
- circular economy (CE) 100, 192, 204
- clothing industries' sustainability 283
- cognitive dissonance theory 171–172, 177, 179–180
- community of practice 300
- competing values model (CVM) 157
- conceptual framework 321, 322
- consumer obsolescence 267
- consumer packaged goods (CPG) 246
- consumers 336



- coping up strategies 80
- corporate entrepreneurial management 294–296
- corporate environmental sustainability.
  - See environmental sustainability
- corporate social performance (CSP) 296
- corporate social responsibility (CSR) 252, 287, 293, 295–297, 309
- corporate sustainability 136
- Corporate Sustainability Reporting Directive (CSRD) 198
- cotton
  - bud/plant 37
  - farming challenges 30–33
  - field 32
  - importance of 29–30
  - large-scale manufacturing 8
  - mills 3
  - plant 7
  - sustainable crop management 34–36
  - sustainable production 36–37
  - unsustainable practices 29
- CPD. See Carbon Disclosure Project (CPD)
- cradle to cradle/loop approach 192
- crop protection 35
- crop selection 34
- CSP. See corporate social performance (CSP)
- CSR. See corporate social responsibility (CSR)
- CSRD. See Corporate Sustainability Reporting Directive (CSRD)
- cultural management practices 294
- customer relationship management 206
- customer value proposition 46
- custom-made method 240
- CVM. See competing values model (CVM)
  
- DBE. See Development Bank of Ethiopia (DBE)
- de Jong, I. 224–225
- Delphi method 210
- demand business models 242
- demand-driven model 138–139, 141
- Department of Inspection for Factories and Establishments (DIFE) 333
- Development Bank of Ethiopia (DBE) 104
- digital hesitancy 154
- digital marketing communication (DMC) 206
- digital technologies 149–150, 156, 206, 217
- digital transformation 204, 205
- DMC. See digital marketing communication (DMC)
- Dutch wax prints 264
  
- ecodesign 136
- economic development 261, 294
- emerging markets, outsourced locations 328–329
- employee engagement 322
- employee maintenance matrix 318
- employment distribution 69
- Engel Kollat Blackwell (EKB) theory 208
- entrepreneurial strategies. See also sustainable development
  - integrated responsible brand identity 307–308
  - sneakers, Brazil 301–307
  - social responsibility strategy 296–297
  - stakeholder value creation and responsible brand identity 300–301
  - sustainable brand identity 298–299
- entrepreneurship, religion and cultural orientation 60–63
- environment, profit and loss (EPL) 191
- environment, social and governance (ESG) 185
- environmental disaster 265–266
- environmental impact
  - clothing sector 90–91
  - fashion industry 135–137
- environmentally sustainable model
  - acquire 272
  - awareness 274–275
  - barriers 268–269
  - clothing 275
  - design 271
  - fabrics production 270–271
  - fashion cycle 267–268
  - fashion industry 265–266
  - Ghana fashion 263–264
  - Ghanaian economy 262
  - importance of 261
  - making clothing 270
  - making fashion 268
  - process 272
  - reuse/disposals 273
  - sustainable fashion 266–267
  - usage 273
- Environmental Protection Agency 246
- environmental sustainability 273
  - context 251–252
  - fashion firms 257
  - inspired creation 253
  - methodology 253–254
  - rationale 254
  - strategic drivers 254–256

- EPB. *See* Export Promotion Bureau (EPB)
- EPZs. *See* export processing zones (EPZs)
- ESG. *See* environment, social and governance (ESG)
- ethical fashion 136
- Ethiopia
- export-promoting policy 103
  - IDS 105
  - industry parks 112–115
  - market destinations 112, 115
  - ownership, textile and apparel sector 111–112
  - textile and apparel sector 104
- Ethiopian investment commission's one-stop-service coordinator director (EICOSSCD) 110
- Ethiopian textile industry development institute (ETIDI) 110
- ethnobotany 34
- Everything But Arms (EBA) 104
- export processing zones (EPZs) 282
- Export Promotion Bureau (EPB) 279, 288–289
- fabrics production 270–271
- Fair Wear Foundation (FWF) 335
- fashion brands 301
- fashion cycle 267–268, 270
- fashion industry
- Africa (*see* Africa's fashion industry)
  - environmental disaster 265–266
  - environmental impact 135–137
  - environmental sustainability 254–256
  - Ghana 261–262
  - overview 327–328
  - production innovation, sustainability 133–144
  - sustainability 205–206
  - sustainable practices 315
  - water pollutants 275
- fashion product passport
- blockchain technology 150
  - considerations 164–165
  - cost implications 159–161
  - cultural shifts 150
  - data collection and analysis 156–157
  - digital technologies 149–150
  - increased competition 163–164
  - industry applications 154
  - literature review 151–152
  - methodology 155
  - sampling strategy 156
  - scalability 161–163
  - single case study 155
  - social and environmental performance 158
  - theoretical lens 157–158
  - transparency, supply chain 152–153
- Fashion Revolution's Fashion Transparency Index 194
- fashion supply chain technology 149
- fashion sustainability 189–190
- fashion sustainability rating systems 195–196.
- See also* rating systems
- fast fashion 257
- cognitive dissonance, evidence of 179–180
  - conceptual framework 173
  - data themes 175
  - findings 173–175
  - impulse consumption 169–170, 181
  - marketing tactics 171
  - methodology 173
  - participant profiles 174
  - post-purchase cognitive dissonance 171–172
  - post-purchase emotions 177–178
  - pre-purchase emotions and influences 175–177
  - retailers 170
- FDI. *See* foreign direct investment (FDI)
- female fashion 128
- fire safety 285
- fleece, wool 3, 5–6
- forecasting process 209
- foreign direct investment (FDI). *See also* Ethiopia
- correlations 119
  - economic contraction 104
  - export destination 116
  - GDP growth 119
  - import-export trade 117, 118
  - inflows 112, 116–117
  - literature review 105–109
  - methodology 110
  - sectoral inflows on economic growth 121
  - vs. sustainable economic growth 117–119
  - total inflows on economic growth 119–120
  - trade balance 118
  - volatility 103
- freshwater consumers 31
- furrow irrigation 32
- FWF. *See* Fair Wear Foundation (FWF)
- garment industry 3, 97–101
- GDP. *See* gross domestic product (GDP)
- gender equality 284

- gender inequality 284–285  
 Gered Gereedschap 225  
 Ghana  
 – context 262  
 – environmentally sustainable fashion 268–270  
 – fashion industry 261–264  
 – social system 264  
 – top fashion designers 264  
 – types of kente 263  
 Ghana Watsan Journalists Network (GWJN) 265  
 Global Consumer Confidence Association 246  
 Global Organic Textile Standard (GOTS) 190, 243  
 global production networks 107  
 Global Slavery Index 336  
 global value chains (GVCs) 107, 143  
 goat leather 9  
 governments, stakeholders responsibility 333–334  
 green entrepreneurial orientation 255  
 greenhouse gas emissions 246, 261  
 green innovation strategies 255–256  
 Green Supply Chain Management (GrSCM) 136  
 greenwashing 274  
 grey water 32  
 gross domestic product (GDP) 134  
 groundwater 31  
 GrSCM. *See* Green Supply Chain Management (GrSCM)  
 GVCs. *See* global value chains (GVCs)  
 GWJN. *See* Ghana Watsan Journalists Network (GWJN)
- Helmersson, H. 243  
 hemp 233  
 human resources (HR). *See also* sustainability  
 – evolution 314  
 – fashion sector 313–315, 320–322  
 – leveraging technology 319  
 – roadblocks 317–319  
 Husqvarna sewing machine 3, 4
- identity prism 308  
 IDS. *See* industrial development strategy (IDS)  
 IFC. *See* International Finance Corporation (IFC)  
 ILO. *See* International Labour Organisation (ILO)  
 incentive schemes 108–109  
 Indian clothing sector  
 – definition 90  
 – ecological issues 89–90  
 – environmental impact 90–91  
 – findings 93–94  
 – labourers' rights 92  
 – recommendations 94  
 – scenario 90  
 – studies 92–93  
 – temporary employment 91  
 – well-being and safety 92  
 – women, labour force 92  
 Indian economy 73  
 Indian Factories Act of 1948 92  
 Indigenisation 63–64  
 Indigenous societies 3  
 industrial development strategy (IDS) 105  
 industrial production 204  
 industrial revolution 3  
 Industry 4.0 204, 205  
 industry parks, Ethiopia 112–115  
 influencer marketing 245–246  
 informal apparel enterprises 72–74  
 informal vs. formal sector 69–70  
 infotracing 152  
 innovative management 225–227  
 institutional/systemic trust 299  
 Intellectual Property (IP) 164  
 International Finance Corporation (IFC) 335  
 International Labour Organisation (ILO) 303, 335  
 international monetary fund (IMF) 110  
 international movements 26  
 international textile supply chain 38  
 International Wool Textile Organisation 15  
 internet of things (IoT) 140  
 interpersonal trust 299  
 IPs one-stop-service support centre (IPOSSSC) 110  
*Iwa Ogado* 53
- Kapferer, J. 307–308  
 karakul wool 14  
 Kenya, pre-colonial styles 54  
 killer app 149–165  
 kink fashion  
 – female 128  
 – male 128  
 – materials 128–129  
 – one-size-problem 129  
 – production 129  
 – recommendations 129–130  
 – sexual pleasure/teasing 127  
 – shopping options 129  
 – sources 130

- swingers' club 127
- Kopp, S. 301
- Kringloopwinkel Steenwijk
  - humble 224
  - innovative management 225–227
  - Nazi victims, memorial 224
  - operations 227–228
  - sustainability issues 223
- labourers' rights 92
- labour force 92
- labour rights. *See* workers' rights
- leather
  - by-products 23
  - cow hides 21, 22
  - critics of 26
  - goat shirt, Ethiopian girl 22
  - military materials 22
  - sheep overcoat with wool lining 23
  - social media platforms 25
  - tannery 22
  - tanning 25
  - wearing coat and hat, Tibetan man 24
  - workshop, Bangladesh 98
- Leather Working Group (LWG) 23
- Lefkowitz, M. 64
- legislative guidance 189–190
- legitimacy 297
- life cycle assessment approach 92
- lifespan products 139–141
- logistic regression model 76, 77, 79
- López, T. 328
- Luber, H. 43–49
- Lubertex International, Canada
  - background 44
  - competency and growth 48
  - competitive advantage 45–46
  - customer value proposition 46
  - obstacle 47–48
  - resources 45
  - textile factory 43
- Luxury Certificate programme 15
- luxury fashion garments 140
- LWG. *See* Leather Working Group (LWG)
- Macarthur, J. 15
- macro approach 294
- made-to-order models 138–139
- mafia groups 100
- male fashion 128
- manufacturing sites 331–333
- market destinations 112, 115
- marketing innovation drivers
  - artificial intelligence 207–208
  - circular economy 204
  - consumer behaviour 209–210
  - convergent validity and reliability 211
  - digital transformation strategies 204
  - drivers and factors 212–216
  - experts, demographic characteristics 211
  - findings 212–216
  - industrial processes 204
  - methodology 210–211
  - requirements 217
  - reuse and recycle 206–207, 217
  - selling process 208–209
  - sustainability, fashion industry 205–206
- marketing tactics 171
- market survival techniques 72
- Maurillon, G. 301
- MFA. *See* Multi-Fibre Agreement (MFA)
- micro approach 295
- microfinance 306
- Mills, M. 3
- MNC. *See* Multinational Companies (MNC)
- moral agency 295
- multi-cropping 34
- Multi-Fibre Agreement (MFA) 134, 333
- Multinational Companies (MNC) 334–335
- multi-purpose styles 271, 272
- MuSkin 234
- Mycoskie, B. 306
- national bank of Ethiopia (NBE) 110
- Neves, J. 135
- New Industrial Policy (NIP) 282
- new product development (NPD) 136–137
- non-governmental organisations (NGOs) 251
- non-legislative guidance 189–190
- normative vision 298
- Not Out of Africa: How Afrocentrism Became an Excuse to Teach Myth as History* (Lefkowitz) 64
- NPD. *See* new product development (NPD)
- Obroni waawu* 262
- OCAI. *See* Organisational Culture Assessment Instrument (OCAI)
- occupational safety and health (OSH) 98, 334

- oligopolistic firm structures 106
- one-for-one movement 305
- Organisational Culture Assessment Instrument (OCAI) 158
- organisational culture theory 157–158, 162
- organisational trust 299
- organochlorine 31
- organophosphate 31
- OSH. *See* occupational safety and health (OSH)
  
- PaperTale company 158–160
- performance management 322
- Persian wool. *See* karakul wool
- personality trait theory 274
- PES. *See* proactive environmental strategy (PES)
- Pinatex 233
- power relationships 141–142
- pre-consumption waste 100
- proactive environmental strategy (PES) 254
- product differentiation 309
- production innovation
  - demand-driven model 138–139
  - environmental impact, fashion industry 135–137
  - greenhouse gases 133
  - lifespan products 139–141
  - market power 133
  - reconciling fashion and sustainable development 137
  - state of affairs 134–135
  - sustainable production 138, 141–143
- product passports 153
- proportionate sampling technique 76
  
- qualitative analysis
  - financial aid 81
  - lockdown challenges and issues 80–82
  - model fit statistics 79
  - predictors 79
  - regression results 78–80
  - respondents 80
  
- Ramie 233–234
- Rana Plaza 98
- rating systems
  - changing methodology 197–198
  - disclosure content 197
  - distance to suppliers 197
  - ignoring economic dimension 198
  - methodologies 193–194
  - self-reporting 197
- reactive environmental sustainability (RES) 255
- readymade garments (RMGs) 280–281, 284–285
- recycling 206–207, 217
- regional players 335
- regression coefficients 120, 121
- RES. *See* reactive environmental sustainability (RES)
- resource-based theory 306
- responsibility 295
- responsible brand identity 300–301
- responsive strategic management 293
- reusing 206–207, 217
- RMGs. *See* readymade garments (RMGs)
- runoff farms 31
  
- SaaS. *See* subscription as a service (SaaS)
- SAC. *See* Sustainable Apparel Coalition (SAC)
- saline soil/irrigation 31
- Scottish generation-Z consumers 169–181
- SCT. *See* supply chain transparency (SCT)
- SDGs. *See* sustainable development goals (SDGs)
- Self Employed Women’s Association (SEWA) 71
- self-image 307
- SEZs. *See* Special Economic Zones (SEZs)
- shearing 7
- Shi, X. 142
- SimpliZero 243
- Singer sewing machine 3, 4
- single-use plastics/wrapping 272
- SKUs. *See* stock keeping units (SKUs)
- slave labour 330
- sneakers, Brazil 301–307
- social contract 294
- social judgment theory 273
- social media influence 180, 181
- social responsibility 294, 296–297, 307
- social security 334
- social sustainability approach 72
- soil management 35
- solar panels 225
- Southern Denmark University 98
- Special Economic Zones (SEZs) 108
- stakeholders responsibility
  - consumers 336
  - governments 333–334
  - MNC 334–335
  - regional players 335
  - UN, ILO and WTO 335

- stakeholder value creation 300–301
- State University of New York (SUNY) 24
- stock keeping units (SKUs) 140
- subscription as a service (SaaS) 151
- Sumangali scheme 330
- SUNY. *See* State University of New York (SUNY)
- supply chain management 256
- supply chain network 316
- supply chain transparency (SCT) 151–152
- sustainability 3, 231, 239–240, 266. *See also*
  - human resources (HR)
  - Africa’s fashion industry 65–66
  - communications 190–191
  - contemporary kink fashion 127–130
  - contribution 315–317
  - drivers 283–284
  - emergence of 185
  - factors, clothing industries 283
  - fashion business 137
  - fashion industry 205–206, 315, 316
  - garment industry 97–101
  - informal apparel enterprises 72–74
  - measurement 191–192
  - orientation 255
  - production innovation 133–144
  - proposed model 320–322
  - rating system 186
  - tiers of suppliers, fashion and loop opportunities 193
- sustainability marketing
  - problem 186–188
  - product, price, place and promotion 188–189
  - solution 188
- Sustainability Standards Comparison Tool (SSCT) 191
- Sustainable Apparel Coalition (SAC) 186
- sustainable brand identity 298–299
- sustainable brand orientation 309
- sustainable cotton production 36–37
- sustainable crop management 33, 34–36
- sustainable development 72, 136
  - vs. brand identity 297
  - corporate entrepreneurial management 294–296
  - corporate social responsibility 293
  - definition 293
  - reconciling fashion 137
  - textile and clothing industries 293
  - transforming risks, opportunities. 295
- sustainable development goals (SDGs) 23, 53, 284, 286–287
- sustainable economic growth 103, 104. *See also* foreign direct investment (FDI)
- sustainable fashion business models 136, 239, 266–267
  - body scanning 242
  - definition 237
  - demand 242
  - examples 241, 242–245
  - green materials 238
  - history 238–239
  - implementation 240
  - recycling textile 237
  - spring/summer lines 245
  - textiles 241
  - 3D virtual sampling 240–241
  - virtual changing room 242
- sustainable garments industry
  - best practices 287–288
  - challenges 288–289
  - fire safety and risk factors 285
  - gender inequality 284–285
  - improved working conditions 287
  - reduced inequality 286–287
  - unfavourable working conditions 286
- sustainable labour practices 239
- sustainable materials 239
- sustainable poverty alleviation 225
- sustainable production
  - brands and retailers 138
  - manufacturers’ actions 141–143
- tailors in India 226
- talent management process 318
- TBL. *See* Triple Bottom Line (TBL)
- tea-time 227
- tech-washing 163
- template analysis approach 156
- temporary employment 91
- textile and apparel industries, Ethiopia 103–122
- textile factory 6, 43
- textile manufacturing work sites 331–332
- throwaway fashion 170
- transparency 274
- tribal marks 63
- Triple Bottom Line (TBL) 185, 187
- triple helix 97–99, 101
- Twins for Peace brand 305–306, 308

- UIMS. *See* Urban Informal Manufacturing Sector (UIMS)
- UK Modern Slavery Act 334
- unconventional materials
  - bamboo 232
  - ethical and social effects 232
  - hemp 233
  - natural fibres 231
  - Pinatex 233
  - Ramie 233–234
  - sustainability 231
  - synthetic fibres 232
- United Nations conference on trade and development (UNCTAD) 110
- United Nations Industrial Development Organization (UNIDO) 335
- United Nations' sustainable development goals (UNSDGs) 151
- United States Fashion Industry Association (USFIA) 134
- upcycling 273
- Urban Informal Manufacturing Sector (UIMS) 70
- USFIA. *See* United States Fashion Industry Association (USFIA)
- utilitarian vision 298
  
- Veja brand
  - agroecological cotton 302
  - business model 304
  - ecological leather 302–303
  - manufacturing 303
  - natural rubber 302
  - raw material 302
  - synthesis 308
  - transport, logistics and distribution 303
  - value chain 304
  - vision of sustainable development 301–302
- Villaget 303
  
- Waste Framework Directive (WFD) 206
- waste management 101, 160
- wastewater 6
- water conservation measures 35–36
- water scarcity 32, 91
- water usage effects 31
- Web 3.0 technologies 153, 154, 159
  
- white gold, cotton 30
- wicked problems 97
- Williams, L. 273
- wool 6
  - carbon cycle 15
  - dromedary camels sheds 12
  - drying coarse yak 13
  - Lakiya Negev Bedouin Weaving Cooperative 19
  - quality of 11–12, 14
  - rugs, Lower Mustang 12
  - sheep 11 (*see also* Awassi sheep, Negev Desert)
  - spinning alpaca 16
  - spinning yak, Lower Mustang 14
  - tapestry, South Africa 13
  - textile education 15
  - weaving alpaca 16
- wool spinner 5
- work environment 330
- workers' rights
  - Bangladesh 336–337
  - China 337
  - emerging markets 328–329
  - fashion industry 327–328
  - implications 337–338
  - India 336
  - manufacturing sites 331–333
  - stakeholders, responsibility of 333–336
  - Vietnam 337
  - workplace conditions 329–331
- workplace conditions 329–331
- workshop, Bangladesh
  - background 98
  - leather 98
  - outcome 99–101
  - problems 97, 101
  - structure 98–99
- world bank (WB) 110
- World Trade Organisation (WTO) 335
- WTO Agreement on Textiles and Clothing (ATC) 282
  
- yak wool 13
  
- zero waste technologies 316
- zones demarcation, Guwahati Municipal Corporation 75