Chapter 9
Promoting Sustainable Consumption in Fashion With AI:
Empowering Sustainable Fashion Through Virtual Digital Wardrobe Technologies

I. Nivetha
http://orcid.org/0009-0000-3851-219X
Velalar College of Engineering and Technology, India

V. Kavitha
http://orcid.org/0000-0002-5222-4781
Velalar College of Engineering and Technology, India

M. Parimala Devi
Velalar College of Engineering and Technology, India

S. Russia
Velalar College of Engineering and Technology, India

P. Ravi
KGiSL Institute of Technology, India

T. Suresh Kumar
http://orcid.org/0009-0001-1644-6678
AVS Engineering College, India

ABSTRACT

Artificial intelligence-powered virtual digital wardrobes encourage sustainability by enabling customers to make better decisions about their wardrobe management and fashion consumption. These platforms encourage less waste, longer product usage, and responsible purchasing by combining AI with personalized suggestions, lifecycle evaluation, gamification, and integration with circular models like resale and leasing. The chapter describes system architectures that facilitate industry-wide

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data sharing, platform-level analytics, and consumer-level nudges for supply chain efficiency and transparency. Scalability, data protection, and the requirement to democratize these technologies globally are major obstacles.

1 INTRODUCTION

For a long time, people have noticed the importance of the fashion industry in the global economy, culture, and society. Nevertheless, it is now facing the greatest challenges, such as human rights violations, resource use, and pollution. The eco-friendly aspect of fast fashion's corporate practices is a disaster for the planet, as it leads to waste, production of carbon dioxide, and killing of rivers. Furthermore, the consumer's tendency to buy faster is not helping the earth. The fashion industry has not yet achieved a proper balance between satisfying customers, earning money, and producing clothes in an environmentally friendly way despite the rising consciousness of the issue among both consumers and lawmakers. It is quite obvious that the future of digital technology as the enabler of change in the manner consumers purchase and the businesses' interaction with their supply chains will be more prominent as the demand for change grows.

Among the different technologies, one of the most noticeable is the virtual digital wardrobe powered by AI, which is allowing the consumers to buy clothes as well as keep their wardrobes supplied without harming the environment. Besides, this virtual digital wardrobe is fostering customer interactions through the unification of both digital and physical wardrobes. It further aims to tackle immense consumption and prolong the life cycle of garments. Furthermore, the tech of virtual digital closets paves the way for circular business models which comprise resale, licensing, and upcycling, thus allowing the consumers as well as the companies to participate in the eco-friendly systems together.

The young ethical consumers are pushing the brands to be green and truthful. This is allowing the companies to improve their lead times, and the incorporation of the gamification and educational features in the new technologies is the putting of the consumers in a position to make the right choices when it comes to fashion and consumption. By the economic obstacles that the resale and rental marketplaces have created, the consumer is being empowered to turn their unused clothes into cash, and at the same time, the eco-friendly behavior is being promoted. However, the advancement of technology has also opened up new problems such as the privacy of data, the digital divide, and the environmental impact of digital systems like data centres.

Additionally, the large-scale adoption and simple operation of virtual digital wardrobe platforms are key factors in the process of making fashion available to