


Chapter 8


Green Manufacturing in the Era of Industry 4.0: Applying People Analytics to Direct Consumer Purchasing Behavior and Intentions

Amandeep Kaur

 <https://orcid.org/0009-0004-5716-7298>

Chandigarh Group of Colleges Jhanjeri, Mohali, India

Meenakshi Devi

 <https://orcid.org/0009-0005-7086-5549>

Lovely Professional University, India

Veer P. Gangwar

Lovely Professional University, India

ABSTRACT

The escalating need for sustainable materials and responsible consumption has placed green entrepreneurship at the heart of current market strategies. For businesses to significantly impact consumer preference for green products they must learn more about the motivations behind these choices. This document analyzes the role of people analytics in steering consumer decisions towards sustainable products and points out the extensive benefits of integrating sustainability into business practices. Through an analysis of case studies and a systematic literature review. This research outlines the connection between sustainable business adoption and people analytics. Existing research on eco-friendly consumer behavior and business models informs the SLR's analysis of significant variables affecting customer preferences including sustainability and ethical shopping.

DOI: 10.4018/979-8-3693-9306-2.ch008

1.1 INTRODUCTION

The global landscape of manufacturing is undergoing a profound transformation driven by urgent environmental concerns and the rapid advancement of digital technologies. As climate change and resource depletion increasingly impact societies and economies, businesses are compelled to embrace sustainable practices. Green manufacturing—defined as the production of goods with minimal environmental impact—is becoming a critical strategy for organizations seeking to enhance their competitiveness and respond to consumer demand for eco-friendly products (Zhang & Liang, 2018). This chapter delves into the synergy between green manufacturing and Industry 4.0, highlighting how the integration of innovative technologies and people analytics can significantly shape consumer purchasing behavior and intentions towards sustainable products.

The fourth industrial revolution, characterized by the adoption of smart technologies and data-driven decision-making, presents a unique opportunity for manufacturers to optimize their processes and minimize waste (Kamble, Gunasekaran, & Gawankar, 2018). Industry 4.0 technologies—including the Internet of Things (IoT), artificial intelligence (AI), and big data analytics—enable real-time monitoring and optimization of production processes, thereby enhancing resource efficiency and sustainability (Xu, Xu, & Li, 2018). By leveraging these technologies, organizations can not only improve their operational performance but also align their manufacturing practices with the growing consumer preference for sustainability.

As consumers become more environmentally conscious, their purchasing decisions are increasingly influenced by a brand's commitment to sustainability (Vermeir & Verbeke, 2008). Consequently, businesses must adapt their marketing strategies to resonate with this shift in consumer behavior. People analytics, which encompasses the analysis of consumer data to derive insights into preferences and behaviors, offers a powerful tool for organizations seeking to understand and influence consumer purchasing intentions (Bohdanowicz & Zientara, 2008). By integrating people analytics into their business models, manufacturers can identify and address the specific factors that drive consumer preferences for green products, ultimately enhancing their market positioning.

This chapter aims to provide a comprehensive framework for understanding the interplay between green manufacturing, Industry 4.0, and consumer behavior, with a particular emphasis on how people analytics can facilitate the adoption of sustainable practices in the manufacturing sector. By examining the challenges and opportunities presented by this convergence, the chapter will contribute to the growing body of knowledge on sustainable manufacturing and consumer behavior in the context of the fourth industrial revolution.

24 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/green-manufacturing-in-the-era-of-industry-40/383815

Related Content

Political Economy of Media Entrepreneurship: Commercialization and Commodification in a Digital News Media Enterprise

Sreekala Girija (2019). *Journal of Media Management and Entrepreneurship* (pp. 27-39).

www.irma-international.org/article/political-economy-of-media-entrepreneurship/220048

Developing A Model for Transforming Government in the Digital Age: Local Digital Government in Australia

Qiuyan Fan (2018). *International Journal of E-Entrepreneurship and Innovation* (pp. 44-53).

www.irma-international.org/article/developing-a-model-for-transforming-government-in-the-digital-age/211139

Relationships between Micro-Enterprises and Web Developers: Roles, Misconceptions and Communication

Robert J. McQueen and Nordiniana Daud (2013). *International Journal of E-Entrepreneurship and Innovation* (pp. 28-42).

www.irma-international.org/article/relationships-between-micro-enterprises-and-web-developers/81262

Mapping the Research on Artificial Intelligence and Entrepreneurship: A Bibliometric Review From Scopus Database

Sheena Lovia Boateng, Obed Kwame Adzaku Penu, Joseph Budu, Richard Boateng, John Serbe Marfo, Thomas Anning-Dorson and Frederick Edem Junior Broni (2024). *International Journal of E-Entrepreneurship and Innovation* (pp. 1-24).

www.irma-international.org/article/mapping-the-research-on-artificial-intelligence-and-entrepreneurship/343790

Empowering Innovation: The Interplay of the Education Sector and Government Initiatives in Fuelling Entrepreneurial Growth

Laveena Pareek and Shivangi Seth (2025). *Support Networks for Entrepreneurs: Social Capital and Strategic Collaborations* (pp. 55-76).

www.irma-international.org/chapter/empowering-innovation/376448