


Chapter 1

Transforming Corporate Sustainability: Integrating Advanced Analytics and Business Intelligence Into ESG Strategy Implementation

Marcos Komodromos

 <https://orcid.org/0000-0002-2910-6541>

University of Nicosia, Cyprus

Sofia Anastasiadou

University of Western Macedonia, Greece

Lamprini Seremeti

Agricultural University of Athens, Greece

ABSTRACT

This chapter explores how combining advanced analytics and business intelligence (BI) revolutionises Environmental, Social, and Governance (ESG) strategies. It showcases the move from compliance-led efforts to data-driven, proactive ESG management, powered by AI, machine learning, IoT, and big data. Practical examples from Unilever, IKEA, and Rio Tinto demonstrate how these technologies boost ESG data quality, reporting, and risk management, allowing for real-time monitoring and predictive insights. Despite the benefits, challenges remain, including data fragmentation, lack of standardisation, and regulatory complexity. The chapter stresses the need for robust data governance, cross-functional collaboration, and ongoing improvement. It concludes that harnessing BI and AI is crucial for organisations to meet changing stakeholder expectations, achieve tangible sustainability outcomes, and build long-term resilience in a data-driven business landscape.

DOI: 10.4018/979-8-3373-5142-1.ch001

INTRODUCTION

The convergence of Environmental, Social, and Governance (ESG) strategy and Business Intelligence (BI) signifies a transformative paradigm for sustainable business advancement within the modern corporate environment (Chen et al., 2025). As organizations encounter increasing pressure from investors, regulators, and stakeholders to exhibit substantial ESG performance, the amalgamation of advanced data analytics, artificial intelligence (AI), and BI tools is fundamentally redefining the methodologies by which companies evaluate, manage, and convey their sustainability initiatives (Morozova et al., 2024). This paradigm shift is substantiated by compelling evidence from recent research, which demonstrates that sustainability has transitioned from a peripheral compliance obligation to a strategic necessity that directly impacts corporate value generation and competitive positioning (Kalyanam, 2025).

Recent empirical analysis conducted by the OECD (2025) reveals significant challenges within the current ESG landscape, emphasising that ESG rating providers employ over 2,000 distinct metrics characterised by varying definitions and weightings, which generates considerable comparability issues for stakeholders (Kalyanam, 2025). This fragmentation highlights the essential requirement for data-driven approaches capable of standardising, harmonising, and optimising ESG data management across organizations. Furthermore, the OECD study illustrates that 86% of global market capitalization was represented by companies disclosing some form of sustainability-related information in 2022, signifying widespread adoption while also exposing an urgent need for enhanced data quality and consistency (Gong et al., 2024).

The justification for integrating business intelligence (BI) within an environmental, social, and governance (ESG) strategy is reinforced by consumer behaviour research published in the Harvard Business Review, which indicates that sustainability has evolved into a fundamental criterion for purchasing decisions (Ahmad et al., 2023; Sklavos et al., 2024). Consumers are increasingly drawn to brands that demonstrate a genuine commitment to environmental and social responsibility (Aldowaish et al., 2022). This consumer-driven demand establishes a direct correlation between ESG performance and business outcomes, thereby rendering data-driven sustainability strategies indispensable for securing a competitive advantage and enhancing market positioning (Kumar et al., 2021).

Artificial intelligence has emerged as a transformative technology within this context, as indicated by KPMG's 2024 CEO Outlook, which reveals that 64% of CEOs regard AI as a strategic priority for their organisations (Shang et al., 2024). The integration of AI into Environmental, Social, and Governance (ESG) frameworks facilitates real-time data collection and analysis regarding environmental impacts,

34 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/transforming-corporate-sustainability/388312

Related Content

Methodology for Identifying Territories With Innovative Business Sector Nuclei to Support the Design of Development Policies

Brenner Lopes and Luander Falcão (2018). *Handbook of Research on Strategic Innovation Management for Improved Competitive Advantage* (pp. 315-330).

www.irma-international.org/chapter/methodology-for-identifying-territories-with-innovative-business-sector-nuclei-to-support-the-design-of-development-policies/204228

A Framework for Business Performance Management

Marco van der Kooij (2004). *Information and Communications Technology for Competitive Intelligence* (pp. 158-180).

www.irma-international.org/chapter/framework-business-performance-management/22565

Business Intelligence as a Service: A Vendor's Approach

Marco Spruit and Tim de Boer (2014). *International Journal of Business Intelligence Research* (pp. 26-43).

www.irma-international.org/article/business-intelligence-as-a-service/126896

Talent Management for Innovation: Personality Traits and Organizational Climate Impact in Creativity Process

José da Silva Rabelo Neto and Angêlo Reck Neto (2018). *Handbook of Research on Strategic Innovation Management for Improved Competitive Advantage* (pp. 602-620).

www.irma-international.org/chapter/talent-management-for-innovation/204243

Business Intelligence as a Service: A Vendor's Approach

Marco Spruit and Tim de Boer (2014). *International Journal of Business Intelligence Research* (pp. 26-43).

www.irma-international.org/article/business-intelligence-as-a-service/126896