Chapter 5
Sustainable Productivity Enhancement in Industry 5.0:
Leveraging AI-Driven Behavioural Insights and Immersive Environments

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ABSTRACT

This chapter explores the synergy between behavioral insights and artificial intelligence (AI) to boost productivity within Society 5.0—a framework that balances economic growth with social well-being through digital transformation. It underscores the critical role of AI technologies, including machine learning, natural language processing (NLP), predictive analytics, human-AI collaboration, and generative AI, in achieving sustainable development. When combined with insights from psychology, economics, and neuroscience, these technologies play a pivotal role. Real-life case studies from various industries illustrate how these technologies influence decision-making, policy formation, and intervention design, aligning with human behaviors. The chapter also addresses the ethical challenges of integrating AI with behavioral insights, focusing on privacy, data security, and biases in AI systems. Finally, it offers practical recommendations for leaders and policymakers to align AI strategies with sustainable development goals, prioritizing human welfare.

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INTRODUCTION

The next industrial revolution, which is being referred to as Industry 5.0, represents a significant divergence from the industrial paradigms that have come before it. It places an emphasis on human-centered methods that combine technology advancement with environmental responsibility. In contrast to its predecessor, Industry 4.0, which mostly focused on automation, Industry 5.0 aims to include human creativity, critical thinking, and ethical concerns into technology breakthroughs in order to achieve industrial efficiency while simultaneously ensuring social and environmental responsibility. Companies all over the globe are now confronted with the twin difficulty of reaching the Sustainable Development Goals (SDGs) of the United Nations while simultaneously sustaining high levels of production (United Nations, 2023). This transition is especially crucial because of this dual challenge.

The integration of artificial intelligence (AI) with behavioural insights is at the heart of Industry 5.0. This integration aims to improve productivity and facilitate the alignment of corporate operations with sustainability priorities. (Wazi, Karim, & Noor, 2024) In today's contemporary corporate contexts, management methods that are enabled by artificial intelligence have become a vital component for driving efficiency. Insights into human behaviour, which are obtained from disciplines such as psychology, neuroscience, and behavioural economics, provide organisations the ability to comprehend and affect human behaviour via the use of various technologies. According to Thaler and Sunstein (2008), these insights make it possible to create interventions that improve efficiency, encourage sustainable decision-making, and empower individuals to engage in behaviours that are ecologically responsible.

In the process of operationalising behavioural insights, artificial intelligence plays a vital role via the use of technologies such as machine learning, natural language processing (NLP), and predictive analytics. The use of these technologies enables organisations to analyse huge datasets, recognise patterns of behaviour, forecast results, and tailor actions that are in accordance with both the objectives of the organisation and the well-being of the individuals involved. Using artificial intelligence, nudges, which are interventions that are subtle and purposeful, may affect behaviour without constraining the freedom of choice (Sunstein, 2014). However, in order to achieve long-term sustainability via the utilisation of these AI-powered insights, it is necessary to strike a careful balance between factors such as economic development, environmental preservation, and social justice (Elkington, 1997).

An additional component that is crucial to Industry 5.0 is the incorporation of immersive environments, which may include virtual reality (VR) and augmented reality (AR). In controlled settings that mirror real-world circumstances, these technologies make it possible for individuals to engage in experiential learning, adaptive training, and collaborative problem-solving (Dede, 2009). The use of AI-driven behavioural insights further improves these settings by allowing experiences to be tailored to the specific learning styles and requirements of each person, which in turn increases both productivity and engagement. The practical applications of these technologies in real-world scenarios show substantial improvements in organisational productivity and efficiency (Wazi et al., 2024). The capacity of organisations to simulate the environmental effect of industrial processes, assess environmentally friendly alternatives, and promote environmentally responsible behaviours via appealing visual renderings is another way in which immersive environments contribute to sustainability (Gartner, 2021).

The purpose of this chapter is to investigate how the combination of artificial intelligence-driven behavioural insights and immersive environments may work together to foster sustainable productivity in Industry 5.0. This article dives into the fundamentals of behaviour, illustrates how artificial intelligence technologies may be used to operationalise these findings, and showcases real-world uses of immersive