Chapter 4
Globalization and Emerging Opportunities and Challenges in Sustainable Environment in Industry 4.0

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ABSTRACT

The rapid technological advancement of the manufacturing sector over the past few decades inevitably led to the rise of Industry 4.0. It has the potential to significantly alter how globalisation is practiced in the production and consumption of products and services across international markets. In this chapter, the authors take a closer look at the rise of Industry 4.0 and the new technical architecture that underpins it, as well as the benefits it's expected to bring. In addition, how technology can be used to fortify a company's competitiveness and shield it from the perils of this transformation. The new global division of labour, the worldwide supply chain, and the global value chain will all be profoundly affected by this multifaceted technology, as evidenced by a thorough examination of the relevant literature. It will alter the competitive landscape by shifting the advantage away from large corporations and toward small and medium-sized enterprises (SMEs) in emerging marketsand developed markets. As human and technological skills advance quickly, businesses may be able to profit.

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INTRODUCTION

The rapid technological advancement of the manufacturing sector over the past few decades inevitably led to the rise of Industry 4.0. It has the potential to significantly alter how globalisation is practiced in the production and consumption of products and services across international markets. In this chapter, we'll take a closer look at the rise of Industry 4.0 and the new technical architecture that underpins it, as well as the benefits it's expected to bring.In addition, how we may use technology to fortify a company's competitiveness and shield it from the perils of this transformation. The new global division of labour, the worldwide supply chain, and the global value chain will all be profoundly affected by this multifaceted technology, as evidenced by a thorough examination of the relevant literature. It will alter the competitive landscape by shifting the advantage away from large corporations and toward small and medium-sized enterprises (SMEs) in emerging marketsand developed markets. As human and technological skills advance quickly, businesses may be able to profit from this innovation. However, there are a number of obstacles that must be conquered in order to make a profit from this new technical development, including a lack of qualified workers, technological difficulties, questionable business practices, and questionable values.

With an emphasis on globalisation, international trade, and foreign direct investments, Industry 4.0 has enhanced the relevance of digital transformation as well as its potential applications in manufacturing(Ghadge et al. 2020). "Artificial intelligence, the Internet of Things, additive manufacturing, robotics, cloud computing, and other digital and physical technologies" are all part of Industry 4.0, which seeks to increase firms' flexibility, responsiveness, and connectivity so that more informed judgments can be made(Ghadge et al. 2020; Chalmeta and Santos-dele 2020). When the research and development, design, production, marketing, distribution, and customer service phases of the value chain are all computerised, production efficiency and the worldwide market both rise(Handfield, Jeong, and Choi 2019). The German-conceived Industry 4.0 is currently trending in the international manufacturing sector(Bag et al. 2020). Managers and legislators in developed, emerging, and developing nations are debating how to take advantage of the Fourth Industrial Revolution while shielding their nations from its potential ill impacts(Preindl, Nikolopoulos, and Litsiou 2020). This is an emerging topic that is sparking heated debate amongst experts across disciplines and industries(Stock and Seliger 2016).

The purpose of this chapter is to add to the ongoing conversation about Industry 4.0 and its potential impact on global trade and the supply chain over the next few years(Tjahjono et al. 2017). What is Industry 4.0 in today's interconnected world, and how might it help international corporations and organisations advance their own globalisation agendas?Industry 4.0 is so advanced that it has surpassed all of the previous industrial revolutions that humanity has seen over the course of the last few centuries. The rise of cyber-physical systems and other developments that blur the line between the digital and physical worlds usher in what some have called the "fourth industrial revolution."The rise of cyber-physical systems and other developments that blur the line between the digital and physical worlds usher in what some have called the "fourth industrial revolution.", but self-sufficient, self-learning, and self-acting ones that don't need human intervention(Taylor and Conexxus 2018). The term "Industry 4.0" encompasses a wide range of practices, from ERP software and robotic process automation to AI and "smart" manufacturing. Increases in productivity are already being seen across the business world thanks to cutting-edge, high-value technologies whose horizons we cannot yet see.

To introduce our methodology, we shall first do a brief literature study. Then, we'll dive deep into the components of Industry 4.0 and discuss how they're impacting the way organisations operate in today's