Chapter 16
Future of Jobs in IR4.0 Era: The Essential Technologies and Skills of the Future Jobs

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ABSTRACT

Industry 4.0 is revolutionizing the way companies work and integrate enabling technologies, including the internet of things (IoT), cloud computing, analytics, and AI and machine learning, to the production facilities and entire operations or on delivering their services. Advanced sensors, embedded software, and robotics are used in smart factories to collect and analyze data, allowing for better decision-making by more predictive analysis. Furthermore, the COVID-19 pandemic posed challenges to the society to adapt to a new reality. While the rest of the world searches for answers, Industry 4.0 technology has become a vital component of how we survived the pandemic and how we will survive in the post-pandemic future. The main purpose of this chapter is to understand the future and reality of jobs in IR 4.0. There are several ways IR 4.0 will reinvent jobs in the future. For the readers, the authors divided the chapter into the following sections: "How IR 4.0 Reinvents Jobs," "Types of Jobs in IR 4.0," and "Conclusion."

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INTRODUCTION

Industry 4.0 is a digital transformation reflected by the automation and the implementation of smart factories (i-SCOOP, 2021). Industry 4.0 is revolutionising the way companies manufacture, improve and distribute their products. Manufacturers integrate enabling technologies, including the Internet of Things (IoT), cloud computing and analytics, and AI and machine learning, to the production facilities and entire operations. Advanced sensors, embedded software, and robotics are used in smart factories to collect and analyse data, allowing for better decision-making. (IBM, n.d.).

The world has already witnessed three industrial revolutions (IRs), having significant impacts (Dogaru 2020). The 1st IR dealt with mechanical processes using water and steam for the mass production of textiles and metals. The 2nd IR dealt with the concept of industries, and here, the use of electricity, oil, and gas took place; the steel and synthetic industries became established with new communication and transport systems. The 3rd IR dealt with new nuclear energy and automation (Dogaru 2020). However, most of these revolutions had enormous consequences on the environment. They caused much damage and harm to the planet and human lives. Hence, the IR 4.0 is a viable, sustainable, and environmentally friendly approach to manufacturing, using renewable resources and recyclable bio-based materials (Carvalho et al. 2018; Dogaru 2020). This key argument that the adoption of new technology has to be accompanied by systemic changes, applies both to the company as well as the societal level. Any novel solutions being developed must take into account the complexity of the interdependencies between different types of actors with various backgrounds, overall market dynamics, as well as the need for knowledge development and institutional reforms. In fact, the need for systemic changes may be particularly relevant in the case of green technologies, such as zero-carbon processes in the energy-intensive industries (Söderholm, 2020).

The 4th Industrial Revolution is driven by four specific technological developments: high-speed mobile Internet, AI and automation, big data analytics, and cloud technology. Out of these technologies, AI and automation are expected to have the most significant impact on employment figures within the global workforce (Recruitment, C, n.d). In today's labour marketplaces, transformations and upheavals are commonplace. Images and documents are kept in the cloud, emails remind us to follow up, and light bulbs can be turned on with a simple voice command. The worldwide labour market is progressively adopting new technology. Due to new technology, businesses are finding it more straightforward to automate routine jobs, disturbing the balance between human-driven tasks and those handled by computers and algorithms. Businesses must consider implementing the most up-to-date technology into their workforce as innovative technology becomes more ubiquitous (Recruitment, C, n.d). Furthermore, the COVID-19 pandemic posed challenges to the society to adapt to a new reality. While the rest of the world searches for answers, Industry 4.0 technology has become a vital component of how we survived the pandemic and how we will survive in the post-pandemic future (Marr, 2019).

The main purpose of this chapter is to understand the future and reality of jobs in IR 4.0 towards building greener economics in the era of climate change. There are several ways on how IR 4.0 will reinvent jobs in the future for the greener economic and sustainability. For the readers understanding, we divided the chapter in the following sections: *Building Greener Economics in the Era of Climate Change*, *How IR 4.0 Reinvent Jobs In Greener Economics, Types of Job in IR 4.0, and Conclusion.*