Chapter 12
AI in Automation and Robotics on Employment in Industrial Era:
Technological Transformations and Digital Work Environments

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ABSTRACT

The combination of AI, automation and robotics is radically transforming the employment landscape around the world, fundamentally altering the nature of workplaces, skills and job opportunities. Although these technologies improve productivity, efficiency and innovation across industries, they also raise concerns regarding job displacement and workforce disparity. Repetitive tasks in routine sectors like manufacturing, logistics, and customer service have been increasingly

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automated, reducing the demand for low-skilled labor. This impact, in turn, leads to net-new jobs emerging for individuals willing to bridge the gap between human creativity and computing power in roles such as AI developers, data analysts, cybersecurity experts and robotics engineers, among others, as they endeavor to implement effective use of technology with the need for a high level of digital competence. This transition to digital workspaces highlights the increasing significance of remote collaboration tools, virtual offices, and flexible employment arrangements, reshaping the conventional office landscape.

INTRODUCTION

AI tools are allowing better decision-making, streamlined workflow, and greatly improved employee productivity. These near-death experiences highlight the need for something to connect these rapidly shifting tasks and roles, and that something is reskilling and upskilling to ensure they have the capacity to absorb these opportunities and rise with these waves of change. There will need to be collaboration to design policies that ensure that training programs are available equitably and that economic growth is inclusive i.e. workers who lose jobs will find new jobs. Ensuring sustainable and fair digital workplaces will involve addressing ethical considerations, like algorithmic bias, job security, and worker privacy (Cazzaniga et al., 2024). AI, automation and robotics does represent a significant threat to traditional employment models but, at the same time, this is coupled with unprecedented opportunities to create a smarter, more efficient, more equitable, more inclusive digital workspace.

The accelerating spread of AI, automation and robotics represents a sea change in the fragmentation of industrial production, with the digital universe opening up new opportunities for growth, supply chain, and service provision worldwide. The industrial revolution, which was first defined by steam power, electrical power and mass production has progressed to intelligent automation-based environment is called Industry 4.0. This change is more than technological, it's profoundly socio-economic, as AI and robotics fundamentally change the way businesses function and, more importantly, how humans work. The integration of AI into automation and robotics has brought the possibility of high level of automation, efficiency and accuracy for the industrial system such as smart manufacturing, real time decision making and autonomous control system. These advancements offer potential productivity improvements along with new job roles, but they also have the potential to eliminate traditional ones, in particular those that are repetitive, manual, or that rely on rule-based workflow.