

THE IMPACT OF ARTIFICIAL INTELLIGENCE AND AUTOMATION: A LITERATURE REVIEW ON INDUSTRIAL TRANSFORMATION

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Abstract

This research explores the impact of artificial intelligence (AI) and automation on industrial transformation through a comprehensive literature review. The findings show that AI and automation have the potential to improve operational efficiency, productivity and innovation across a range of sectors, including manufacturing, services, healthcare and finance. However, the application of these technologies presents significant challenges, such as the reduction of traditional employment, the need to develop new skills, and ethical and data security issues. The study highlights the importance of investment in technology infrastructure, workforce training, and organisational culture adaptation to reap the maximum benefits of AI and automation. In addition, mitigation strategies and the formation of strategic partnerships are recommended to overcome negative impacts and ensure the success of industrial transformation in the digital age.

Keywords: Artificial Intelligence, Automation, Industrial Transformation

Introduction

The rapid development of technology in recent decades has brought significant changes to various industrial sectors. One of the most prominent technological revolutions is the advancement in Artificial Intelligence (AI) and automation.

Artificial Intelligence (AI) is a field of computer science that focuses on creating machines or systems that can mimic human intelligence. This includes aspects such as machine learning, natural language processing, speech recognition, and computer vision. These intelligent machines can perform tasks that usually require human intelligence, such as decision-making, problem-solving, and learning from experience (J. Wang & Zhang, 2022) . For example, virtual assistants such as Siri or Alexa use AI to understand and respond to users' voice commands, while machine learning algorithms are used for product recommendations in e-commerce platforms or trend prediction in data analysis (X. Wang & Yang, 2021) .