Chapter 3
Innovating With AI for Climate Resilience:
Exploring the Role of Digital Inclusion in Economic Development

Usharani Bhimavarapu
https://orcid.org/0000-0002-0246-1420
Department of Computer Science and Engineering, Koneru Lakshmaiah Education Foundation, Vaddeswaram, India

ABSTRACT

This study examines the role of artificial intelligence (AI) in promoting sovereignty and carbon neutrality, with a focus on digital inclusion and climate-resilient AI strategies for emerging markets. By integrating insights from previous studies on AI's contribution to carbon neutrality and digital inclusion within the context of climate change, the chapter highlights the importance of technology policy frameworks in shaping effective AI strategies. Additionally, the chapter explores the use of confirmatory factor analysis (CFA) and exploratory factor analysis (EFA) in evaluating and validating the impact of AWI on economic resilience. These statistical methods are employed to identify and confirm key factors influencing the successful implementation of AI in climate action. The study also incorporates fuzzy-set qualitative comparative analysis (fsQCA) to assess the

DOI: 10.4018/979-8-3693-8714-6.ch003

complex interplay of multiple factors contributing to AI-driven solutions.

INTRODUCTION

Artificial Intelligence (AI) plays a pivotal role in enhancing economic resilience, particularly in emerging economies. As technological advancements continue to reshape industries, AI facilitates significant improvements in productivity, decision-making, and resource management. By automating routine tasks and enabling data-driven insights, AI allows businesses to optimize operations, reduce costs, and improve efficiency. In sectors like manufacturing, agriculture, and healthcare, AI-driven solutions have proven instrumental in streamlining processes, reducing human error, and fostering innovation. This transformative potential of AI supports sustainable growth, providing a competitive edge to countries looking to diversify their economies and adapt to global market changes.

In addition to its direct impact on industries, AI also complements the economy through its ability to support climate resilience and digital inclusion. As emerging economies face the dual challenge of addressing climate change while driving economic development, AI can help devise innovative solutions that promote both sustainability and economic growth. By enabling more efficient energy use, optimizing supply chains, and predicting environmental impacts, AI aids in creating strategies that align with carbon neutrality goals. Moreover, AI-driven platforms can enhance digital inclusion by providing access to essential services like education, healthcare, and financial resources, bridging the digital divide and ensuring that marginalized communities are not left behind in the technological revolution.

Furthermore, AI's contribution to economic resilience is closely tied to the broader policy frameworks that govern its integration. Governments are increasingly focusing on AI as a tool for achieving economic stability in the face of global uncertainties, such as economic recessions, pandemics, and climate disasters. AI-driven innovations in sectors like healthcare, transportation, and finance not only drive economic recovery but also enhance the adaptability of economies to changing circumstances. With robust policy frameworks that encourage AI adoption, particularly in the