Chapter 7
Bridging the Divide:
Capacity Building for AI Adoption in Developing Countries

Amaresh Jha
https://orcid.org/0000-0002-6083-1610
University of Petroleum and Energy Studies, Dehradun, India

Sanjeev Ratna Singh
https://orcid.org/0000-0002-5899-2749
Bennett University, India

ABSTRACT

This multi-method research explores the challenges and opportunities of AI adoption in developing countries. Through a literature review, case studies, and expert interviews, the research analyzes existing knowledge, examines successful initiatives, and gathers stakeholder insights. By investigating these areas, the study aims to identify capacity-building strategies (infrastructure, funding, education), explore ethical AI frameworks and transparency, emphasize local innovation ecosystems, and analyze AI's potential for tackling sustainability challenges. Ultimately, this research seeks to provide a roadmap for developing countries to leverage AI for inclusive and sustainable growth, bridging the digital divide and fostering participation in the global digital economy.

INTRODUCTION

Artificial intelligence (AI) is rapidly transforming societies worldwide, offering immense potential for economic growth, improved efficiency, and enhanced service delivery. However, a significant digital divide exists between developed and developing countries, creating a complex situation for AI adoption in the latter (World Bank, 2016). This situation presents both challenges and opportunities, demanding a comprehensive research agenda to bridge the AI divide and ensure inclusive development. Limited internet access, unreliable electricity supply, and inadequate digital infrastructure pose major barriers to AI deployment in developing countries (Balakrishnan et al., 2020). This research area delves into specific infrastructure limitations hindering AI adoption. It investigates potential solutions like government-led

DOI: 10.4018/979-8-3693-6392-8.ch007

initiatives for infrastructure development (Heeks, 2018) and public-private partnerships to expand internet connectivity (World Bank, 2023).

Financial constraints and a lack of skilled professionals in AI development, data science, and engineering can hinder effective AI implementation (Mitra et al., 2020). This research explores how developing countries can address these resource limitations. It investigates innovative funding models for AI research and development, such as leveraging international partnerships and impact investing (OECD, 2019). Additionally, it examines strategies to cultivate a skilled AI workforce through targeted education and training programs aligned with industry needs.

The potential for data bias, privacy violations, and lack of transparency in AI algorithms necessitates careful consideration of ethical implications (Jobin et al., 2019). This research examines frameworks for responsible AI development in developing countries, focusing on strategies to mitigate bias in algorithms (Selbst et al., 2019), ensure data privacy (European Commission, 2016), and promote transparency in decision-making processes (Mittelstadt et al., 2016).

Concerns exist regarding potential job losses in certain sectors due to automation through AI (Frey & Osborne, 2017). This research explores how developing countries can prepare their workforce for the changing job landscape of the AI era. It investigates potential reskilling and upskilling initiatives to bridge the skills gap (World Economic Forum, 2020) and ensure a smooth transition for displaced workers.

While challenges are significant, developing countries also have unique opportunities to leverage AI for accelerated economic growth and development. Fostering a collaborative environment where government, industry, academia, and civil society work together is crucial for developing AI capabilities specific to local needs (Mitra et al., 2020). Research can explore successful models of local innovation ecosystems in developing countries and how to replicate them effectively. AI can play a pivotal role in achieving sustainable development goals (SDGs) by supporting economic growth while ensuring equity and environmental sustainability (Ehui et al., 2020). Research can explore specific AI applications that address local challenges related to poverty, hunger, climate change, and other SDGs in developing countries.

Establishing robust policy frameworks to regulate AI usage is crucial for responsible adoption. These policies should encompass data protection, ethical AI development, and responsible usage (Manyika et al., 2017). Research can examine existing policy frameworks in developed countries and explore how they can be adapted to the specific context of developing countries.

AI adoption presents a complex situation for developing countries, fraught with challenges but brimming with opportunities. By addressing the research questions outlined above and exploring the potential for AI to contribute to sustainable development, this research agenda aims to empower developing nations to harness the power of AI for inclusive and equitable growth in the digital age.

Objectives

1. **Assess the Current AI Landscape in Developing Countries**: To evaluate the existing infrastructure, expertise, and resources available for AI adoption in developing countries, identifying key gaps and challenges.
2. **Develop a Comprehensive Framework for AI Capacity Building**: To create a detailed, actionable framework that addresses the specific needs of developing countries in terms of infrastructure, education, knowledge transfer, and policy development.
3. **Analyze the Potential Impact of AI Adoption**: To explore the potential benefits and challenges of AI integration in key sectors such as healthcare, education, and environmental sustainability in developing countries.