

Forum: UN Commission on Science and Technology for Development (UNCSTD)

Issue: Leveraging Artificial intelligence and Big Data Development Goals in Sub-Saharan Africa

Student Officer: José Berríos

Position: Deputy Chair of the Committee on Science and Technology for Development

Introduction

Currently, Sub-Saharan Africa has faced significant challenges in its social, economic, and environmental development, which require innovative, sustainable, and concrete solutions so that the various affected nations can begin to develop.

Artificial intelligence (AI) and big data have emerged as powerful tools in recent years, with the aim of accelerating sustainable development goals (SDGs) in the region. These technologies enable the analysis of large volumes of data to improve decision-making in key areas such as health, agriculture, education, and public services.

However, the region also faces obstacles such as limited infrastructure, a significant digital divide, and regulatory challenges that must be addressed to maximize the positive impact of these technologies on the development of these countries.

Definition of key terms

Artificial Intelligence (AI)

Computer systems capable of performing tasks that require human intelligence, such as pattern recognition, learning, and automated decision-making.

Big Data

A massive set of varied and complex data that requires advanced technologies for storage, processing, and analysis in order to extract valuable information.

Sustainable Development Goals (SDGs)

A global agenda with 17 goals adopted in 2015 by the UN to eradicate poverty, protect the planet, and promote peace and prosperity by 2030.

Digital Infrastructure

Technological systems and networks that enable connectivity and access to digital services, including the internet and technological devices.

Technological Ecosystem

Integrated network of actors, institutions, and resources that facilitate innovation and sustainable technology adoption.

Issue Overview

Context and relationship to the topic

Throughout its history, Sub-Saharan Africa has faced significant challenges for the nations in the region to maximize the use of artificial intelligence (AI) and Big Data, making it very difficult to achieve the Sustainable Development Goals (SDGs). Despite the enormous potential of these technologies to transform key sectors for the population, such as health, agriculture, education, and public services, they cannot be applied in the region due to structural and social obstacles that hinder their widespread and effective implementation.

One of the most significant problems (and one that hinders development in these countries) is insufficient digital infrastructure. Many rural and/or urban areas do not have reliable access to high-speed internet, stable electricity, and adequate technological devices. This technological lag limits the ability of governments, businesses, and communities to use tools such as AI to process large volumes of data that enable more informed and efficient decision-making. The digital divide and inequality in access to technology further exacerbate this problem, as large segments of the population, especially women, young people, and people in rural and vulnerable areas, do not have access to the necessary training in digital skills, limiting their participation in the digital economy and the various opportunities offered by these technologies to improve their quality of life and socioeconomic development.

Within the regulatory and ethical sphere, the region still needs to make progress in creating clear and effective regulatory frameworks that guarantee the protection of personal data, privacy, transparency, and accountability in the use of AI. However, the absence of these regulations can lead to risks such as data misuse, algorithmic discrimination, human rights violations, and social mistrust of new technologies. Similarly, **economic** and **financial challenges** hinder the implementation of funds for technology development. This is because many sub-Saharan countries face significant budgetary constraints, where they prioritize basic needs, leaving little room to finance projects integrating AI and Big Data into public policy, affecting the scale and permanence of innovative technological initiatives.

Finally, we must take into account the problems with the cultural and social adaptation of these technologies. Many AIS and Big Data solutions are developed in different contexts and sometimes do not fit local characteristics, languages, values, and priorities. It is also important to understand that many rural populations have ancient customs that do not require the support of technological devices. This can reduce the efficiency of technological tools and also generate resistance or mistrust in the target communities.

Taken together, these challenges present a challenging but also motivating landscape for articulating multisectoral and collaborative strategies that promote inclusive, ethical, and sustainable digital development, which will enhance the achievement of the SDGs in Sub-Saharan Africa.

Major countries and organizations involved

South Africa

Considered one of the countries with the greatest technological capacity in Africa, South Africa has developed national strategies for artificial intelligence and digital transformation. It also has a number of universities and research centers that are leaders in data science and technological development. In this context, South African companies are applying AI in areas such as health, mining, agriculture, and financial services.

Nigeria

As Africa's largest economy, Nigeria has shown rapid growth in its technology ecosystem. Notable are AI startups focusing on solutions for fintech, smart agriculture, and big data analytics for government services. The Nigerian government and civil society organizations have been promoting policies to foster innovation and regulate the digital sector in an inclusive manner.

Kenya

Known for its leadership in digital innovation in East Africa, Kenya promotes the adoption of AI to improve education, health, and agriculture. M-Pesa, the mobile payment system, reflects the country's technological innovation. Innovation centers in Nairobi and international partnerships facilitate artificial intelligence projects applied to big data.

Rwanda

Rwanda is emerging as a technology hub in Central Africa thanks to various public policies aimed at digitization and the responsible use of AI. It supports initiatives to integrate big data into health services and SDG monitoring, as well as investing in STEM education and international collaboration.

Ghana and Mauritius

Both countries have implemented national policies to promote the adoption of disruptive technologies such as AI and big data, focusing on priority sectors for sustainable development. They have excelled in training specialized technicians and attracting investment in technological innovation.

Egypt

Located in North Africa and linking the sub-Saharan region with the Mediterranean, this country has developed strategic plans for artificial intelligence, including public investment and cooperation with the international private sector.

African Union (AU)

The AU has established strategic initiatives to drive digital transformation in Africa, one of which is the Digital Agenda 2020-2030, which prioritizes the use of AI and big data for sustainable development, promoting cooperation between African countries, the establishment of regulatory frameworks, and joint projects to expand digital infrastructure.

African Development Bank (AfDB)

As the main financier of development in the region, the AfDB supports technological innovation projects that integrate AI and big data analytics, promoting programs to improve connectivity, technical training, and the creation of business ecosystems that foster inclusive technological development.

United Nations and its agencies

Organizations such as the Economic Commission for Africa (ECA), UNESCO, and the World Health Organization (WHO) promote and finance programs for the use of advanced technologies in SDG monitoring, public health, education, and digital governance within the region.

International Labor Organization (ILO)

Promotes the use of technology to improve working conditions, digital training, and the protection of rights in the digital age.

Possible solutions

Strengthening digital infrastructure

One of the key priorities is to improve the region's technological and communications infrastructure. This includes expanding access to high-speed internet, particularly in rural areas and marginalized communities, and ensuring a stable and affordable electricity supply. To this end, investments in telecommunications networks can be promoted, public-private partnerships can be formed to deploy technological infrastructure, and renewable energies can be explored as sustainable solutions for areas without reliable access to electricity. To achieve this, having robust infrastructure is the first step toward democratizing access to advanced technologies such as AI and big data.

Training and development of human talent

The creation of a qualified workforce is essential for technological development. Investment must be made in STEM (Science, Technology, Engineering, and Mathematics) education from basic to higher levels, with a special emphasis on training in data analysis, AI development, and digital ethics. It is also necessary to promote continuous training and professional development programs to adapt to rapid technological advances. Collaboration with international universities, technical institutions, and online education platforms can expand access to training. This investment will train a new generation of experts to design and manage technological solutions tailored to African realities.

Development of clear regulatory and ethical frameworks

For the adoption of AI and Big Data to be sustainable and generate social trust, it is important to have clear regulations that protect citizens' rights. This involves creating laws and policies that guarantee the privacy and security of personal data, prevent discrimination and algorithmic abuse, and ensure transparency and accountability in the use of automated technologies. Independent oversight mechanisms must also be established, and citizen participation in the formulation of these standards must be promoted. Ethics in AI must be a pillar that prevents negative impacts and promotes comprehensive human development.

Awareness and training in civil society

For technological adoption to be truly inclusive, digital literacy must be promoted among the general population, raising awareness of the benefits, risks, and rights involved in the use of AI and big data. Educational campaigns, community workshops, and accessible materials can empower individuals and communities to actively participate in the design and use of these technologies, preventing digital exclusion and promoting equity.

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