Technology for Development: Sector Applications

AiCE Africanism & Pan-African Studies — Agriculture, healthcare, and education

Agriculture: Feeding Africa with Digital Tools

Agriculture employs approximately 60% of Africa's workforce and generates 25-35% of GDP across many African countries. Transforming African agriculture — increasing yields, reducing post-harvest losses, connecting farmers to markets, improving access to finance and inputs — is the single most powerful lever for reducing African poverty, and digital technology is increasingly central to this transformation.

Precision agriculture — using data, sensors, and AI to optimise farm inputs and timing — has transformed agricultural productivity in wealthy countries. In Africa, the challenge is making precision agriculture accessible to the smallholder farmers who produce the majority of Africa's food, not just to large commercial operations. Hello Tractor in Nigeria has created a 'Uber for tractors' — a digital platform connecting smallholder farmers who need mechanisation with tractor owners who have equipment to rent. Twiga Foods in Kenya has built a digital supply chain connecting smallholder farmers directly to urban retailers, eliminating exploitative middlemen. Aerobotics in South Africa uses drone imagery and AI to help commercial farmers detect crop disease and nutrient deficiency early enough to prevent major losses.

Healthcare: AI Diagnostics in Resource-Limited Settings

Africa's healthcare systems face a chronic shortage of trained medical personnel, expensive diagnostic equipment, and the infrastructure to deliver care to dispersed rural populations. Digital health technology offers possibilities for addressing these gaps that were inconceivable a decade ago.

Zipline's drone delivery network — which began operating in Rwanda in 2016 and has expanded to Ghana, Nigeria, and beyond — has transformed the delivery of blood products and medicines to remote health facilities. In Rwanda, before Zipline, a hospital needing emergency blood could wait hours or days for a road delivery; with Zipline, the wait is reduced to minutes, as a drone flies autonomously to the hospital and drops its

payload within meters of the target. The system has completed hundreds of thousands of deliveries and demonstrably saved lives.

mDoc in Nigeria uses digital health coaches and AI-powered tools to support patients managing chronic diseases — hypertension, diabetes, HIV — who previously fell through the gaps of the formal healthcare system. Flare in Kenya provides a digital emergency dispatch system, connecting callers to the nearest available ambulance in a city where emergency services have historically been unreliable. In Rwanda, an AI-powered symptom checker deployed by Babylon Health has provided millions of health consultations, extending basic health triage to populations far from clinics.

Education: Technology and the Learning Gap

Africa has the world's youngest and fastest-growing population. By 2050, Africa will be home to approximately 40% of the world's children under fifteen. Educating this generation — giving them the knowledge, skills, and critical thinking capacities they need to build the Africa of the twenty-first century — is perhaps the continent's most urgent challenge, and digital technology is both a tool for meeting it and a subject every young African must learn.

The COVID-19 pandemic, which forced school closures across Africa for extended periods, both exposed the inadequacy of digital education infrastructure in most African countries and accelerated investment in solutions. EdTech companies including ULesson in Nigeria, Eneza Education in Kenya, and Snapplify in South Africa have built digital learning platforms designed specifically for African educational contexts — adapting content to African curricula, working with low-bandwidth connections, and ensuring accessibility on affordable devices.

Coding education deserves particular attention. The ability to write software is, in the twenty-first century, one of the most economically valuable skills a young person can acquire. African coding schools — Andela (Pan-African), Moringa School (Kenya), Decagon (Nigeria), WeThinkCode_ (South Africa) — are training a generation of African software engineers who are building African technology companies and working for global technology companies from African cities. This is precisely the kind of human capital investment that breaks the dependency cycle: instead of Africa exporting raw

materials and importing finished goods, Africa exports software engineering talent and imports investment.

Key Takeaways

Digital technology is already transforming three of Africa's most urgent development sectors: agriculture, through platforms connecting smallholder farmers to mechanisation, markets, and diagnostic tools; healthcare, through drone delivery and AI-assisted diagnostics reaching populations far from clinics; and education, through EdTech platforms and coding schools building the next generation of African technical talent. The final lesson in this sequence examines what it will take to build genuine, continent-scale technological sovereignty from these foundations.