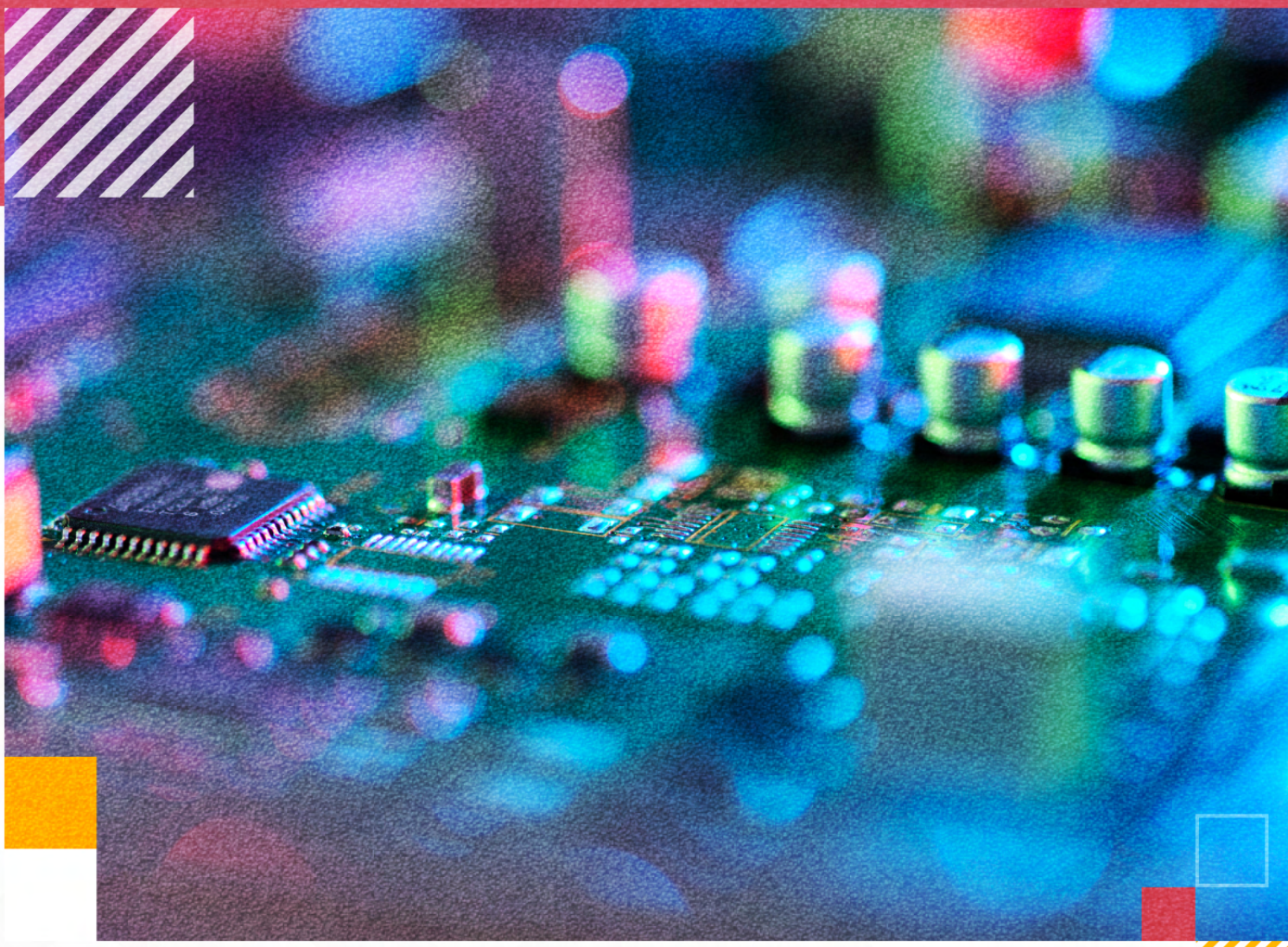
AI in Nigeria

- Opportunities, challenges and strategic pathways



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For more information, visit www.lbs.edu.ng

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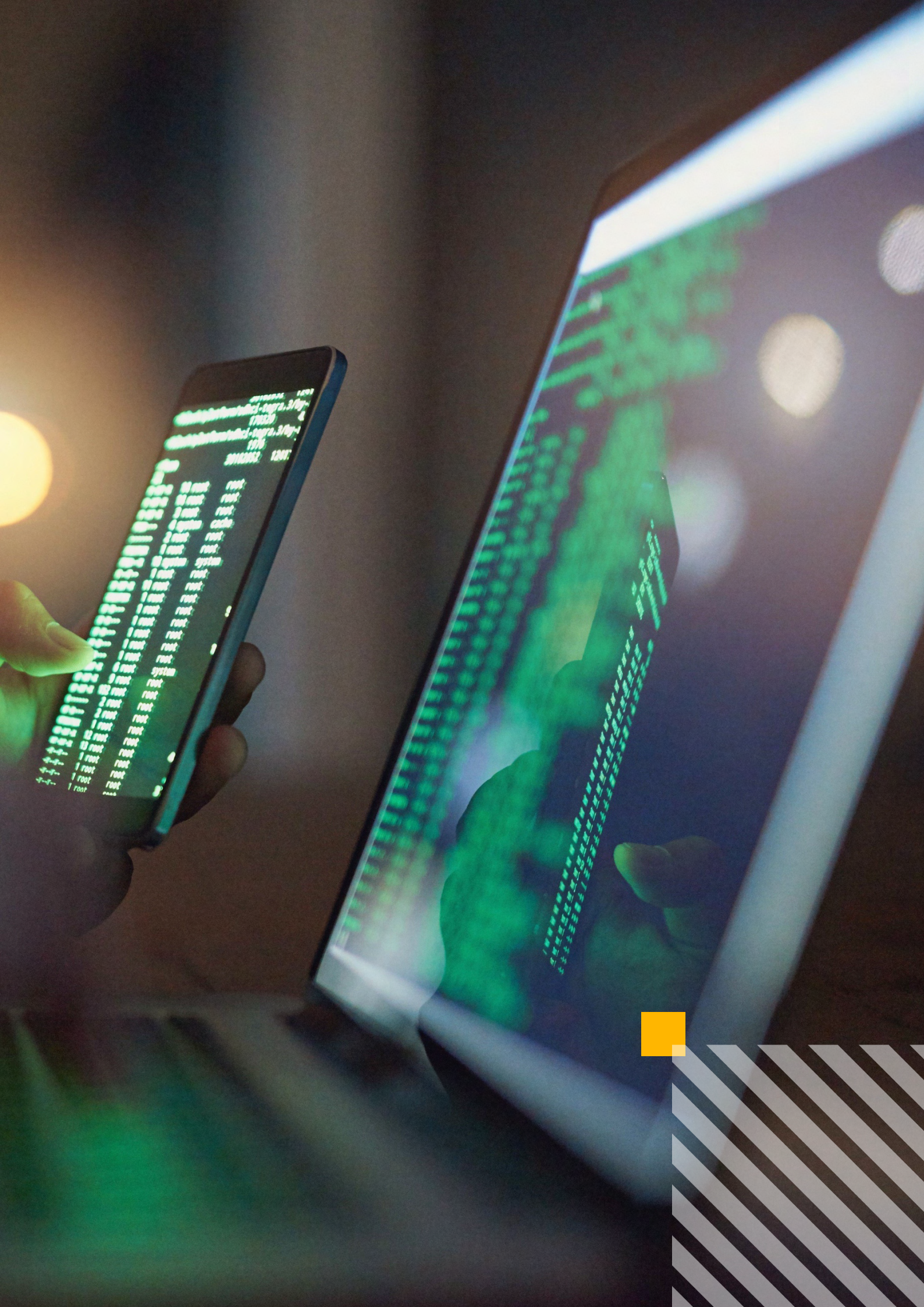


Foreword

With the advent of generative AI solutions, artificial Intelligence has progressed from a notion once considered distant to a significant and influential force positively impacting global industries, economies, and governance. AI is expected to add up to $15.7 trillion to the global economy by 2030, making it one of the most transformative technologies of our time. From tools like OpenAI's ChatGPT to platforms such as High-Flyer's DeepSeek, AI is already reshaping industries—enhancing customer service, accelerating medical diagnostics, and powering smarter decision-making across sectors.

As Nigeria seeks to establish itself as a global digital powerhouse, AI presents a transformative opportunity to enhance productivity, drive innovation, and harness inclusive economic growth. However, to catalyse national development, we must approach AI with strategic intent—leveraging its potential while mitigating its risks, ensuring AI solutions are inclusive and solving social and institutional challenges. Through the collaborative effort of Nigerians in the AI ecosystem, our strategic approach has been articulated in our National Artificial Intelligence Strategy (NAIS) and supported by other initiatives like the National AI Research Scheme (NAIRS) towards enhancing our AI scholarship and evidence, AI Collective, building an ecosystem of academia, civil society and innovators.

While innovative local startups like Ubenwa and uLesson are advancing AI solutions in Nigeria, the broader ecosystem continues to face significant challenges to widespread adoption. Yet, these challenges are far from insurmountable. In fact, several solutions are already underway, offering clear pathways forward:

- Digital infrastructure: Bridging the connectivity gap between rural and urban areas through initiatives like Project BRIDGE, which aims to expand Nigeria's fibre optic network by 90,000 km, and Project 774, which ensures that every local government secretariat benefits from high-speed internet access.
- Skills development: Empowering the next generation through programmes like the Three Million Technical Talent (3MTT) initiative, which has already trained 106,225 learners across its first two cohorts in cutting-edge digital and AI skills.
- Data readiness: Building robust local datasets to train AI models that reflect Nigeria's unique context, with efforts led by innovators like Awarri.
- Regulatory frameworks: Nigeria is developing adaptive and forward-thinking policies, such as the National AI Strategy, to promote innovation while safeguarding public interest.
- Ethical governance: Embedding principles of transparency, fairness, and accountability into every stage of AI development and deployment.

Our government is committed to transforming these challenges into stepping stones for growth. Through strategic investments, collaborative partnerships, and forward-thinking policies, we aim to unlock the vast potential of AI to drive sustainable development, boost economic competitiveness, and uplift every segment of Nigerian society.

This whitepaper is a call to action—a rallying cry for policymakers, researchers, and business leaders to harness the transformative power of AI. Let us move boldly into this new era, building an AI-powered Nigeria that is innovative, inclusive, and unstoppable.

Dr. Bosun Tijani

Honourable Minister of Communications, Innovation and Digital Economy

Introduction

Artificial intelligence is reshaping the global economy, with generative AI (GenAI) marking a significant leap in accessibility and impact. While traditional artificial intelligence has long driven progress in data analysis, automation, and predictive modelling, GenAI represents a significant leap forward in the democratisation of technology. By removing the need for specialised expertise, it enables a broader range of people to access and benefit from powerful tools simply through natural language interaction.

AI is set to revolutionise the global economy, transforming industries, enhancing productivity, and fostering innovation. According to a PwC report, AI is expected to contribute up to $15.7 trillion to the global economy by 2030[1]. Often compared to transformative inventions like electricity and the printing press, AI could reshape how we live, work, and innovate. It's already powering breakthroughs across healthcare, finance, manufacturing, and communication.

AI is expected to contribute up to…

$15.7T

…to the global economy by 2030.

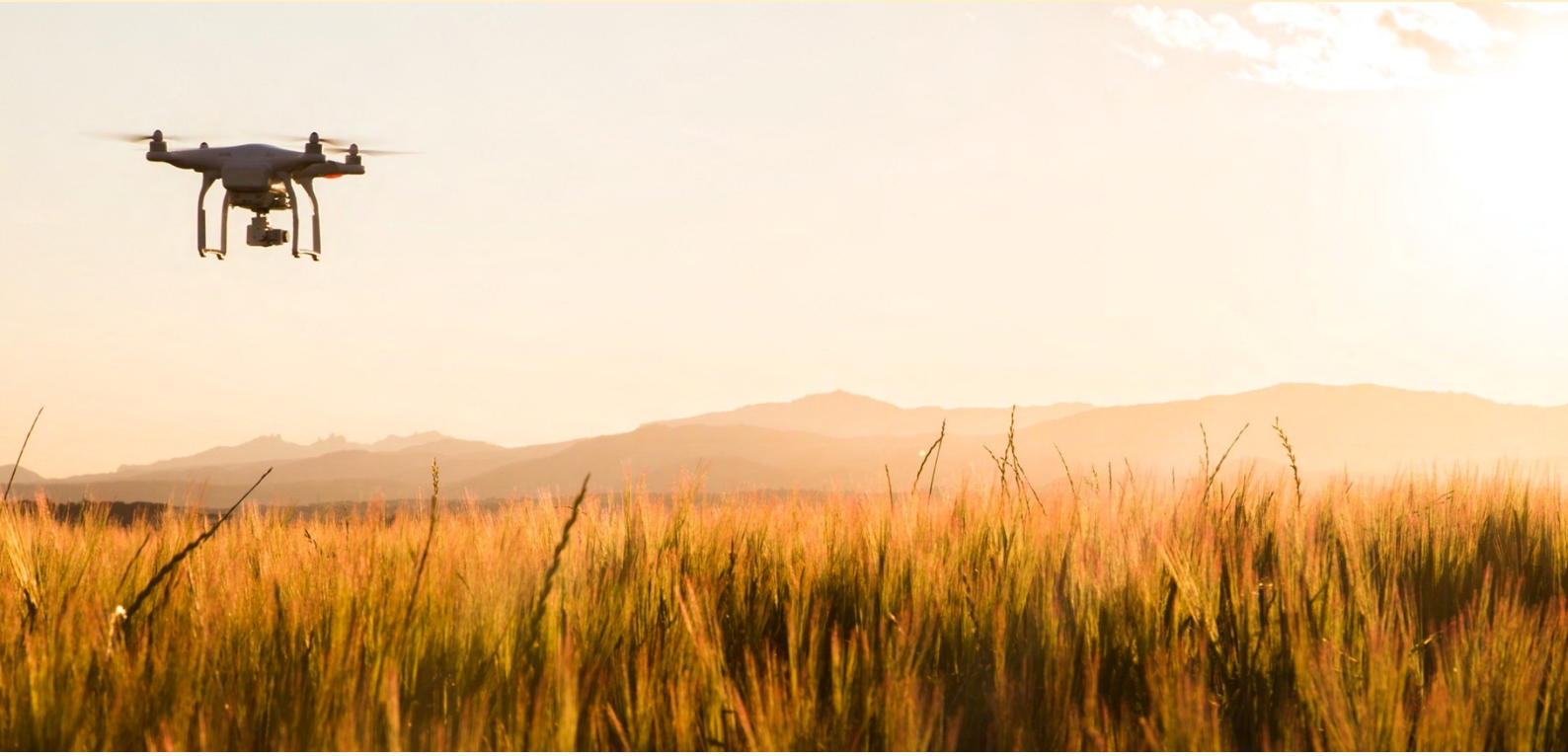
Source: PwC

Beyond industry, intelligent systems are helping address global challenges—enhancing disease detection, improving climate models, and supporting disaster management. Their role in advancing the Sustainable Development Goals (SDGs) is increasingly evident. As noted by UN Deputy Secretary-General Amina Mohammed, when used safely, AI can significantly contribute to achieving SDGs by enhancing decision-making, driving innovation, and optimising various processes[2]. With responsible AI, countries can accelerate progress towards achieving the SDGs and create a more sustainable and equitable future.

In healthcare, AI algorithms are revolutionising practices like medical image analysis and personalised medicine. The finance sector is embracing AI for tasks like fraud detection and algorithmic trading. Countries like Germany, the Netherlands, and Singapore are at the forefront of integrating AI into transportation systems, employing autonomous vehicles and predictive maintenance technologies.

As AI reshapes industries, it also brings significant potential for positive impact on employment. By automating routine tasks, AI allows workers to focus on more creative, strategic, and human-centric roles, thereby enhancing job quality and satisfaction. It also creates entirely new categories of employment in areas such as data science, AI ethics, and digital infrastructure. Generative AI lowers the barrier to entry for many digital roles by enabling people to interact with complex systems using natural language, expanding access to economic opportunities. Countries that invest in AI adoption and workforce upskilling are likely to gain a competitive edge, leading to increased productivity, job creation, and long-term economic growth.

[1] https://www.pwc.com/gx/en/issues/artificial-intelligence/publications/artificial-intelligence-study.html
[2] https://unsdg.un.org/latest/announcements/harnessing-artificial-intelligence-sustainable-development-goals-sdgs



AI adoption in Africa

AI adoption is accelerating across Africa, with countries increasingly integrating intelligent technologies into key sectors to drive innovation and address local challenges like agriculture and climate change Almost half (49%) of AI use cases in Africa focus on the agriculture and food security sector[3]. Notable examples include, South Africa's ITIKI, a drought prediction tool, Kenya's Forest Guard, focused on combating illegal logging, Microsoft AI for Good Lab, which tackles climate change in Africa and PlantVillageNuru, created to help Kenyan farmers recognise diseases in their plants.

In the financial sector, services like South Africa's Mama Money and Kenya-based M-KOPA are adopting AI technologies to enhance security, improve customer experience, and expand access to financial services. Mama Money has integrated AI-powered biometric authentication, including passive liveness detection, to verify customer identities securely and conveniently, supporting safer cross-border transactions and promoting financial inclusion. M-KOPA leverages AI-driven analytics and rich payments data to build individual credit profiles for customers, enabling personalised access to digital loans, affordable data plans, and insurance. These advancements reflect a growing trend in African fintech, where AI is helping to build more inclusive, efficient, and secure financial ecosystems.

49%

…of AI use cases in Africa focus on the agriculture and food security sector

Source: GSMA

[3] https://www.gsma.com/solutions-and-impact/connectivity-for-good/mobile-for-development/wp-content/uploads/2024/07/AI_for_Africa.pdf

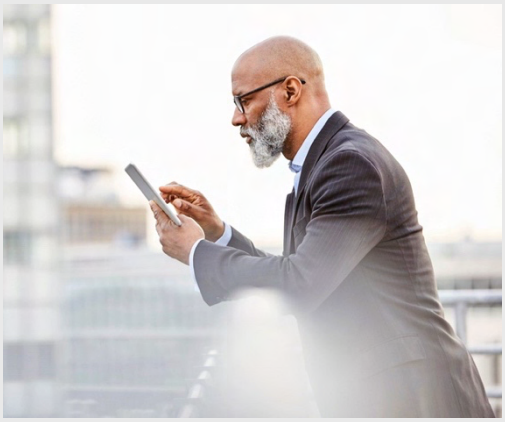
While AI is gaining traction in Africa, its adoption remains relatively slow compared to global counterparts, primarily due to underdeveloped infrastructure, weak governance frameworks, limited data ecosystems, and gaps in STEM education across many countries.

AI adoption in Nigeria

Artificial intelligence remains an emerging field in Nigeria, but recent years have seen a notable shift in awareness, investment, and application. Spurred by global advancements and a growing recognition of AI's transformative potential, Nigerian entrepreneurs, researchers, policymakers and investors have begun to explore how intelligent technologies can address local challenges and drive inclusive economic growth.

The Nigerian government, for example, has launched several initiatives to support innovation and capacity-building. These include the Nigeria Artificial Intelligence Research Scheme (NAIRS) and the National Centre for Artificial Intelligence and Robotics (NCAIR), both of which provide funding, infrastructure, and technical support for AI-driven projects. Most recently, the government unveiled its National AI Strategy, which outlines a vision for leveraging AI to enhance economic competitiveness, promote social inclusion, and position Nigeria as a leader in technological innovation.

The private sector, particularly startups, is also a driving force in Nigeria's AI ecosystem. From healthcare to agriculture, local innovators are deploying AI-powered solutions to improve service delivery, optimise operations, and enhance decision-making. For instance, AI-based diagnostic tools are being developed to expand access to affordable healthcare in underserved communities.



As of February 2025, 10 out of 26 commercial banks in Nigeria have adopted conversational AI to enhance customer engagement and streamline issue resolution. Among the most impactful applications of AI in the financial sector is fraud prevention; a priority area that has seen significant investment from banks in response to the global rise in fraud incidents, to which Nigeria is not immune.

AI has also found applications in sectors such as e-commerce, with services like Bumpa using AI as a personalised business coach to sellers [4], and in agriculture, with services like Kitovu using AI and data-driven agronomic advisory to increase yield, provide personalised soil, and crop health analysis. This integration of AI in traditional industries is driving efficiency and propelling Nigeria towards a more digitally advanced economy. Nonetheless, AI's progression in Nigeria faces its own set of obstacles.

> "Nigeria is still at an early stage of AI adoption, working on infrastructure, connectivity, and skill-building while developing a National AI strategy."
>
> - Dr. Bunmi Ajala, NCAIR

[4] https://www.getbumpa.com/blog/how-bumpa-is-using-artificial-intelligence-to-drive-growth-for-small-businesses-in-nigeria

Overview of AI in Nigeria

AI maturity
Current development stage

Overall maturity level	**Emerging**
AI Readiness Index	**45/100**
Digital infrastructure	**Developing**
AI adoption rate	**25%**

AI use cases
Key application areas

- Fintech
- Security
- Agriculture
- E-commerce
- Healthcare
- Manufacturing
- Education
- Energy

Leading sector - **Fintech**

Fastest Growing - **Agritech**

Infrastructure
Digital & tech foundation

Broadband penetration	**48%**
4G coverage	**84%**
Data centres	**15+**
Cloud adoption	**Growing**

AI talent
Human Capital & Skills

- **800k+** Tech workers
- **50+** AI Startups
- **<10** AI-teaching universities
- Tech hubs - Lagos, Abuja, PH
- Skills gap - High

AI regulation
Policy & governance framework

- **2021:** NITDA AI Framework
- **2023:** Data Protection Regulation
- **2024:** National AI Strategy Draft
- Regulatory status - **Developing**
- Key Regulator - **NITDA**

The statistics presented in this infographic are illustrative estimates based on typical patterns in emerging AI markets and publicly available reports. Some figures represent approximations and projections. For the most current and precise data, please refer to the Endnotes. Data collection methods and definitions may vary between sources.

Challenges of AI Adoption in Nigeria

AI presents many new opportunities and risks. The opportunities are evident in the widespread adoption of AI, increased funding for AI startups, and the benefits reported by businesses using AI. While this technology promises to reimagine many facets of daily life, it also presents a unique set of hurdles that Nigeria must surmount to enhance its AI prowess.

These challenges span across three key dimensions: infrastructure, people, and risks.

Infrastructure

- High cost of infrastructure
- Internet connectivity

People

- Skills
- Public sentiment
- Managing leadership expectations

Risks

- Ethics
- Regulatory challenges
- Data readiness
- Language disparities in LLMs

High cost of AI infrastructure

AI adoption demands significant financial investment in both computational hardware and data storage infrastructure. Hardware like High-performance GPUs (Graphics Processing Units) are essential for training complex AI models, as they provide the computational power needed to process large datasets and perform intricate calculations. However, these GPUs are expensive, making it difficult for many organisations, especially in developing regions, to afford them.

Additionally, storing the vast amounts of data required for AI applications demands extensive storage solutions, which further increases costs. These financial barriers can hinder the widespread adoption of AI, as many entities may struggle to secure the necessary resources to implement and maintain AI technologies effectively.

Internet connectivity

Despite progress, Nigeria continues to face notable connectivity challenges. As of April 2025, the country had a broadband penetration rate of 48.15%, with over 104 million broadband subscriptions[5]. However, internet speeds remain relatively low by global standards. The median mobile internet speed was 46.78 Mbps, while fixed broadband lagged at 27.54 Mbps. Additionally, a 2024 report ranked Nigeria 132nd out of 220 countries in global speed ranking, placing it in the 60th percentile globally, with an average download speed of 27.62 Mbps [6].

These figures highlight persistent infrastructure limitations, particularly in rural areas where internet access is often slower and less reliable. This urban-rural digital divide restricts the ability of many organisations—especially those outside major cities—to fully leverage AI technologies, collaborate globally, or access advanced cloud-based platforms.

[5] https://ncc.gov.ng/industry-statistics
[6] https://bestbroadbanddeals.co.uk/broadband/speed/worldwide-speed-league/

Skills

A major barrier to AI adoption in Nigeria is the shortage of skilled professionals who can navigate its technical complexity. Developing and deploying AI systems requires expertise in areas such as machine learning algorithms, data engineering, and model optimisation—skills that are in short supply locally. This gap is further widened by the emigration of trained professionals, creating a talent vacuum. For aspiring professionals, the steep learning curve and lack of accessible, high-quality training can be discouraging. Together, these factors contribute to a persistent skills deficit that slows the growth of Nigeria's AI ecosystem.

However, initiatives like the Federal Ministry of Communication and Digital Economy's 3MTT (Three Million Technical Talent) program, Microsoft AI Skill Navigator, and other programs are gradually growing the next generation of AI talents and working to fill the skill vacuum. Given Nigeria's substantial youth population, both public and private enterprises have a unique opportunity to fully leverage AI's advantages. By addressing the current gap in advanced data science skills, these enterprises can harness AI's full potential and drive significant progress.

Public sentiment

A common argument is that Nigeria should not prioritise AI adoption, given the country's pressing challenges. However, this perspective overlooks the potential of AI to address these very issues. By leveraging AI, Nigeria can create innovative solutions to its unique problems, rather than simply adopting methods from more developed economies.

One area where AI can make a significant impact is education. Intelligent tutoring systems and personalised learning can help bridge the educational equity gap. Successful examples of AI-driven educational innovations can be seen in Uganda, where AI-powered pro-bono legal education and services are provided to rural communities, and in India, where students using AI-powered personalised learning tools achieved higher scores in Hindi and math [7].

Managing leadership expectations

Securing sufficient resources, such as capital budgets, to sustain data collection can be a hurdle of organisations adopting AI. Business leaders often demand clear and immediate results, but AI implementation requires large data sets and considerable time to develop and refine models. This creates tension around budget approvals, as executives may be impatient and expect quick returns on investment without fully understanding the time-intensive nature of AI projects.

Additionally, the need to keep data accurate and up to date further strains resources, making it essential for organisations to balance short-term expectations with long-term AI development goals. Addressing these challenges requires clear communication about the AI implementation process and its benefits, as well as securing ongoing investment in data management infrastructure.

[7] https://blogs.worldbank.org/en/digital-development/tipping-the-scales--ai-s-dual-impact-on-developing-nations

Ethics and governance

One of the primary ethical concerns is bias in AI systems, which can perpetuate existing social inequalities if they are trained on biased data sets. Ensuring transparency in AI decision-making processes is also crucial, as it enables stakeholders to understand how AI-driven conclusions are reached, thereby building trust and accountability.

Another aspect is data protection and privacy. As AI systems rely on vast amounts of data, often including sensitive personal information, ensuring that this data is safeguarded is vital. Nigeria has taken steps in this direction by establishing the Nigeria Data Protection Regulation (NDPR), which provides guidelines for the collection, processing, and storage of personal data.

Linguistic disparities in LLMs

Majority of Large Language Models (LLMs) are trained using English-based data, resulting in varying levels of performance across languages. This creates a significant disadvantage for non-English speaking countries, limiting their ability to fully benefit from AI advancements. Research shows that LLMs and speech recognition technologies may not benefit all linguistic groups equally, particularly in critical areas like medicine, with current speech recognition supporting only a fraction of the world's over 7,000+ languages[8].

To ensure AI effectiveness in Nigeria, it is essential to refine AI models in local languages. Awarri, a notable example of inclusive innovation, acknowledges the significant gap in Africa's and Nigeria's linguistic diversity, cultural nuances, and indigenous knowledge in AI data models and algorithms. Awarri aims to address this gap by developing essential infrastructure and foundational frameworks, enabling AI to be effectively leveraged and beneficial to the African continent.

[8] https://www.policycenter.ma/publications/ai-and-future-government-unexpected-effects-and-critical-challenges

Regulatory challenges

Nigeria's AI landscape is characterised by a lack of robust regulation, leaving society vulnerable to potential risks of misuse. Currently, AI regulations are fragmented across various regulatory bodies, resulting in confusion, overlap, and a lack of cohesion.

Data readiness

AI systems rely heavily on high-quality data to function effectively, but many organisations in Nigeria struggle with data that is incomplete, outdated, or inaccurate. This poor data quality can lead to unreliable AI models, which in turn produce flawed insights and decisions. Additionally, many institutions and businesses still use unstructured databases, such as text documents and emails, which are not optimised for AI applications. This unstructured data requires significant preprocessing to be useful for AI algorithms, a process that is resource-intensive and requires specialised skills often in short supply.

> One of the challenges we face is getting access to good quality data that's relevant to our context. If we're relying on data from other countries, our AI models are going to be biased. We need more open-source data that's curated here in Nigeria.
>
> - Mr. Mayowa Abejirin, Epoch Zero

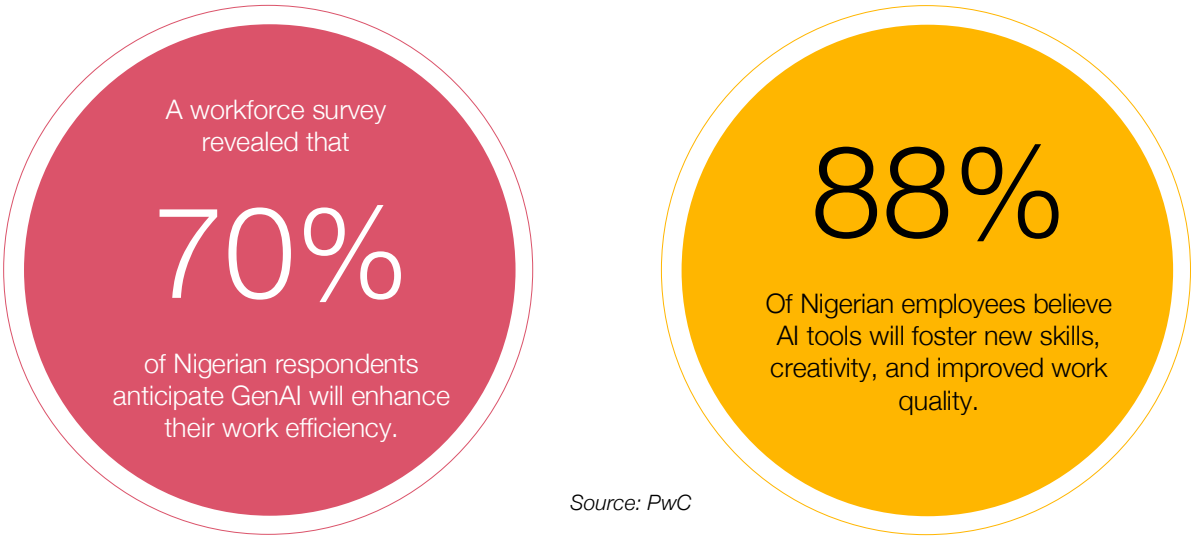
AI and Jobs

The fear of job replacement by AI is widespread, extending beyond Nigeria and Africa, making employees resistant to AI adoption. However, research suggests that AI is likely to complement human work in many cases. Supporting this, a CEO survey found that only 13% of Sub-Saharan organisations adopting AI reported workforce reductions[9].

According to an IMF analysis, AI exposure is expected to be lower in emerging markets (40%) and low-income countries (26%)[10]. While this may mean fewer immediate disruptions, developing economies tend to lack the infrastructure and skilled workforces to harness AI's benefits, potentially exacerbating inequality.

Interestingly, employees using GenAI are experiencing significant productivity gains. A workforce survey revealed that 70% of Nigerian respondents anticipate GenAI will enhance their work efficiency, while 88% believe AI tools will foster new skills, creativity, and improved work quality[11].

For instance, workforces are leveraging tools like Copilot to automate administrative tasks, such as drafting emails, summarising documents, and creating workflows. Additionally, developers utilise Copilot to enhance code quality, streamline code reviews, and ultimately achieve faster development cycles, improved learning outcomes, and increased job satisfaction.



Source: PwC

As AI transforms the job market, workers in AI-exposed roles, such as teaching and IT, may need to acquire new skills to stay relevant. Although jobs in these roles are still growing, they are doing so 27% slower[12]. To support employees, organisations can provide training and upskilling opportunities, helping them see AI as a tool that enhances their capabilities and opens new career paths.

Far from heralding the end of jobs, AI signals the start of a new era in which workers can be more productive and valuable than ever.

[9] https://www.pwc.co.za/en/publications/ceo-survey.html
[10] https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2024/01/14/Gen-AI-Artificial-Intelligence-and-the-Future-of-Work-542379?cid=bl-com-SDNEA2024001
[11] https://www.pwc.com/ng/en/assets/pdf/six-actions-to-build-a-future-fit-workforce-in-nigeria%20.pdf
[12] https://www.pwc.com/gx/en/issues/artificial-intelligence/ai-jobs-barometer.html

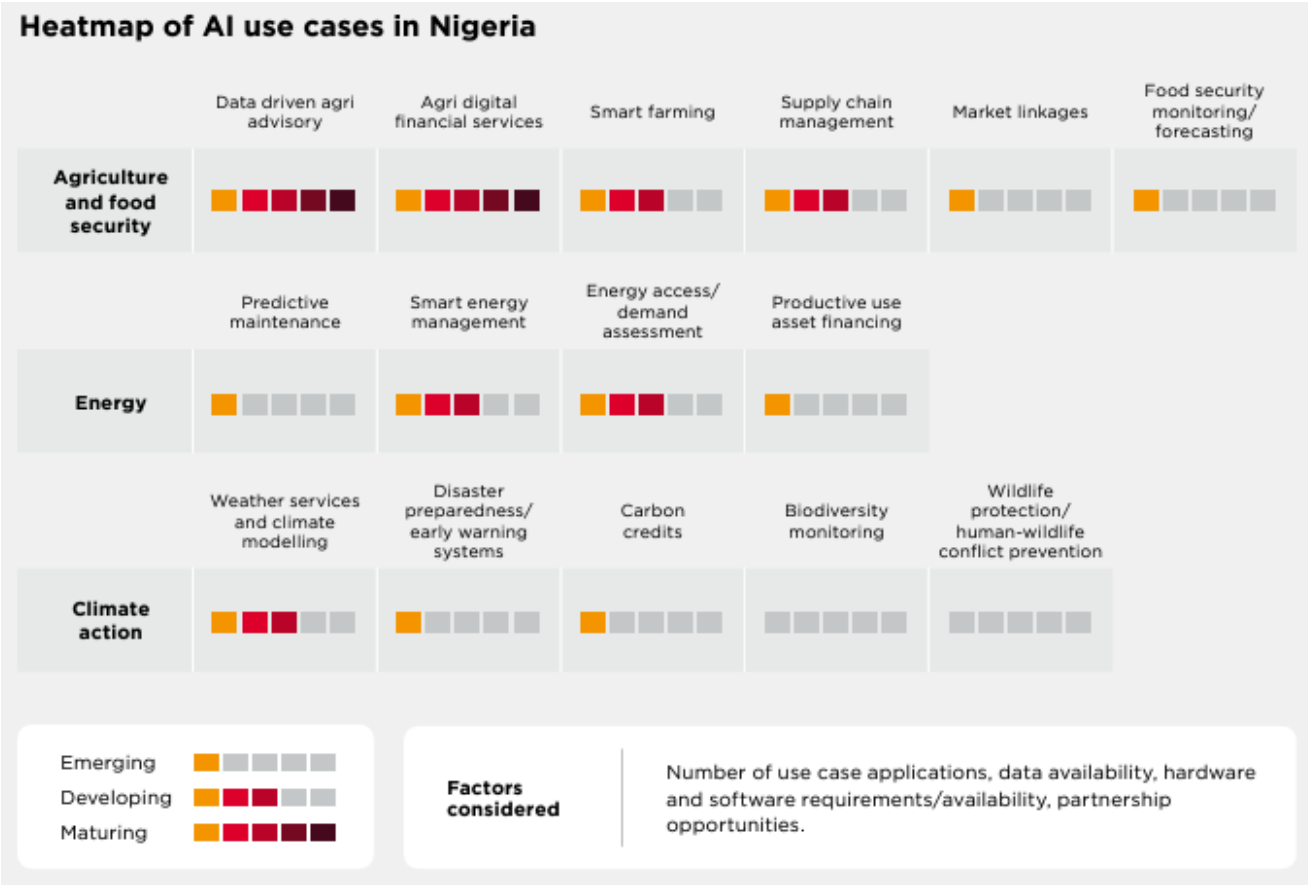
AI enhances productivity and reduces costs by automating tasks under human supervision, particularly in virtual work settings.

- Mr. Iyinoluwa Aboyeji, Future Africa

Opportunities and use cases of AI in Nigeria

Many developed nations have leveraged artificial intelligence to drive growth across various sectors, enhancing industry processes and boosting their economies.

Similarly, AI holds significant potential to accelerate the growth of key sectors in Nigeria's economy. It is crucial for Nigeria to quickly adopt AI technology and begin experimenting with its applications to achieve positive outcomes. Implementing AI could be the most effective strategy to stimulate growth in core sectors and promote rapid digitisation in Nigeria.



Source: GSMA[13]

[13] https://www.gsma.com/solutions-and-impact/connectivity-for-good/mobile-for-development/wp-content/uploads/2024/07/NIGERIA_AIforAfrica.pdf

Agriculture

Agriculture is a key part of Nigeria's economy, contributing 21% of GDP as of Q2 2023. AI can optimise farming practices by providing insights on planting times, crop yield predictions, and climate conditions, helping to drive efficiency and productivity in agriculture.

By automating some farming activities, AI can significantly increase agricultural output. Machine learning algorithms can support crop management and enable precision agriculture. Companies like Crop2Cash and Ignitia use AI to give farmers tailored recommendations based on weather, environmental, and farm-level data. Integrated Aerial Precision (IAPrecision) uses drones and data analytics for precision farming.

Agriculture is a key part of Nigeria's economy, contributing…

21%

…of GDP as of Q2 2023

Other Agritech companies also use AI to improve efficiency across the agricultural value chain. For example, Farmcrowdy uses AI to address inefficiencies in the food value chain, while Hello Tractor uses AI to enhance its farm equipment sharing platform, connecting tractor owners with smallholder farmers.

> AI solves complex problems collaboratively with humans, enhancing fields like healthcare, agriculture, and governance. Collaborations with global organisations leverage AI for social impact.
>
> - Dr. Olubayo Adekanmbi, Data Science Nigeria.

Education

With approximately 18.5 million children out of school[14] and nearly 2 million candidates competing annually for just 700,000 university spots[15], Nigeria's education system must evolve beyond the traditional brick-and-mortar approach and adapt to accommodate this growing number.

AI-powered learning platforms can provide personalised education to students, regardless of their location. AI-driven adaptive learning systems can offer tailored lessons to students sitting at home, helping to bridge the gap in access to quality education. Additionally, AI-powered virtual teaching assistants can support teachers in grading, feedback, and student engagement, freeing up instructors to focus on more hands-on, human aspects of teaching. By harnessing the potential of AI, Nigeria's education system can become more inclusive, effective, and accessible to all.

In Nigerian universities and polytechnics, there is growing application of AI, though many institutions still face challenges related to infrastructure, faculty training, and access to resources. While a few offer AI courses, specialised degree programs, or research opportunities, the quality and availability of these programs vary significantly. Edtechs like uLesson and Edves use AI to create personalised learning and design learning experiences based on student performances. This solves the challenge of using a 'one size fits all' method for all students. uLesson uses tools like Classboard, a digital class assistant, to support teachers in teaching easily with engaging videos, set assessments for learners and grade assessments. Edves provides schools and government agencies with the digital infrastructure to improve learning outcomes.

[14] https://www.africanews.com/2022/05/13/18-5-million-children-in-nigeria-are-out-of-school-unicef/
[15] https://nairametrics.com/2024/09/16/nigerias-universities-can-only-admit-700000-out-of-2-million-annual-applicants-nuc

Key AI applications in education

Personalised learning platforms

AI-driven adaptive learning systems that customise educational content based on individual student progress and learning styles.

Adopters: Nigeria, South Africa, Kenya, Ghana

Language learning & translation

AI-powered tools for multilingual education, supporting local languages and bridging communication gaps in diverse classrooms.

Adopters: Ethiopia, Tanzania, Uganda, Senegal

Intelligent tutoring systems

Virtual tutors providing 24/7 support for students, offering explanations and guidance in core subjects like mathematics and science.

Adopters: Rwanda, Botswana, Morocco, Egypt

Educational analytics

AI systems analysing student performance data to identify at-risk learners and optimise educational outcomes.

Interactive content creation

AI-generated educational content, including interactive simulations, videos, and gamified learning experiences.

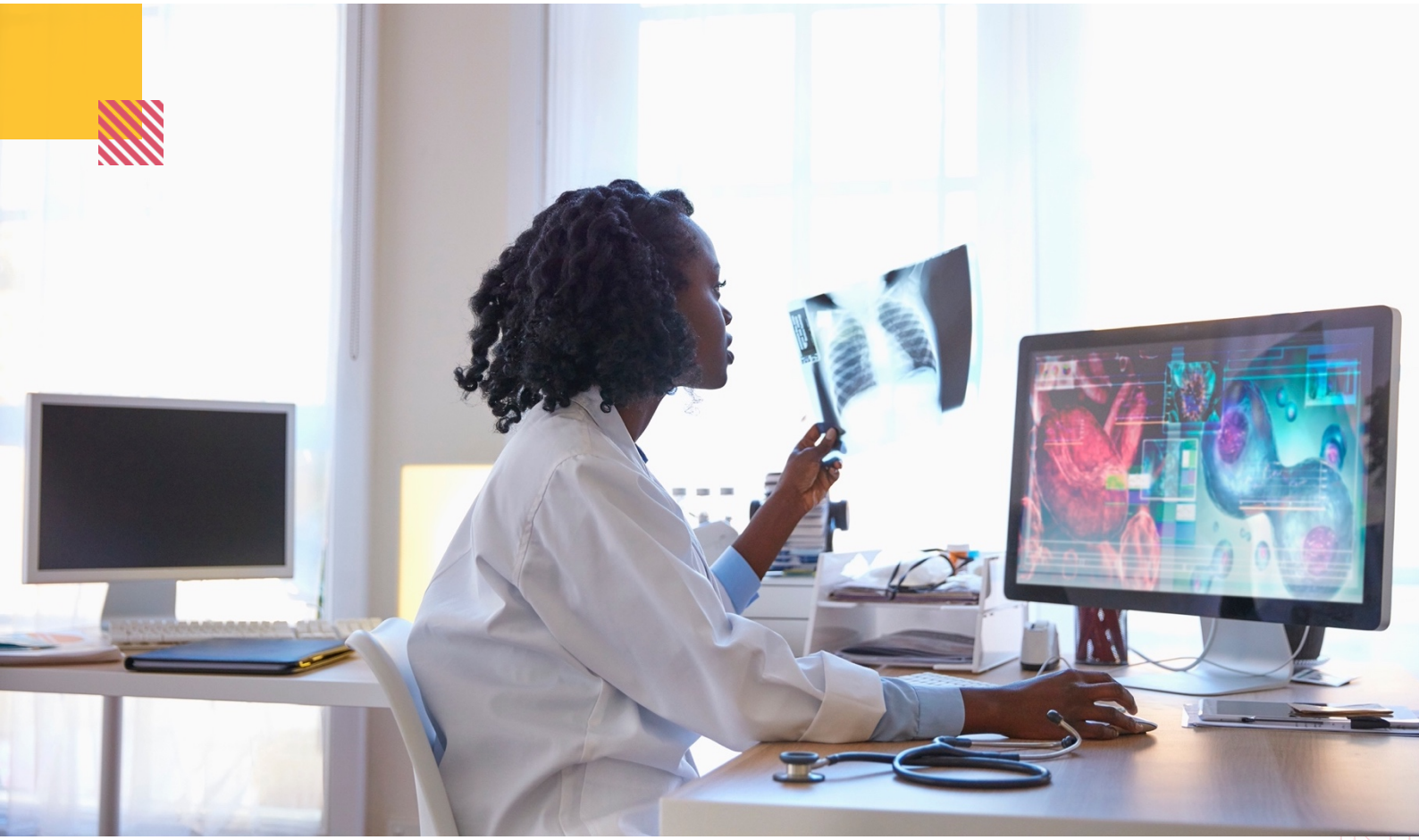
Mobile learning solutions

AI-powered mobile apps delivering education to remote areas, enabling offline learning and progress tracking.

Healthcare

AI technology can offer significant services in the healthcare sector of the Nigerian economy. The implementation of AI technology in healthcare can be used to interpret medical data and make accurate conclusions without direct human input. It can be applied in diagnosis processes, treatment protocol development, drug development, personalised medicine, and patient monitoring and care.

Notably, AI can help alleviate the critical shortage of healthcare workers that Nigeria currently faces, with the country experiencing a significant brain drain and a health worker-to-population ratio far below the WHO-recommended threshold[16]. For example, EpochZero addresses healthcare challenges such as the shortage of radiologists, by training models to identify pathologies. This technology can significantly enhance diagnostic accuracy and speed, ultimately improving patient outcomes and reducing the burden on healthcare professionals. Additionally, the NSIA-Cancer Center at the Lagos University Teaching Hospital created an AI-powered system (Radformation package) for diagnosing breast cancer. The system analyses mammograms using machine learning algorithms to detect early symptoms of breast cancer. The AI system also conducts a treatment plan evaluation to assess and evaluate the level of care provided to each patient.



[16] State of the world's nursing report 2025

Key AI applications in healthcare

Medical diagnostics

AI-powered diagnostic tools for radiology, pathology, and disease detection, particularly for TB, malaria, and HIV.

Adopters: Nigeria, Kenya, South Africa, Ghana, Nigeria

Telemedicine & remote care

Mobile health platforms connecting rural patients with urban specialists through AI-assisted consultations.

Adopters: Rwanda, Uganda, Tanzania, Senegal

Drug discovery & development

AI accelerating research for tropical diseases and personalised medicine tailored to African genetics.

Adopters: South Africa, Egypt, Morocco

Epidemiological surveillance

AI systems tracking disease outbreaks and predicting health trends across populations.

Adopters: Ethiopia, Mali, Chad

Healthcare chatbots

AI-powered conversational agents providing health information and triage in local languages.

Medical imaging analysis

AI analysing X-rays, CT scans, and ultrasounds to detect conditions like pneumonia and fractures.

Adopters: Algeria, Tunisia, Ivory Coast

Finance

Banks and other financial institutions worldwide are incorporating AI solutions into their systems. The financial services industry is in an advantageous position due to the tailwind and maturity from digital banking and payment systems that have been in existence for decades. Financial institutions in Nigeria have applied AI in varying degrees to enhance customer experience through AI-powered customer onboarding, support, and personalised marketing. Additionally, AI is being adopted in risk and portfolio management, including fraud detection and prevention, credit default prediction, and forecasting.

Several Nigerian financial institutions are actively leveraging AI to enhance financial inclusion, improve risk management, and streamline operations. The Alternative Bank uses AI for personalised banking, Renmoney applies predictive analytics to identify high-risk borrowers and reduce loan defaults and Flutterwave integrates AI into its product development process to optimise payment solutions.

Current advances in LLMs for speech synthesis, transcription, and translation for Nigeria's major languages create the potential for significant growth in financial inclusion. The barrier to entry has been lowered by the democratisation of LLMs in platforms like Azure AI Foundry, which offers over 1800 foundational models.

Key AI applications in finance

Digital payments & mobile money

AI-powered fraud detection, transaction optimisation, and personalised payment experiences through mobile platforms.

Adopters: Nigeria, Kenya, Tanzania, Uganda, Ghana

Credit scoring & risk assessment

AI algorithms analysing alternative data sources to assess creditworthiness for the unbanked population.

Adopters: Nigeria, South Africa, Morocco, Egypt

Chatbots & customer service

AI-powered conversational interfaces providing 24/7 banking support in local languages.

Fraud detection & security

Machine learning models identifying suspicious transactions and preventing financial crimes in real-time.

Adopters: Kenya, Nigeria, South Africa, Ethiopia

Robo-advisory & investment

AI-driven investment platforms providing automated portfolio management and financial advice.

Adopters: South Africa, Egypt, Tunisia, Morocco

Digital banking platforms

AI-enhanced digital-only banks offering personalised services and seamless user experiences.

Adopters: Nigeria, Kenya, Ghana, Zimbabwe

Currency exchange & remittances

AI optimising cross-border payments and currency exchange rates for diaspora remittances.

Adopters: Senegal, Mali, Ghana, Nigeria

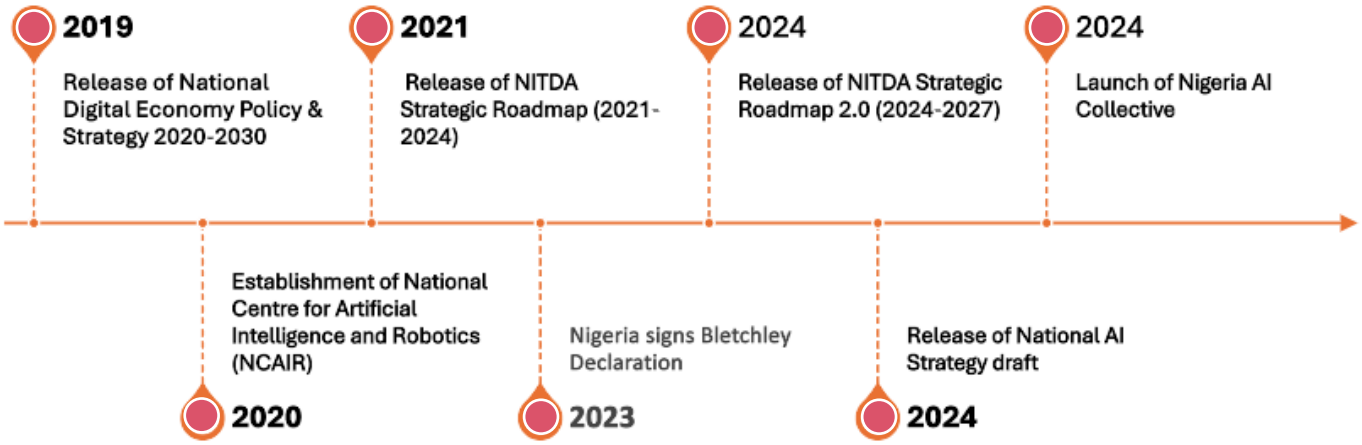
AI mimics human intelligence using machine learning and big data. It plays a significant role in banking for fraud management, customer understanding, and efficiency improvement.

- Mr. Fatai Tella, The Alternative Bank.

AI policies and regulations in Nigeria

Regulation in Nigeria has not yet caught up with the rapid advancements in AI. While there have been efforts to establish regulatory frameworks, these attempts are often fragmented, existing as isolated provisions within various sectors rather than as a cohesive, overarching law. The most comprehensive effort to date is the National Artificial Intelligence Strategy (NAIS), which remains in draft form and has yet to be fully implemented.

AI regulation efforts in Nigeria



Source: PwC

While there isn't a specific AI law yet, various sectors and industries are addressed through existing regulations and guidelines. A non-exhaustive list of key examples include:

- The Cybercrimes (Prohibition, Prevention, etc.) Act, 2015
- The Nigeria Data Protection Act, 2023
- The Security and Exchange Commission (SEC) Rules on Robo-Advisory Services
- The Federal Competition and Consumer Protection Act, 2018
- The Copyright Act, 2022
- The Nigerian Communication Commission Act, 2003

As Nigeria continues to await comprehensive AI regulation, there is a risk that the rest of the world will advance, leaving the country behind. Additionally, in the absence of federal regulation, individual state governments may begin to develop their own AI policies. This could lead to a patchwork of regulations, further complicating the landscape and potentially hindering the growth and integration of AI technologies across the nation.

> We're seeing a lot of excitement around AI startups in Nigeria, but regulation is evolving. Hopefully, in the next 3-5 years, we'll see a more robust framework in place.
>
> - Mr Dotun Adeoye, AI in Nigeria

Evaluating Nigeria's National AI Strategy

Nigeria's National AI Strategy (NAIS) is a crucial step towards harnessing the potential of Artificial Intelligence to drive economic growth, improve governance, and enhance citizen well-being. While the strategy provides a comprehensive framework for AI development, further consideration could be given to certain areas to ensure effective implementation.

Ethics and governance framework

A clear framework for AI ethics and governance will further guide responsible AI development and deployment. For instance, countries like Brazil and India have established robust guidelines for AI ethics and governance. Brazil's AI Strategy (2021) emphasises the importance of ethics and governance in AI development, highlighting the need for transparency, accountability, and respect for human rights. Nigeria's strategy will benefit from having a comprehensive framework that ensures the ethical development and deployment of AI technologies. This can be achieved by establishing responsible AI principles that are designed to mitigate risk, promote ethical practices and maximise the benefit of AI for society.

Metrics, measurement and evaluation frameworks

Specific, measurable goals and metrics to track progress and evaluate success are key for continuous improvement. For instance, countries like Brazil, India and Singapore have established clear targets and indicators for their AI strategies, enabling them to monitor progress and continuously improve as required. Identifying clear metrics and establishing a robust measurement and evaluation framework for Nigeria's Strategy ensures that AI initiatives are effectively tracked, assessed and optimised, leading to better outcomes and more efficient use of resources.

Addressing potential job displacements

There are numerous concerns around job loss and displacement with the advent of AI, which has the potential to negatively impact AI adoption and fuel anxiety in the Nigerian labour market. Countries like Germany and Japan have established programs to support workers who may be displaced by AI, such as retraining and upskilling initiatives. A comprehensive approach that focuses on how AI enhances human capabilities should be deployed, including reskilling and upskilling programmes, promoting AI-human collaboration and equitable access to AI resources.

Considerations for an AI Data Centre

The cloud is the critical infrastructure behind AI as training AI models requires both large datasets and AI-optimised cloud computing infrastructure. Cloud-based AI platforms make it easier for organisations to develop their own AI applications. Cloud computing resources provide organisations of all sizes with a cost-effective way to run and scale AI innovation. Enabling public cloud access is essential for democratisation of AI because it provides the infrastructure and resources needed to ensure universal access to AI technologies.

Nigeria will benefit strongly from enabling strong partnerships to drive data centre infrastructure investments in the country. While the NAIS acknowledges the importance of data centres, the approach to attracting investment and establishing infrastructure should be approached collaboratively. The government could leverage the digital public infrastructure framework to strengthen public-private partnerships and drive infrastructure investment.

Benefits of AI to the Government

AI solutions built on local data can yield numerous benefits for the government, especially in enhancing service delivery to citizens. Some of these benefits include:

Enhanced tax collection:

AI can improve the efficiency and accuracy of tax collection by identifying tax evasion and fraud more effectively. By analysing large datasets, AI can detect patterns and anomalies that may indicate underreporting or other tax-related issue.

For example, in Ceará, Brazil, the finance department implemented the HMX Tax Intelligence System (TIS) to enhance tax compliance monitoring among retail vendors. The system processes over 2.5 million transactions daily from more than 60,000 point-of-sale devices operated by 36,700 vendors. Using AI, it analyses digital sales receipts to identify potential errors and tax avoidance, providing detailed explanations for compliance issues.[17]

Improved ease of doing business:

AI can provide valuable insights on market trends, potential customers, and other business-related information, making it easier for businesses to start, operate and grow.

Smart traffic management:

AI can recommend optimal routes and manage traffic flow more efficiently. Cities like Singapore and Los Angeles already have smart traffic management systems that use AI to reduce congestion and improve traffic conditions.

Housing recommendations:

AI can analyse data on budgets and proximity to destinations to recommend suitable housing areas for students and the workforce. To facilitate this, the government would need to establish a body to collate and regulate real estate data.

Strengthened public safety and national security:

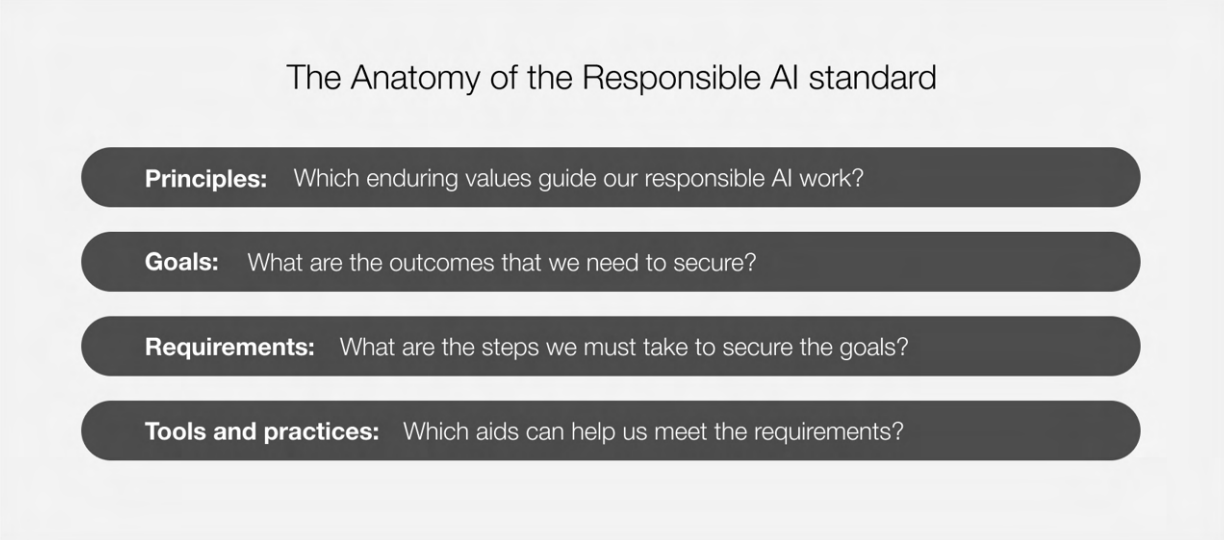
AI can rapidly analyse intelligence data and identify potential risks, helping federal agencies stay ahead of emerging threats and protect the nation.

AI can also help generate revenue for the government through enhanced tax collection; by analysing large datasets, AI can detect patterns and anomalies that may indicate underreporting or other tax-related issues. Additionally, governments could generate revenue by monetising anonymised and aggregated data collected from various sources. However, this practice raises ethical questions about whether the individuals whose data is being used should be notified, given the option to consent, and informed about the results.

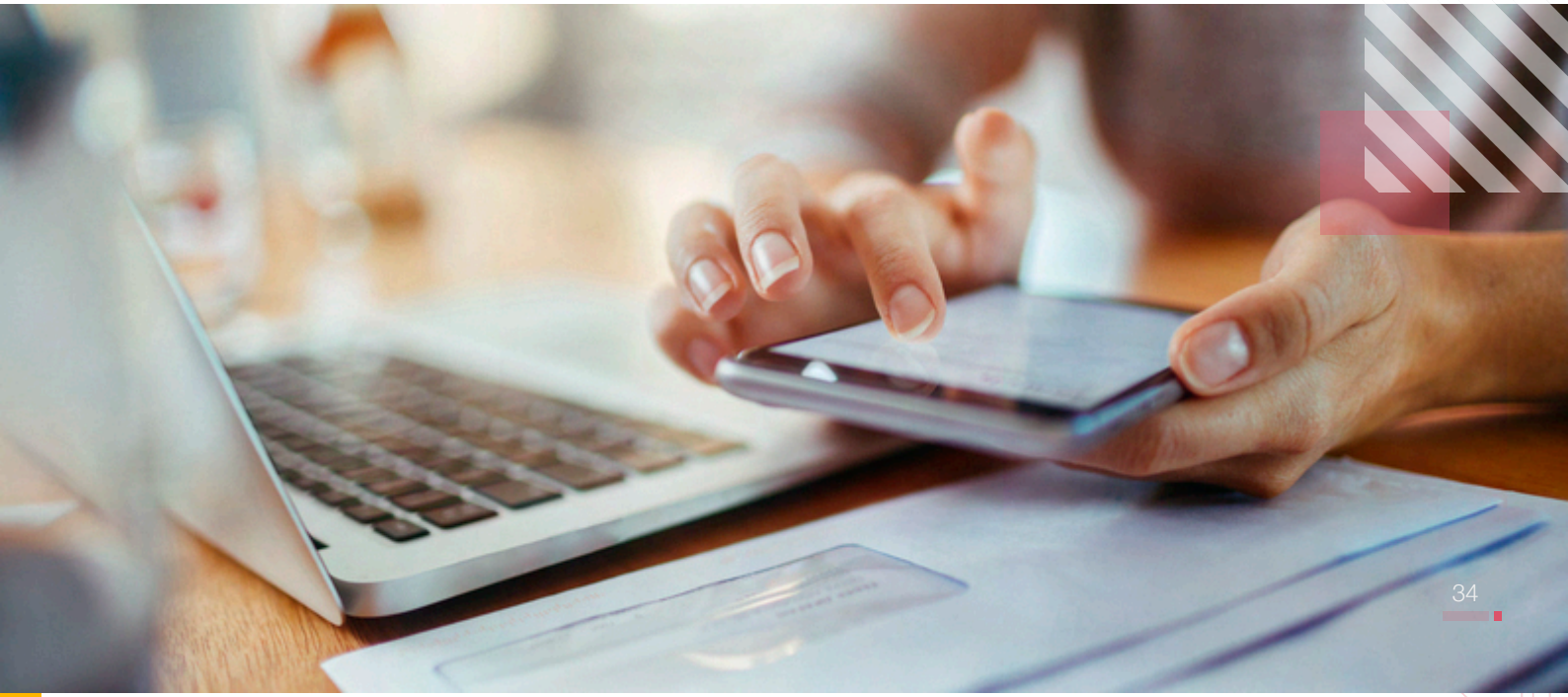
[17] https://www.microsoft.com/en-us/industry/blog/government/2025/01/28/cloud-and-ai-are-shaping-the-future-of-tax-administration-in-5-essential-ways/

Responsible by design: Building trustworthy AI systems

There are several reasons to be excited about generative AI, starting with its power and ease of use. But, as with any emerging technology, there are also potential new risks. Some of these risks may come from internal use, others from malicious actors. To manage both kinds of risks and harness generative AI's power to drive sustained outcomes and build trust, responsible AI is essential.



Source: Microsoft

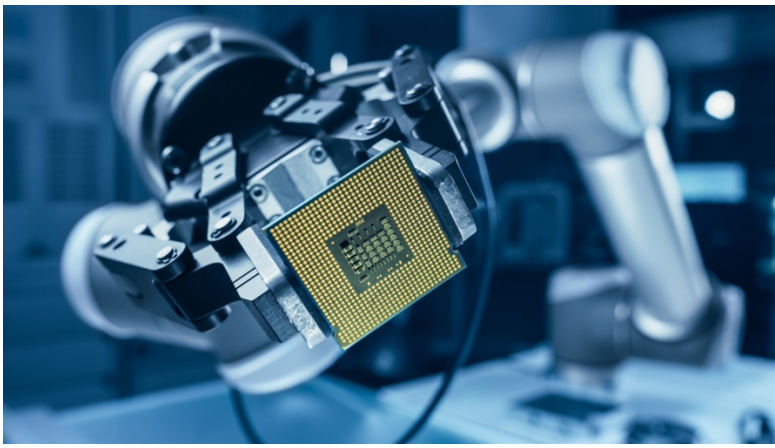


Generative AI can create software code, data analysis, texts, videos, human-like voices, and more with simple commands. This technology is transforming functions, business models, and industries, boosting productivity, supporting decision-making, and reducing costs.

Despite its benefits, generative AI is not perfect. Its outputs often require verification and modification, and it can produce irrelevant, inaccurate, or offensive content. New cyber risks, such as deep fakes, are also emerging. As generative AI becomes more accessible, these risks may become more widespread, especially among users unfamiliar with AI models.

Responsible AI can help manage these risks and build trust in AI systems. It addresses both application-level risks, like performance and security, and broader risks, such as compliance and misinformation.

If there's a golden rule for responsible AI (and trusted technology in general), it's this: It's better to implement trust and ethics by design from the start rather than racing to close gaps after systems are up and running. Effective responsible AI should be integral to every AI strategy.



PwC's Responsible AI Toolkit

Strategy

Data & AI Ethics
Consider the moral implication of uses of data and AI and codify them into your organization's values.

Policy & Regulation
Anticipate and understand key public policy and regulatory trends to align compliance processes.

Control

Governance
Enable oversight of systems across the three lines of defense.

Compliance
Comply with regulation, organizational policies, and industry standards.

Risk Management
Expand transitional risk detection and mitigation practices to address risks and harms unique to AI.

Responsible Practices

Interpretability & Explainability
Enable transparent model decision-making.

Sustainability
Minimize negative environmental impact and empower people

Robustness
Enable high performing and reliable systems.

Bias & Fairness
Define and measure fairness and test systems against standards.

Security
Enhance the cybersecurity of systems.

Privacy
Develop systems that preserve data privacy.

Safety
Design and test systems to prevent physical harm.

Core Practices

Problem Formulation
Identify the concrete problem you are solving for and whether it warrants an AI/ML solution.

Standards
Follow industry standards and best practices.

Validation
Evaluate model performance and continue to iterate on design and development to improve metrics.

Monitoring
Implement continuous monitoring to identify drift and risks.

Recommendations

Encourage digitisation across sectors:

To fully harness the potential of AI, Nigeria must prioritise digitisation across sectors, generating a comprehensive dataset to drive innovation. Encouraging a digital-first mindset by promoting digitisation at the tertiary level can yield significant benefits. For instance, making it mandatory for students to digitise projects or materials can provide sectors with innovative solutions to pressing challenges.

Extending digitisation efforts beyond tertiary institutions to other sectors can further enhance data accessibility and management. This can involve incentivising businesses, healthcare providers, and government agencies to digitise their operations and data.

Collaborate with corporate bodies on sensitisation among professionals:

Partnering with professional bodies such as the Institute of Chartered Accountants of Nigeria (ICAN), The Nigerian Medical Association (NMA) etc., can help raise awareness and understanding of AI among professionals. These collaborations can include workshops, seminars, and training sessions that highlight the benefits and applications of AI in various industries. Through these collaborations, each sector can address the concerns and misconceptions surrounding AI, helping to alleviate fears about job displacement and foster a more positive, informed understanding of its benefits.

Make AI courses free on online platforms:

Providing free access to AI courses on online learning platforms can democratise AI education. This initiative would allow a broader audience to gain essential AI skills, regardless of their financial background. By removing financial barriers, the government can foster a more inclusive and skilled workforce capable of leveraging AI technologies.

Include AI in school curricula:

> Integrating AI into the school curriculum from an early age can empower students with essential skills and knowledge for the future workforce. While pursuing ambitious initiatives like integrating Coding and Robotics into tertiary education, the government can also explore smaller-scale yet high-impact projects, such as educating students on AI literacy, including effective AI tool usage, prompt engineering, and AI-facilitated research skills

Encourage AI adoption and education at the government level:

> Government support is crucial for the widespread adoption of AI. This can include creating policies that promote AI research and development, providing funding for AI initiatives, and ensuring that public sector employees are trained in AI applications. Additionally, the government can lead by example by implementing AI solutions in public services, demonstrating the practical benefits of AI to the broader community. This ensures that the government is knowledgeable about what they plan to regulate.

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