
ECONOMIC RESEARCH / AFRICA / 2035

Africa's AI Economy 2035

How Artificial Intelligence Will Reshape Economic
Growth, Employment, Productivity, and
Development in Africa

Research at NuvoAI / Gideon Ogunbanjo

AFRICA-WIDE ANALYSIS / NIGERIA QUANTITATIVE CASE STUDY

Abstract and publication note

Artificial intelligence could change Africa's development trajectory through better decisions, lower coordination costs, new services, and changes in the tasks performed by workers. Its economic contribution will depend on effective adoption, the availability of complementary inputs, and the institutions that distribute gains. This paper examines those mechanisms across the continent, including North Africa, rather than treating a single country as a proxy for Africa.

The study combines a structured review of primary institutional and research sources, a comparable eight-country connectivity snapshot, sectoral economic analysis, and a transparent Nigeria-only accounting exercise. It distinguishes observed statistics, external conditional estimates, the author's analytical propositions, and illustrative model outputs. It does not estimate a continent-wide causal GDP effect or a net employment forecast.

The evidence points to a practical development agenda: strengthen electricity and connectivity, support adoption within ordinary firms and agricultural systems, build skills and local-language evaluation, and retain more income through domestic services, supplier capabilities, and research. Lower occupational exposure in poorer economies should not be mistaken for economic protection: those economies may also have fewer opportunities to capture productivity gains.

Nigeria is one clearly bounded quantitative case study. Using verified 2024 NBS constant-price sector weights and inherited illustrative parameters, its 2035 GDP level rises by 0.762004%, 3.145896%, or 8.886976% above a hypothetical baseline. These outcomes are mechanically reproducible, but their adoption, productivity, and realization parameters are not empirically validated. They carry no assigned probabilities and cannot be extrapolated to Africa.

Status, authorship, and scope

Authors: Research at NuvoAI and Gideon Ogunbanjo. Publisher: NuvoAI. Publication date: 9 October 2026. Classification: research working paper and conditional scenario analysis. Horizon: 2026-2035; the numerical case uses 2025 = 100 and ten compounding intervals to 2035.

The requested title uses "will" to describe the subject of inquiry. The paper's substantive conclusions are conditional. This publication makes no claim of external peer review, official statistical endorsement, or validated forecasting performance. References were accessed on 8 October 2026. No new firm or household survey was conducted.

RESEARCH / THE DEVELOPMENT QUESTION

Executive findings

Turning useful intelligence into productive value.

AI can support economic development when access becomes sustained adoption, adoption creates net productivity gains, and those gains improve incomes and services. These links are the paper's analytical framework, not an estimated causal relationship.

01

Productive use

Economic gains require useful tasks, complementary inputs, and sustained adoption.

02

Unequal starting points

Countries and firms face different access, skills, energy, and investment constraints.

03

Changing work

Exposure describes potential task change; it does not predict jobs lost.

04

Local capabilities

Integration, applied research, evaluation, and supplier networks can retain more value.

THE DEVELOPMENT MECHANISM



Each link must be tested. Availability alone does not establish adoption, net productivity, or household gains.

Diagram 1. Development mechanisms and research priorities. Author synthesis. Nigeria's numerical scenarios remain a separate, illustrative case study; no continental GDP forecast is inferred.

Contents and reading guide

Section	Page
Executive findings	3
1. Research questions and analytical scope	5
2. Methodology and evidence standards	6
3. Africa's economic and digital baseline	7
4. Comparisons among African economies	8-9
5. Productivity and economic growth	10
6. Employment, tasks, and distribution	11-12
7. Agriculture and food systems	13-14
8. Industry, mining, and logistics	15
9. Services, finance, and small businesses	16
10. Human capital and public services	17
11. Effective AI access and infrastructure	18
12. Domestic value capture and regional scale	19-20
13. Governance, competition, and investment	21
14. Africa's alternative pathways to 2035	22
15. Nigeria: illustrative quantitative case study	23-26
16. Limitations, research agenda, and conclusion	27-28
Appendix A. Reproduction and audit	29
References	30-31

Numbered bracket citations identify entries in the references. Tables and figures label the geographical scope, reference year, and evidence status. Country opportunities are analytical propositions unless explicitly described as observed outcomes. The Nigeria calculations are fully specified in the case study and Appendix A.

1. Research questions and scope

Africa's AI economy is an economic system, not simply a technology sector. Farmers, manufacturers, traders, public agencies, financial institutions, and service exporters can all use AI without building foundation models. The development question is whether these uses increase real value added and welfare once costs, failures, and distributional effects are included.

This paper asks four questions. Through which mechanisms could AI affect productivity and growth? How might it alter jobs and the distribution of earnings? What makes economically useful AI accessible to African firms and households? And which domestic capabilities would allow African economies to retain more of the income generated by adoption? These questions connect technology policy to agriculture, industrial upgrading, human capital, and regional integration.

A continental scope with distinct statistical geographies

Africa here includes Northern, Western, Central, Eastern, and Southern Africa. Sources differ in coverage: World Bank Africa-region analysis generally concerns Sub-Saharan Africa; ITU's statistical Africa region is not identical to the full continent, with many North African countries classified under Arab States. Neither aggregate is silently relabelled as a continent-wide statistic. North African economies enter the comparison explicitly through Morocco and Egypt. DR Congo adds a Central African perspective; Kenya and Rwanda represent contrasting East African conditions; Ghana and Nigeria provide West African examples; South Africa represents a Southern African comparison.

These countries were selected to expose differences in market scale, access, and plausible sectoral channels, rather than to estimate a representative continental average. The selection excludes many important contexts, including small island economies, much of the Sahel, and countries affected by war. Regional synthesis therefore discusses conditions and mechanisms, not a universal country ranking or one uniform adoption timetable.

Technology and outcomes

AI includes prediction and classification systems, computer vision, language technologies, generative tools, and decision support. These technologies have different capital requirements and risk profiles. An agricultural forecasting system and a generative office assistant should not be assigned the same adoption curve. A robot also needs machinery, maintenance, and safety systems; a language tool may need relatively little new physical equipment but substantial organizational change.

Real GDP, output per hour, employment, household welfare, and domestic income are separate outcomes. Higher output can coexist with fewer jobs in a firm, unchanged wages, or profits accruing abroad. Throughout the paper, productivity possibilities are evaluated against these broader development objectives. The contribution is an integrated economic framework and auditable case study, not a claim to have measured Africa's total AI dividend.

2. Methodology and evidence standards

The research design has four components: a structured source review; a harmonized country connectivity comparison; sector-by-sector mechanism analysis; and a bounded conditional accounting model. Searches prioritized official statistics, multilateral publications, and original research papers. Material was checked against publisher pages and, for the Nigeria weights, the source PDF table. The search was purposive, not a registered systematic review; no claim of exhaustive coverage is made.

Selection, extraction, and classification

Sources were included if they documented an economic mechanism, a comparable development constraint, a policy framework, or an explicitly identified scenario. Institutional outlooks retain their publication date and forecast status. Older diagnostics are used for structural context, not presented as 2026 measurements. An external field study illustrates a mechanism without calibrating Africa-wide effects. Commercial estimates are treated as scenarios, with author and uncertainty visible.

Evidence is classified as: observed or estimated historical data from statistical systems; external outlooks and exposure estimates; author analysis of mechanisms and policy choices; or illustrative assumptions and calculations. The Nigeria parameters belong to the last category, except the source sector weights. Mathematical verification establishes calculation correctness, not empirical validity.

Comparable country data

The country chart uses World Development Indicators series IT.NET.USER.ZS, sourced to ITU, for all eight countries in the same year, 2024 [5]. Values were retrieved through the World Bank API on 8 October 2026; the response reports a last update of 13 July 2026. We retain the unrounded values in the reproduction package and display one decimal place. No interpolation, population weighting, or imputation is applied. Internet use is a contextual prerequisite indicator, not a measure of AI adoption or reliable workplace connectivity.

Accounting design and identification limits

The Nigeria model applies sector weights to the product of effective adoption, adopter productivity gains, and a realization factor. A common baseline growth rate deliberately fixes sector composition. Annual trajectories use a transparent linear interpolation of the terminal uplift. Sensitivity tests vary parameters mechanically; they are not probability intervals. The model contains no econometric estimation, causal identification, general-equilibrium closure, or out-of-sample forecast validation.

A causal follow-up would require longitudinal firm and worker observations, credible counterfactual groups, and net cost measurement. Randomized or phased implementation could estimate changes in value added per hour, job transitions, and household earnings. The current review instead identifies hypotheses and measurement priorities, while explicitly avoiding false precision in continent-wide estimates.

3. Africa's economic and digital baseline

The World Bank's 6 October 2026 Africa Economic Update release projects Sub-Saharan African growth of 4.3% in 2026, against 4.1% in 2025, and describes continued pressure to turn growth into sufficient jobs [1]. These are dated regional outlook figures, not observed outcomes for the entire continent. They establish the macroeconomic context rather than an AI-attributable growth baseline.

A stronger aggregate growth rate does not establish that productivity is increasing across small firms or that young people are entering stable employment. A useful AI strategy must connect adoption to the economic constraints faced by enterprises: working capital, power, transport, input supply, management, and demand. An automated process can save time without increasing sales if buyers lack income or production is constrained elsewhere.

Indicator	Value / period	Scope and interpretation
Real GDP growth outlook	4.3%, 2026	Sub-Saharan Africa; World Bank forecast, not an AI effect [1]
Internet use	38%, 2024	ITU statistical Africa region; rounded estimate [2]
No electricity access	565 million, 2023	Sub-Saharan Africa; historical access estimate [3]
Not using mobile internet	63%, 2025	Africa; GSMA estimate, not exclusively the covered-but-offline population [4]
Mobile contribution to GDP	\$240 billion, 2025	Africa; GSMA economic contribution estimate, not AI-specific output [4]

Table 1. Economic and digital context. These indicators have different denominators, methods, and reference years. They are not combined into an index or added together.

The development meaning of the gaps

Connectivity, electricity access, and productive use are distinct. A household can have a mobile signal but lack a suitable device or funds for data. A firm can have an electricity connection but experience interruptions that make equipment unreliable. A manager can subscribe to an AI tool without integrating it into procurement, accounts, or quality control. None of these indicators alone measures the capacity to turn AI into output.

The mobile economy estimate includes a broader set of direct and indirect effects than the production of AI services. It cannot be added to the Nigeria scenario results or cited as evidence that AI already accounts for that value. Similarly, people outside mobile internet use include different combinations of affordability, literacy, relevance, and coverage barriers. Treating the whole non-user population as a pure usage gap would misstate the evidence.

4. Country comparisons: access conditions

A common reference year shows substantial variation among the selected economies. The comparison includes North Africa and Central Africa, making the geographical scope broader than a Sub-Saharan regional average. The figures are estimates of individuals using the internet; they do not measure speed, service reliability, enterprise adoption, or ability to pay for AI [5].

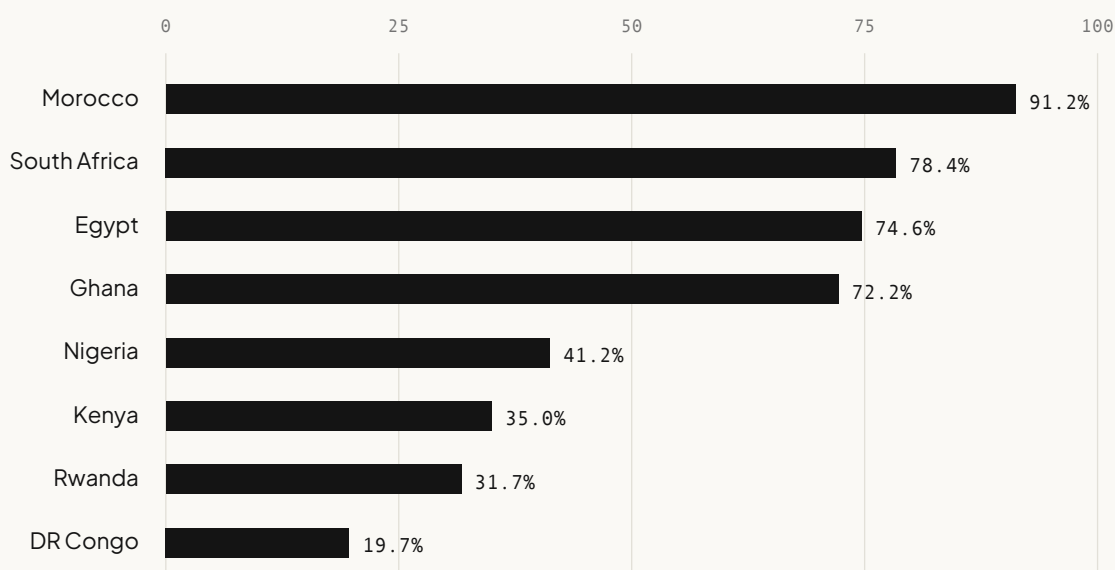


Figure 1. Individuals using the internet, 2024, % of population. Source: ITU via World Bank WDI, IT.NET.USER.ZS; retrieved 8 October 2026. Rounded to one decimal. Eight-country purposive comparison; no Africa-wide average inferred.

Morocco, South Africa, Egypt, and Ghana have higher internet-use estimates in this snapshot than Nigeria, Kenya, Rwanda, and DR Congo. This ordering describes one access dimension and is not an AI-readiness ranking. Institutional quality, advanced skills, sectoral demand, data quality, and computing costs could change the relative suitability of a particular deployment. Within-country inequality also disappears in national averages.

How to use the comparison

For economies with lower widespread use, a public investment appraisal should test whether shared access, assisted interfaces, or business intermediaries can reach users who cannot sustain individual subscriptions. In more connected settings, the binding constraint may shift toward organizational integration, software interoperability, specialized skills, and competition. Both groups still need affordability and reliability testing.

A sector pilot should therefore report adoption alongside access: who could use the service, who actually used it repeatedly, what they paid, and what happened to earnings or production. Comparing national internet use with GDP growth would not identify an AI effect. Richer countries may both connect more people and have stronger institutions; reverse causality and omitted variables would contaminate the inference.

4. Country comparisons: productive channels

The matrix below translates contrasting economic settings into questions for investment and research. These are proposed application channels and author analysis, not measured national AI impacts. The digital diagnostics catalog offers a consistent set of foundational categories across economies [6]. Country-level AI adoption statistics with comparable methods remain a gap in this paper.

Economy	Channel to investigate	Condition to test
Morocco	Manufacturing quality, ports, irrigation	Supplier integration, water constraints, technical skills
Egypt	Business services, logistics, manufacturing	Export demand, Arabic evaluation, reliable service delivery
South Africa	Finance, professional services, mining	Workflow integration, worker transitions, equipment reliability
Kenya	Agricultural services, payments, logistics	Farmer input access, affordability, scaling beyond pilot users
Ghana	Trade, small businesses, public administration	Working capital, firm capabilities, effective platform use
Rwanda	Public services, specialized digital exports	Domestic market scale, skills, regional customer access
Nigeria	Agrifood, services, telecommunications	Power, finance, productive adoption beyond leading firms
DR Congo	Mineral supply chains, trade, service access	Infrastructure, trusted data, institutional capacity

Table 2 compares proposed productive channels and the complementary conditions to test. Morocco illustrates how established industrial activity changes the adoption question. The World Bank's July 2024 economic monitor identifies automobiles and aeronautics among export-oriented growth channels [7]. In such production networks, the economic value of AI may depend on whether local suppliers can meet a buyer's standards and integrate with factory systems. A successful large exporter does not automatically transmit those capabilities to smaller domestic enterprises.

Kenya offers a different route through digitally mediated agriculture and commerce. The World Bank's June 2023 results account describes an agricultural innovation program linking technology providers with farmers [8]. It is evidence of an implementation setting, not a causal estimate of AI-specific yield gains. A plausible extension is to integrate prediction and advice into existing relationships while evaluating actual farmer profits.

Smaller markets can specialize and serve customers across borders, while large markets can support many niches yet leave substantial populations excluded. Regional reach may help Rwanda-based firms scale; broader domestic adoption may be decisive for Nigeria. DR Congo highlights why mineral abundance is not sufficient for local digital value capture. These propositions require sector-specific investigation rather than one continental deployment template.

5. Productivity and economic growth

AI can affect output through prediction, search, communication, quality control, and coordination. A factory may anticipate equipment failures; a trader may reduce stockouts; a public agency may process records faster. In each case, the relevant economic outcome is additional real value added after implementation and operating costs, not the number of prompts, model accuracy in isolation, or hours nominally saved.

From task performance to value added

A revised 2023 NBER working paper studies a phased conversational-assistant rollout among 5,179 customer-support agents. It reports a 14% average increase in issues resolved per hour, with larger gains among less experienced workers [9]. This is an informative example of task-level augmentation in one enterprise environment. It is neither an African sector estimate nor a basis for assigning a 14% uplift to all services.

Scaling a microeconomic effect requires several links. The tool must work on local tasks; firms must adopt and reorganize workflows; saved time must translate into useful output; demand must support expansion; and costs must not consume the benefit. Rework from inaccurate outputs can offset speed gains. Where output is fixed, labor hours may fall instead. Where demand expands, higher productivity may increase employment. These are analytical channels, not measured effects in this study.

A disciplined treatment of headline projections

PwC's May 2025 Value in Motion release describes a possible 4.9-percentage-point addition to African output by 2035 under its scenario analysis [10]. It is retained here as an external conditional estimate, not validated by this paper. Its wording should not be interpreted as an extra 4.9 percentage points of annual growth. It uses a different model and geographical aggregation from the Nigeria exercise, so the two results are not comparable forecasts.

Investment in integration, worker training, process redesign, and data cleaning can precede visible gains. These costs help explain why impressive technical performance need not immediately appear in national accounts. The appropriate policy test is sustained net gains at realistic scale. Public procurement should require a costed counterfactual and measure performance after the pilot support ends.

Growth and structural transformation

Africa's development gains could come from better productivity within existing activities and from movement into higher-value production. AI-assisted compliance, design, translation, and logistics could lower barriers to selling beyond local markets. Yet these tools cannot create buyers, roads, certification capacity, or working capital on their own. Competition may pass gains to consumers as lower prices; market power may instead concentrate profits. A growth strategy should examine both production and distribution rather than assume all efficiency gains become national income.

6. Employment, tasks, and distribution

Employment effects arise through automation, augmentation, new tasks, and changes in product demand. These mechanisms can operate at the same time. A bank can automate routine processing while adding compliance and customer-support work. A small firm can expand sales with fewer administrative hours. A service exporter can face falling prices because overseas competitors adopt the same technology. Net national job creation depends on how these effects interact.

The IMF's January 2024 analysis estimates exposure to AI at about 40% of global employment, with approximately 60% in advanced economies, 40% in emerging markets, and 26% in low-income countries [11]. These group estimates describe potential exposure, not predicted redundancies. The ILO's May 2025 refined GenAI assessment places one quarter of global employment in occupations with some exposure and emphasizes transformation as a more likely outcome than full replacement [12]. Different technologies and methods explain why these figures should not be treated as interchangeable.

Why African labor markets require separate analysis

Physical tasks in agriculture, construction, transport, and personal services may have limited immediate exposure to language-model automation. They can still change through scheduling, forecasting, access to markets, and shifts in demand. Lower direct exposure does not mean households are insulated from disruption in the formal service sector or global outsourcing markets. Nor does it establish that they will obtain the benefits of augmentation.

Informal work makes measurement difficult. Employment counts may remain stable while hours, earnings, and bargaining power change. Own-account workers may adopt a tool without appearing in corporate technology surveys. An assessment should track paid employment, self-employment profits, hours, underemployment, job transitions, and the quality of work. Counting new technology specialists alone would miss most of the potential economic effects.

Skills, bargaining, and the entry-level pipeline

AI assistance could help less experienced workers handle some tasks, but firms may also reduce demand for routine junior work. That creates a training problem: entry-level roles are pathways into expertise. Employers should test apprenticeships that combine AI use with independent reasoning, supervision, and domain practice. Training should cover verifying outputs, handling confidential data, and recognizing when a task requires specialist judgment.

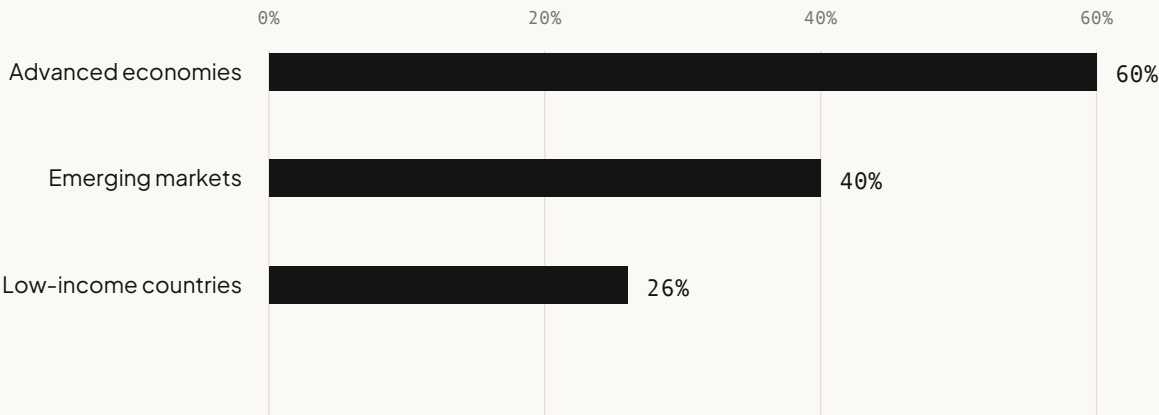
Distribution matters within every country. Urban professionals may gain earlier access, women may face distinct barriers to devices and paid work, and language minorities may receive poorer service quality. Labor policy should measure these differences before selecting support. Worker consultation, portable training, grievance channels, and transition assistance can help preserve bargaining power. This paper does not estimate jobs created or lost by 2035; it specifies the outcomes a credible employment study would need to measure.

EMPLOYMENT / GLOBAL CONTEXT

Exposure is not job loss

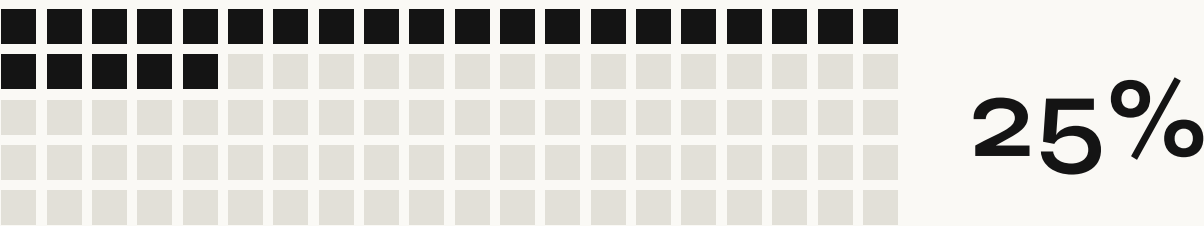
Global exposure studies describe potential changes to tasks and occupations. They provide context for African labor-market analysis, but do not estimate continent-wide job losses or establish country-specific adoption rates.

A / AI EXPOSURE BY INCOME GROUP



IMF, January 2024. Group estimates of potential AI exposure; not Africa-specific and not projected redundancies [11].

B / GENERATIVE AI EXPOSURE, GLOBAL EMPLOYMENT



ILO-NASK, May 2025. One in four workers globally is in an occupation with some GenAI exposure [12]. Different scope and method from panel A.

Figure 2. Global occupational exposure context. Panel A: IMF, January 2024 [11]. Panel B: ILO-NASK, May 2025 [12]. Scope and methods differ; the estimates must not be combined. Neither panel forecasts employment losses.

Measure work, hours, earnings, and transitions.

7. Agriculture and food systems

Agriculture links productivity to food security, rural incomes, processing, and trade. Across African farming systems, AI can potentially improve decisions about planting, pest management, water, harvest timing, storage, and transport. The pathway to welfare differs from office automation: advice is useful only if farmers can act on it and sell the resulting production at remunerative prices.

FAO's 2022 State of Food and Agriculture examines automation from machinery to digital systems, drawing on 27 case studies. It identifies infrastructure, finance, and skills as constraints on inclusive adoption [13]. The evidence is broader than AI and global in coverage. It supports attention to complementary inputs rather than a continent-wide yield assumption. Kenya's agricultural technology program provides a concrete African implementation context [8].

The economics of an advisory service

Consider a service that identifies crop disease from an image and offers a treatment recommendation. Its economic benefit is the avoided loss or improved margin, after data, device, travel, chemical, and labor costs. Image classification accuracy alone is insufficient. The diagnosis may be wrong for a local variety; the recommended treatment may be unavailable; rainfall may make the intervention ineffective; a price decline at harvest may absorb the yield benefit.

Deployment should combine localized agronomic validation with extension staff, input suppliers, cooperatives, and market information. Shared delivery through a trusted intermediary can spread fixed costs across many users. Voice can reduce some literacy barriers, but speech recognition and advice must be tested for local languages and accents. Offline or low-bandwidth features should be evaluated against the actual user journey, not assumed to solve every access barrier.

Different systems, different investment choices

Water-constrained irrigated systems in North Africa may benefit from better water allocation, while rain-fed smallholder systems may prioritize timely advice and risk management. Commercial estates can justify sensors and machine vision where utilization is high. Smaller producers may find shared equipment and cooperative data services more economical. These distinctions are analytical examples; the paper does not assign uniform returns to these regions.

Agrifood processing and logistics may provide gains beyond the farm: grading, matching supply to processors, reducing spoilage, and scheduling transport. A useful trial measures net farm income, reliability across seasons, losses after harvest, and distribution by gender, farm scale, and location. It should compare an AI-supported service with a credible non-AI alternative. More production is not automatically more profit, and labor-saving interventions require attention to seasonal employment and rural transitions.

AGRICULTURE / ECONOMIC TRANSMISSION

From advice to farm income

A recommendation creates economic value only when it is reliable, actionable, timely, and connected to a viable production and sales process. The four stages below identify where an agricultural service should be evaluated.

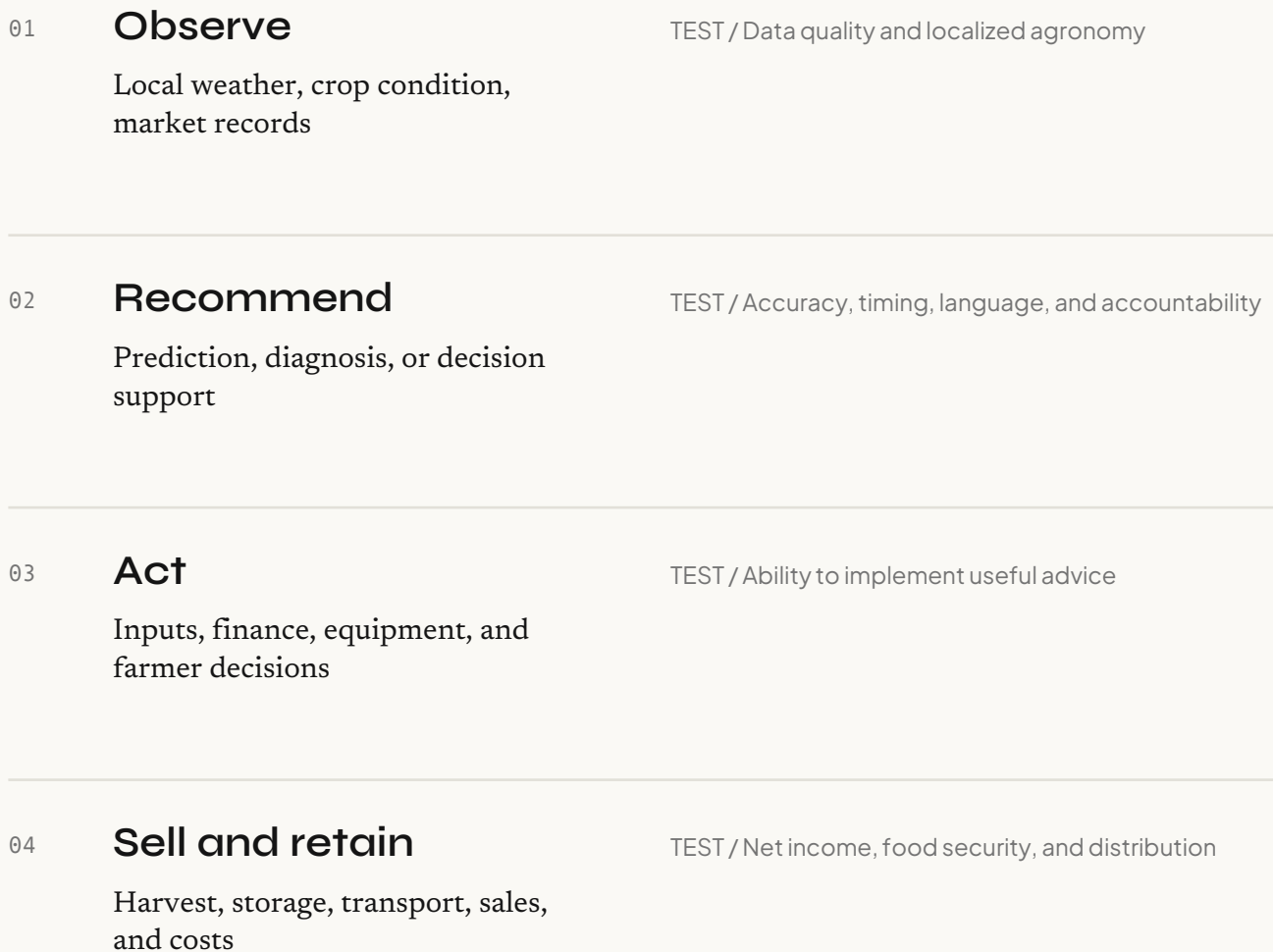


Diagram 2. An analytical pathway for agricultural AI. Author synthesis of the mechanisms discussed in Section 7; not a measured impact model. Evaluation should compare net farm income and distributional outcomes with a credible alternative.

Better predictions need practical means to act.

8. Industry, mining, and logistics

AI-assisted maintenance, visual inspection, production scheduling, and energy management could improve industrial performance. For an African manufacturer competing on cost and reliability, fewer defects or stoppages can be more valuable than a sophisticated standalone model. Benefits depend on equipment condition, sensor quality, maintenance capacity, standards, and the ability to respond to a warning.

Manufacturing and supplier upgrading

The Morocco economic monitor provides evidence of export-oriented automotive and aeronautics activity [7]. The author's inference is that AI opportunities there should be evaluated within supplier networks and quality requirements. Egypt and South Africa also warrant investigation of industrial and service integration, while smaller manufacturers elsewhere may begin with demand planning and inventory records. These are candidate channels, not observed AI productivity estimates.

A factory can identify a faulty component without having financing to replace it. A model can forecast energy demand without preventing grid interruptions. Industrial adoption therefore requires a whole-process appraisal. The relevant cost includes sensors, installation, calibration, downtime during integration, cybersecurity, licenses, staff training, and maintenance. A pilot at an unusually well-resourced facility may overstate returns available to ordinary firms.

Resources and domestic production capabilities

Mining applications can include geological interpretation, equipment monitoring, safety support, and processing optimization. Resource-rich economies such as DR Congo face a separate question: does the technology create local engineering work, supplier contracts, and transferable skills, or chiefly increase the efficiency of an externally controlled operation? Ownership of minerals alone does not determine ownership of software, data, or the resulting income.

Industrial upgrading should seek commercially viable connections between large buyers and domestic suppliers. Local technical service firms can provide integration, equipment support, and data engineering. Procurement that specifies transfer of skills and usable documentation may help these firms participate. Requirements should be assessed against supplier capacity and project economics; unsupported local-content targets can raise costs without producing learning.

Ports, corridors, and cross-border trade

Forecasting arrivals, matching loads, preparing documents, and identifying bottlenecks can lower coordination costs. The benefit requires trustworthy records and cooperation among customs, port operators, carriers, and traders. An AI interface on top of inconsistent procedures will not remove the underlying delay. Regional digital interoperability may create scale, but transport infrastructure and border administration remain central.

Evaluation should track defect rates, utilization, stoppages, energy per unit, lead times, and net value added. Worker safety and accountability must remain measurable outcomes. Manufacturing policy should compare AI projects with alternative investments in power, machinery, and skills, choosing combinations with the strongest credible returns.

9. Services, finance, and small businesses

Services offer relatively direct applications for language and prediction systems: handling records, customer communication, accounts, procurement, analysis, and translation. The diversity of African service work matters. A formal bank, an export-oriented support center, and an informal market trader have different data, budgets, and regulatory obligations. A single "services" productivity coefficient cannot describe all three.

Finance and economic participation

Fraud detection, risk monitoring, and assisted customer service could reduce costs or improve reliability. Credit models may identify previously overlooked borrowers, but they can also amplify bias when proxy variables substitute for information about repayment capacity. An institution should test performance across demographic groups and provide an intelligible process for correcting errors. Speed should not replace accountability for financial decisions.

Financial inclusion requires more than an interface. Users still need affordable accounts, secure identity processes, recourse, and usable payment infrastructure. Automated communication may improve comprehension or administrative access while leaving the financing constraint intact. A study should track successful transactions, costs, complaints, borrower outcomes, and error correction rather than the number of automated interactions.

Small firms and informal enterprises

Bookkeeping assistance, inventory planning, translation, and marketing can lower the fixed cost of management. Yet fragmented or inaccurate records may make advanced analytics unreliable. Small firms may obtain more value from a simple accounting workflow with AI support than from a broad tool they cannot integrate. Paying for a subscription is adoption expenditure; sustained improvements in margins are the outcome.

World Bank Digital Africa documents constraints on productive digital use and evidence linking internet availability to jobs and welfare [14]. That evidence concerns digital technologies, not an identified AI treatment. The author's inference is that adoption support should combine suitable tools with training, finance, and business advice. Survey samples should include unregistered enterprises to avoid overstating access among ordinary businesses.

Exports, competition, and market demand

Translation and AI-assisted production may make cross-border services cheaper to offer. At the same time, international buyers may automate tasks they previously outsourced. African service exporters must investigate both market expansion and substitution. Higher productivity at a firm can coexist with declining sector revenue if prices fall quickly. Specialized domain knowledge, dependable delivery, customer relationships, and local context may remain sources of advantage.

An SME program should compare net profit, survival, sales, worker hours, and repeat customer outcomes with alternatives such as conventional digital tools or management training. Shared service centers and sector associations could reduce implementation costs, provided the services respond to real demand and remain viable after subsidies end.

10. Human capital and public services

Education, health, and effective public administration influence long-run productivity. AI could support these systems by reducing paperwork, improving information retrieval, and helping staff allocate scarce time. These indirect development effects need a different evaluation horizon from short-run enterprise output. The Nigeria accounting model does not add a separate human-capital multiplier.

Education: support learning, measure learning

Teacher preparation, language support, feedback, and tutoring are plausible applications. Their value depends on curriculum alignment, access, pedagogical quality, and whether pupils can evaluate or challenge the system. A tool that produces completed assignments faster may reduce independent learning. Procurement should measure learning gains and teacher time, including outcomes for low-connectivity schools and students using less widely supported languages.

A staged trial could compare teacher-led instruction with and without carefully constrained AI support, using pre-specified learning assessments and documenting costs. It should account for differential attrition, home access, and differences in instructor support. Long-term benefits require sustained improvements in capability, not a temporary rise in engagement. Skills programs should include basic literacy and numeracy alongside technical training.

Health: reliability within clinical systems

Administrative support, record summarization, appointment planning, and logistics may reduce burdens on healthcare workers. Clinical applications require task-specific evidence, accountable professionals, locally appropriate validation, and procedures for uncertainty and failure. Models trained elsewhere may perform differently because disease patterns, equipment, terminology, and data completeness differ. This paper proposes evaluation priorities; it reports no clinical effectiveness claim.

The economic test includes clinician time, patient access, errors, waiting times, and total delivery costs. Avoided paperwork is valuable only if the freed capacity improves care or reduces expenditure without harming patients. Restricted budgets mean AI must be compared with staffing, medicines, diagnostics, and facility investment. An inexpensive software license can still require costly integration and oversight.

Public administration and institutional capacity

Record management, translation, case routing, and procurement analysis could improve administrative performance. However, automated eligibility decisions can exclude people when data are missing or wrong. Assisted access, appeal channels, traceable records, and clear responsibility are necessary design choices. Agencies should measure actual processing time and error rates, including outcomes for citizens who do not use digital services.

The African Union's July 2024 strategy establishes a continental commitment to development-oriented and responsible AI [15]. Turning that commitment into service improvements requires operational budgets, skilled teams, institutional incentives, and public accountability. Public-sector projects should publish evaluation designs and results, including disappointing outcomes, so that replication depends on evidence rather than procurement momentum.

11. Effective AI access and infrastructure

Effective AI access is the ability to use an appropriate system repeatedly, affordably, and safely within a productive activity. It is a chain of complementary conditions: electricity, connectivity, devices, usable interfaces, language support, skills, trusted data, and organizational capacity. Failure at one link can sharply reduce the return to investment in another.

Affordability, reliability, and language

ITU's 2024 regional internet estimates and the comparable country snapshot describe access conditions, not AI use [2,5]. GSMA's 2026 Africa report identifies affordability, digital skills, and relevant content among barriers to mobile internet use [4]. These sources support an access diagnosis; the following deployment choices are the author's analysis.

Total cost includes devices, data, subscriptions, training, supervision, and errors. For firms paying foreign currency fees while earning local currency, exchange-rate movement can make operating costs volatile. A low advertised unit price may become expensive when usage is high or verification is labor-intensive. Appraisals should report cost per completed useful task and the users excluded by the pricing model.

Language is an economic factor. A service that works in English or French may still be poorly suited to everyday transactions in another language or dialect. Translation does not guarantee task accuracy. Evaluation should include local speech, code-switching, specialist vocabulary, and users with different literacy levels. Benchmarks should report accuracy, refusal and failure patterns, and task completion, with informed participation by local communities.

Compute, power, and delivery architecture

Cloud services can allow firms to adopt without owning expensive hardware. Local or regional hosting may improve latency, control, and specialized data handling, but requires utilization sufficient to justify investment. Edge systems can reduce connectivity dependence while introducing device and update constraints. The choice should follow workload, cost, reliability, and data requirements rather than a presumption that one architecture suits the continent.

Electricity access does not measure uptime or power quality. The SDG7 deficit highlights the scale of exclusion in Sub-Saharan Africa [3], while firms already connected also need reliable service. Data-center plans should cost electricity, backup generation, cooling, water, network redundancy, and maintenance. Investments must be evaluated alongside household and industrial energy needs.

An accessibility-productivity proposition

The paper proposes a testable hypothesis: economically appropriate access, combined with complementary inputs, increases the breadth of productive adoption and may distribute gains more widely. It does not claim that access alone causes growth. A credible test must distinguish infrastructure availability from repeated use, and repeated use from net economic benefits. Community access, cooperatives, and assisted services are possible delivery models whose costs and outcomes should be compared empirically.

12. Domestic value capture and regional scale

An African firm can gain from imported AI even when the provider is abroad. Better domestic production is an economic benefit; the purchase of a foreign service is an input cost. The development question is how much additional value is produced locally, who receives wages and profits, and whether new capabilities persist. GDP, gross national income, export receipts, and household income capture different aspects of that question.

UNCTAD's 2025 Technology and Innovation Report documents concentration in AI capabilities and infrastructure and calls for inclusive development [16]. This motivates, but does not quantify, the paper's concern about bargaining power and domestic capabilities. Its discussion of concentrated global corporate R&D should not be mistaken for a measurement of African AI spending.

A practical portfolio of domestic capabilities

Competitive opportunities need not begin with training frontier models. Applied software, integration, testing, local-language datasets, cybersecurity, domain evaluation, and technical support can create skilled work and recurring revenue. Universities and firms can collaborate on specialized research while testing whether local delivery reduces costs or improves task reliability. Infrastructure investment should be linked to demand rather than treated as proof of economic participation.

Open or adaptable models may lower some entry barriers, but deployment still requires expertise, data governance, evaluation, and compute. Service contracts can help retain capability through clear data portability, documented integration, access to operational records, and training. Requiring every input to be domestic would sacrifice useful specialization; depending on one supplier without exit options can weaken bargaining power. The objective is viable capability formation and resilient choice.

Regional markets and public goods

National markets may be too small for some specialized services. Shared evaluation resources, interoperable standards, research networks, and cross-border customers can spread fixed costs. Cooperation should respect national rights and local requirements while reducing unnecessary duplication. Regional scale is particularly useful for low-resource languages and specialist datasets whose value extends beyond a single jurisdiction.

Data collaboration requires permission, documented quality, and equitable participation. Communities and institutions providing data should understand the intended uses and benefit arrangements. A regional benchmark should not become a mechanism for extracting data without supporting the organizations that maintain it. Public funding can support research and evaluation where commercial incentives undersupply them.

Measure retention rather than announce it

A domestic value-capture dashboard should track local wages, procurement from domestic suppliers, export revenue, research collaboration, skill transfer, and provider switching costs. Payments abroad and profit repatriation should be separately recorded where feasible. The Nigeria GDP uplift cannot be converted into a domestic retention rate because its accounting model does not estimate these flows. Transparent measurement would make industrial policy more informative than counting startups or data centers alone.

DOMESTIC CAPABILITIES / REGIONAL SCALE

Creating and retaining value

Using imported technology can raise domestic production. Building competitive local capabilities can add wages, supplier income, and export opportunities. The development question is which benefits persist and who receives them.

USE

Improve domestic production

Firms adopt useful systems; gains depend on net costs and market demand.

BUILD

Develop viable local capabilities

Integration, evaluation, data engineering, languages, and domain expertise.

SCALE

Serve regional and global markets

Interoperability, customer access, supplier networks, and research collaboration.

RETAIN

Measure the income that stays

Domestic wages, profits, exports, local procurement, and skill transfer.

Diagram 3. A portfolio for domestic value creation and measurement. Author synthesis; not an estimated retention rate. GDP, domestic wages and profits, and income flowing abroad require separate measurement.

Track income and capability, not adoption alone.

13. Governance, competition, and investment

Governance affects adoption by determining whether users can trust a service, contest errors, and switch providers. It also affects the cost of compliance and market entry. The policy challenge is to make responsibility clear while allowing useful experimentation. Announcing a national AI strategy is a beginning; implementation needs budgets, capable institutions, and observable performance.

Regulate the use and its consequences

A financial decision, a medical tool, and an inventory assistant have different consequences when they fail. Requirements should be proportionate to the task: validation, documentation, human responsibility, recourse, and monitoring. Organizations should know who is accountable for data quality, system changes, and decisions. Existing sector institutions need the capacity to supervise AI uses within their mandates.

The IMF's AI Preparedness Index examines digital infrastructure, human capital and labor-market policies, innovation and integration, and regulation [17]. These dimensions are useful for organizing diagnostics. An index is not a causal model and cannot establish the return to an individual project. Governments should translate broad readiness categories into specific bottlenecks with costs and responsible institutions.

Competition and procurement

Public contracts can create demand for domestic expertise, but large indivisible awards may exclude smaller suppliers. Modular procurement, interoperability, usable documentation, and clear exit provisions can reduce dependence. Assessment should compare providers on verified task performance and whole-life cost. Small firms also need access to finance and customers; preferential procurement without delivery capability can produce weak outcomes.

Competition policy should investigate lock-in, discriminatory access, market concentration, and control over essential inputs. Users need workable alternatives rather than theoretical portability. Regulators and procuring institutions may share scarce technical expertise, while retaining independent accountability. Procurement results should distinguish technical acceptance from realized economic benefits after deployment.

Investment priorities under scarce budgets

A project appraisal should state the problem, counterfactual, users, implementation plan, recurrent costs, and outcome measures. It should compare AI with conventional software, staff training, or physical investment. Where reliable electricity is the main constraint, a model upgrade may have little return; where records and management are strong, integration may be more productive than another connectivity subsidy.

Public funding is most defensible when it supports public goods, inclusion, research, or coordination failures. Pilots should have explicit scale-up criteria and a stopping rule for weak results. Investments in power, schools, networks, and technical capabilities can support many uses beyond AI, making them robust across technological scenarios. Regional cooperation can pool evaluation capacity and reduce duplicated expenditure without imposing identical national priorities.

14. Africa's alternative pathways to 2035

The three continental pathways below are qualitative scenarios. They describe combinations of access, investment, institutions, and firm capabilities; they carry no probabilities or numerical Africa-wide GDP outcomes. Different countries and sectors may follow different pathways simultaneously. Nigeria's quantified cases are illustrative counterparts, not estimates for these continental narratives.

Concentrated adoption

Large enterprises and highly connected workers adopt rapidly, while smaller firms and rural communities face persistent costs and capacity constraints. Gains appear in finance, telecommunications, export services, and selected industrial operations. Domestic technology suppliers may develop, but benefits remain concentrated. The principal risk is a wider productivity divide within countries and between well-connected and poorly connected markets.

This pathway could still raise measured output. It may nevertheless yield modest improvements in household welfare if labor demand falls in exposed occupations or profits are concentrated. Relevant warning indicators include high tool use among a narrow set of firms, weak diffusion to suppliers, rising entry-level displacement, and unchanged access costs for ordinary users.

Broad-based productive adoption

Infrastructure improvements combine with affordable services, domain training, local-language evaluation, and practical adoption support. Farmers, traders, manufacturers, and public institutions integrate tools into existing systems. Domestic integration and support firms expand. Benefits depend on competition passing some cost savings to customers and on enterprises having demand and finance to grow.

This pathway prioritizes reliable task completion over technological prestige. Indicators would include repeated productive use beyond large firms, improvements in margins and service quality, wider supplier participation, and less unequal access. Independent evaluation is necessary to determine whether those outcomes are caused by AI rather than concurrent reforms.

Accelerated integration with capability formation

Strong complementary investment permits extensive workflow redesign, industrial upgrading, regional digital trade, and specialized domestic research. Firms participate in creating and adapting technology as well as buying it. Adoption changes organizational structures and skill demand; transition support becomes more important. This is an ambitious conditional pathway and requires effective implementation across several systems.

Even here, growth can be unequal and environmental costs material. Compute infrastructure needs energy and cooling; digital export markets can become intensely competitive. Higher adoption is not a sufficient success criterion. The development test remains net production, employment quality, inclusion, and domestic income. These pathways are useful for stress-testing decisions: power reliability, foundational learning, interoperable data, and evaluation capability remain valuable under each one.

15. Nigeria: illustrative quantitative case

This case preserves the previous conversation's explicit assumptions and reconstructs its arithmetic from unrounded inputs. It is a supporting example of how adoption assumptions translate into an aggregate accounting result. Nigeria's output shares, economic institutions, and infrastructure are not treated as representative of Africa.

The NBS July 2025 rebasing report, printed page 13, lists 2024 contributions to GDP at 2019 constant basic prices: agriculture 27.81%, industries 16.67%, and services 55.52% [18]. The earlier draft incorrectly called these nominal shares. Inspection of the official table corrects that classification. The weights sum to 100%, are historical rather than 2035 observations, and are held fixed in this simplified exercise.

Equations and timing

Let $B(t) = 100 \times (1 + g)^{t-2025}$, with $g = 0.035$. Then $B(2035) = 141.059876062112$. The index normalization is $2025 = 100$, while sector weights come from 2024. Equal assumed baseline sector growth preserves those weights. This is a modeling convenience, not an official ten-year outlook.

For each sector s , define $C(s) = w(s) \times a(s) \times p(s) \times r(s)$. The terminal uplift $U = \sum C(s)$, and $Y(2035) = B(2035) \times (1 + U)$. Adoption a is the share of sectoral activity using AI productively. Productivity p is a terminal gain among adopters relative to their counterfactual output, not an annual growth rate. Realization r is 0.80 in all sectors and scenarios.

Sector / historical weight	Adoption A / B / C	Productivity A / B / C
Agriculture / 27.81%	15% / 35% / 65%	3% / 6% / 10%
Industries / 16.67%	20% / 45% / 75%	4% / 8% / 14%
Services / 55.52%	25% / 55% / 85%	5% / 9% / 16%

Table 3. A = constrained; B = broad-based; C = accelerated. Weights: NBS historical statistics [18]. Adoption, productivity, 80% realization, and 3.5% baseline growth: inherited illustrative assumptions. They were not fitted to Nigerian firm data.

For broad-based agriculture, $0.35 \times 0.06 \times 0.80 = 0.0168$: a 1.68% sector uplift. Multiplying by 0.2781 gives 0.00467208, or 0.467208 percentage points of baseline national output. The realization factor heuristically compresses costs and constraints; it is not a national-accounts deduction schedule or an empirically estimated efficiency parameter.

NIGERIA ONLY / ILLUSTRATIVE OUTPUTS

15. Nigeria: terminal results

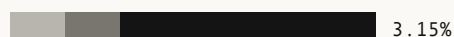
Contribution	Constrained	Broad-based	Accelerated
Agriculture	0.100116	0.467208	1.446120
Industries	0.106688	0.480096	1.400280
Services	0.555200	2.198592	6.040576
Total	0.762004	3.145896	8.886976

Table 4. Contributions in percentage points of baseline national GDP in 2035. The total is equivalently the percentage increase in GDP relative to the baseline. Unrounded calculation inputs; six decimal places shown to make the arithmetic auditable, not to imply forecasting precision.

Constrained adoption



Broad-based adoption



Accelerated integration



■ Agriculture ■ Industries ■ Services

Figure 3. Nigeria-only terminal GDP uplift, 2035, % above counterfactual baseline. Author calculations; illustrative scenarios, not forecasts. Segments show sector contributions. Rounded totals: 0.76%, 3.15%, 8.89%.

Case	2035 GDP index	Gain over baseline
Baseline	141.06	-
Constrained adoption	142.13	0.76%
Broad-based adoption	145.50	3.15%
Accelerated integration	153.60	8.89%

Table 5. Index, 2025 = 100. GDP levels are calculated with unrounded uplifts and then rounded to two decimals. No nominal-naira or exchange-rate projection is made.

The broad-based index is 145.497473060755, displayed as 145.50. It is approximately 45.50% above the normalized 2025 level but only 3.15% above the hypothetical 2035 baseline. Services contribute most because both their historical weight and assumed adopter gains are larger. That conclusion follows from model inputs; it is not independently measured evidence about Nigeria's future sectoral effects.

Rounding individual contributions before summation can produce discrepancies. For example, the constrained contributions round to 0.10, 0.11, and 0.56 percentage points, whose sum is 0.77, while the unrounded total rounds to 0.76%. All tables in this edition calculate first and round only for display.

NIGERIA ONLY / INTERPOLATION

15. Nigeria: annual illustrative trajectory

To reproduce the prior trajectory, $U(t) = U(2035) \times (t - 2025) / 10$. Annual output is $Y(t) = B(t) \times [1 + U(t)]$. This linear phase-in is a display assumption; actual diffusion could be delayed, nonlinear, or interrupted. The baseline already contains ordinary growth. The added uplift should therefore represent effects beyond what is already embedded in that growth assumption.

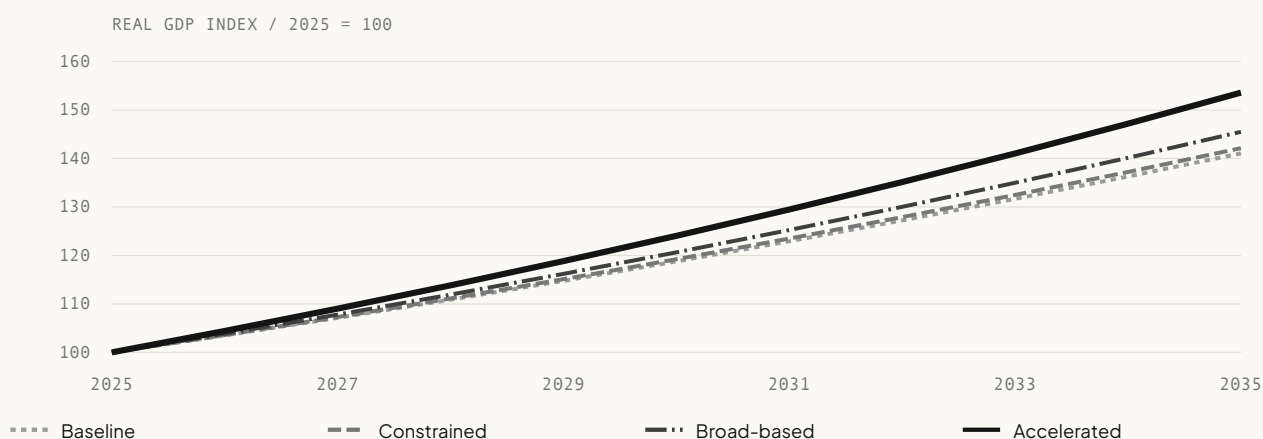


Figure 4. Nigeria real GDP index, 2025 = 100. All years are calculated or normalized, not an observed NBS time series. No probability is attached to any curve.

Year	Baseline	Constrained	Broad-based	Accelerated
2025	100.00	100.00	100.00	100.00
2026	103.50	103.58	103.83	104.42
2027	107.12	107.29	107.80	109.03
2028	110.87	111.13	111.92	113.83
2029	114.75	115.10	116.20	118.83
2030	118.77	119.22	120.64	124.05
2031	122.93	123.49	125.25	129.48
2032	127.23	127.91	130.03	135.14
2033	131.68	132.48	134.99	141.04
2034	136.29	137.22	140.15	147.19
2035	141.06	142.13	145.50	153.60

Table 6. Recomputed with Decimal arithmetic. Every annual entry is recomputed from unrounded inputs. Rounding intermediate values can create discrepancies; the preserved terminal headlines are unchanged. The full-precision results are included in the reproduction package.

NIGERIA ONLY / CONDITIONAL SENSITIVITY

15. Nigeria: sensitivity and interpretation

Case	g = 2.5%	g = 3.5%	g = 4.5%
Baseline	128.01	141.06	155.30
Constrained adoption	128.98	142.13	156.48
Broad-based adoption	132.04	145.50	160.18
Accelerated integration	139.38	153.60	169.10

Table 7. 2035 index, 2025 = 100. Baseline growth sensitivity changes GDP levels while leaving relative AI uplifts unchanged by construction. Calculated from unrounded inputs.

The accelerated case with 2.5% baseline growth is below the no-additional-AI baseline at 3.5% growth. This is a mathematical illustration of the importance of broader growth conditions. It does not estimate the effect of any policy reform or establish that these rates are likely.

Broad-based variation	Terminal uplift
Adoption or productivity 20% lower	2.5167%
Central parameters	3.1459%
Adoption or productivity 20% higher	3.7751%
Realization = 0.60	2.3594%
Realization = 1.00	3.9324%
Adoption and productivity each 20% lower	2.0134%

Table 8. One-factor changes hold other inputs fixed unless both factors are specified. These are sensitivity settings, not confidence intervals. Broad-based adoption increased by 20% remains below 100% in every sector.

Sector-composition sensitivity

Transferring five percentage points of weight from services to agriculture, while holding broad-based sector effects fixed, lowers U by 0.1140 percentage points to 3.031896%. The reverse transfer raises it to 3.259896%. This follows from $0.05 \times (0.0168 - 0.0396)$. It illustrates why a changing sector mix matters; neither change is a forecast of Nigeria's structure.

What the model cannot establish

The multiplicative form makes the uplift proportional to adoption, productivity, and realization. It does not account for firm-level dispersion, input-output spillovers, demand limits, imports, changes in relative prices, labor reallocation, or a separate investment path. Realization of zero produces no uplift; negative net effects are possible in reality but absent from the central nonnegative cases. No net employment, welfare, or domestic profit-retention estimate follows from these numbers.

16. Limitations and validity

The central limitation is the distance between technical possibility and a measured macroeconomic effect. The source review supplies mechanisms and contextual constraints. It does not identify a continent-wide treatment effect, resolve selection into adoption, or measure economic outcomes after sustained deployment. The paper is a research working paper rather than a validated forecast.

Geography, time, and measurement

Sources have different coverage and dates. Sub-Saharan Africa outlooks exclude North Africa; ITU regional classifications differ from continental geography; mobile internet measures differ from all-internet use. Historical access figures are not 2026 AI-adoption rates. The eight-country sample reveals contrasts but is not representative and cannot support a continental average. Differences in statistical capacity and revisions affect comparability.

Internet use is a weak proxy for productive AI access. It does not measure bandwidth, uptime, affordability, language quality, or firm integration. National averages conceal disparities by income, gender, location, and disability. The comparison is descriptive and does not imply that the most connected country will obtain the largest AI dividend.

External evidence and scenario uncertainty

Global occupational exposure estimates depend on task definitions and technology scope. They should not be transferred directly to African national labor markets or read as unemployment predictions. A productivity study in one enterprise can demonstrate a channel without establishing returns for informal firms or agriculture. External consultancy scenarios have different counterfactuals and assumptions from this paper's accounting model.

Nigeria's 2024 constant-price shares are verified historical inputs. The 2025 normalization, 3.5% growth, terminal adoption and productivity assumptions, 80% realization, and linear phase-in are illustrative. Fixed weights and common sector growth suppress structural change. Baseline growth may already include some AI effects, creating double-counting risk unless additionality is defined carefully. The model has no fitted parameters, uncertainty distribution, or validation dataset.

Costs, distribution, and omitted dynamics

The realization factor cannot replace detailed accounting of capital spending, imported software, labor costs, depreciation, and intermediate inputs. Nor can the model predict how competition changes prices or who receives profits. General-equilibrium adjustments may amplify or offset partial gains. Climate shocks, conflict, fiscal constraints, and external demand can dominate technological effects. The central cases exclude negative outcomes and therefore should not be interpreted as a complete risk range.

Calculation verification confirms internal arithmetic and faithful reproduction of the stated inputs. It does not validate causal attribution, economic plausibility, or policy returns. Authorship is credited to Research at NuvoAI and Gideon Ogunbanjo; it does not imply endorsement by the statistical or research organizations cited.

16. Research agenda and conclusion

A measurable agenda for 2026-2035

First, develop comparable surveys of productive adoption. Record use by task, frequency, expenditure, language, firm size, formality, and worker characteristics. Distinguish experiments from sustained integration. Combine firm accounts with employee and household outcomes so that higher reported productivity cannot conceal deteriorating earnings or work quality.

Second, evaluate representative deployments in agriculture, small business services, manufacturing, and public institutions. Where feasible, use randomized or phased rollout with pre-specified outcomes, a credible comparison group, and transparent attrition reporting. Measure net value added or profit, implementation costs, reliability, distribution, and persistence after support ends. Publish unsuccessful trials as well as successful ones.

Third, improve quantitative modeling with sector-specific baseline growth, disaggregated activities, input-output linkages, adoption costs, and labor-market transitions. Estimate parameters from local evidence before assigning probability ranges. Track imported inputs and ownership where feasible to connect domestic output with income retention. Nigeria can remain one case among multiple independently calibrated national studies.

Period	Priority	Evidence of progress
2026-2028	Foundations and evaluated pilots	Reliable access, costed workflows, baseline surveys, local task benchmarks
2029-2031	Diffusion and supplier capabilities	Repeated SME use, independently verified net gains, portable skills and data
2032-2035	Scale with distributional review	Sustained sector outcomes, labor transitions, domestic income and exports

Table 9. Proposed sequencing by the author; a research and policy agenda, not an adoption forecast or government commitment.

Conclusion

Africa's AI opportunity extends across farm production, industry, trade, public services, and knowledge work. The largest development gains will require a connection between usable technology and the complementary conditions that let people produce, earn, and learn. The continent's different economies will face different bottlenecks; regional collaboration can create scale while national implementation remains specific to local institutions and markets.

Nigeria's illustrative exercise shows how changes in assumptions produce materially different output levels. It supports a disciplined discussion of adoption and productivity, not a continental forecast. Africa-wide policy should be grounded in evaluated applications, wider access, credible measurement, labor transitions, and commercially viable domestic capabilities. The meaningful test for 2035 is whether AI contributes to sustained improvements in production and human welfare, and whether African workers and enterprises participate in those gains.

Appendix A. Reproduction and audit

All numerical results follow from the inputs below. Decimals are proportions, and rounding occurs only after the calculations. The accompanying reproduction package contains a standalone Python script using only the standard library, the retrieved country data, calculation outputs, source notes, and the manuscript text.

```
from decimal import Decimal as D
w = [D(".2781"), D(".1667"), D(".5552")]
a = [[D(".15"), D(".20"), D(".25")],
      [D(".35"), D(".45"), D(".55")],
      [D(".65"), D(".75"), D(".85")]]
p = [[D(".03"), D(".04"), D(".05")],
      [D(".06"), D(".08"), D(".09")],
      [D(".10"), D(".14"), D(".16")]]
u = [sum(ws*aa*pp*D(".8") for ws,aa,pp
        in zip(w, ax, px)) for ax,px in zip(a,p)]
assert sum(w) == 1
for year in range(2025, 2036):
    b = D(100)*D("1.035")**(year-2025)
    y = [b*(1+v*D(year-2025)/10) for v in u]
    print(year, b, *y)
```

Exact terminal checks

Check	Value
Weight sum	1.000000
Baseline index	141.059876062112
Uplift A/B/C	0.00762004 / 0.03145896 / 0.08886976
Broad-based index	145.497473060755
Accelerated index	153.595833393382

Source and revision audit

The official NBS rebasing PDF was checked directly for the source weights and constant-price definition. Decimal calculations independently reproduce the inherited headline results. This edition fixes the nominal-share description and regenerates every annual and sensitivity table using unrounded inputs. The model does not require the earlier draft's nominal GDP figures or its 2025 growth claim; neither is used as a calibration input.

The reproduction package retains the raw World Bank API response, including reference year and update metadata. It excludes third-party report files; references provide official access links. The model can be run without internet access. Country data may later be revised by the publisher; the snapshot here is explicitly dated.

SOURCES / ACCESSED 8 OCTOBER 2026

References

[1] World Bank (2026). Africa Economic Update: Building AI Readiness; accompanying press release, 6 October 2026. Regional outlook and AI context.

<https://www.worldbank.org/en/news/press-release/2026/10/06/economic-growth-in-sub-saharan-africa-gains-momentum-despite-global-uncertainty>

[2] International Telecommunication Union (2024). Measuring Digital Development: Facts and Figures 2024. Internet-use estimates; ITU regional geography.

<https://www.itu.int/itu-d/reports/statistics/facts-figures-2024/>

[3] IEA, IRENA, UNSD, World Bank, and WHO (2025). Tracking SDG 7: The Energy Progress Report 2025. Published 25 June 2025; electricity-access evidence for 2023.

<https://www.worldbank.org/en/topic/energy/publication/tracking-sdg-7-the-energy-progress-report-2025>

[4] GSMA (2026). The Mobile Economy Africa 2026. Historical estimates for 2025; connectivity and mobile economic contribution.

<https://www.gsma.com/solutions-and-impact/connectivity-for-good/mobile-economy/africa/>

[5] World Bank / ITU (2026 retrieval). World Development Indicators, IT.NET.USER.ZS, Individuals using the Internet (% of population), 2024. API snapshot: 8 October 2026; API lastupdated: 13 July 2026.

https://api.worldbank.org/v2/country/MAR;EGY;ZAF;KEN;GHA;RWA;NGA;COD/indicator/IT.NET.USER.ZS?date=2024&format=json&per_page=100

[6] World Bank (2024 catalog version). Digital Economy for Africa Country Diagnostics. Comparative foundation categories; country reports have different publication dates.

<https://www.worldbank.org/en/programs/all-africa-digital-transformation/country-diagnostics>

[7] World Bank (2024). Morocco Economic Monitor: Unlocking the Potential of the Private Sector to Spur Growth and Job Creation. 16 July 2024.

<https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099826007162422517>

[8] World Bank (2023). Scaling Up Disruptive Technologies for Agricultural Productivity in Kenya. Results account, 7 June 2023.

<https://www.worldbank.org/en/results/2023/06/07/scaling-up-disruptive-technologies-for-agricultural-productivity-in-kenya>

[9] Brynjolfsson, E., Li, D., and Raymond, L. R. (2023). Generative AI at Work. NBER Working Paper 31161, April; revised November 2023. DOI: 10.3386/w31161. Statistics cited from this working-paper version.

<https://www.nber.org/papers/w31161>

SOURCES / ACCESSED 8 OCTOBER 2026

References, continued

[10] PwC (2025). Value in Motion. Africa press release, 6 May 2025 (body dateline: 29 April 2025). External conditional economic scenario.

<https://www.pwc.co.za/en/press-room/value-in-motion.html>

[11] International Monetary Fund (2024). AI Will Transform the Global Economy. Let's Make Sure It Benefits Humanity. 14 January 2024; summarizes IMF staff occupational-exposure analysis.

<https://www.imf.org/en/blogs/articles/2024/01/14/ai-will-transform-the-global-economy-lets-make-sure-it-benefits-humanity>

[12] Gmyrek, P., Berg, J., et al. / ILO (2025). Generative AI and Jobs: A 2025 Update. Research brief, 20 May 2025; summarizes ILO Working Paper 140, A Refined Global Index of Occupational Exposure.

<https://www.ilo.org/publications/generative-ai-and-jobs-2025-update>

[13] Food and Agriculture Organization (2022). The State of Food and Agriculture 2022: Leveraging Agricultural Automation for Transforming Agrifood Systems. DOI: 10.4060/cb9479en. Global synthesis, including African contexts.

<https://www.fao.org/agrifood-economics/publications/detail/en/c/1613500/>

[14] Begazo, T., Blimpo, M. P., and Dutz, M. A. (2023). Digital Africa: Technological Transformation for Jobs. World Bank, Washington, DC. Evidence on digital technology and productive use; not an AI treatment study.

<https://www.worldbank.org/en/region/afr/publication/digital-africa>

[15] African Union (2024). Continental Artificial Intelligence Strategy: Harnessing AI for Africa's Development and Prosperity. July 2024; publisher page dated 9 August 2024.

<https://au.int/en/documents/20240809/continental-artificial-intelligence-strategy>

[16] UN Trade and Development / UNCTAD (2025). Technology and Innovation Report 2025: Inclusive Artificial Intelligence for Development. 7 April 2025; UNCTAD/TIR/2025.

<https://unctad.org/publication/technology-and-innovation-report-2025>

[17] International Monetary Fund (2024). Mapping the World's Readiness for Artificial Intelligence Shows Prospects Diverge. 25 June 2024; AI Preparedness Index dimensions.

<https://www.imf.org/en/Blogs/Articles/2024/06/25/mapping-the-worlds-readiness-for-artificial-intelligence-shows-prospects-diverge>

[18] National Bureau of Statistics, Nigeria (2025). Rebasing of Gross Domestic Product, July 2025. Printed page 13: Gross Domestic Product at 2019 Constant Basic Prices (%), Contribution to GDP, 2024 column. Agriculture 27.81; industries 16.67; services 55.52.

https://microdata.nigerianstat.gov.ng/index.php/catalog/147/download/1256/GDP_Rebasing_2025_%20Final.pdf

Reference notes: figures reproduce only the explicitly identified historical inputs or illustrative calculations. Earlier conversation drafts are provenance for model assumptions, not independent evidence. Publisher pages and the archived country-data snapshot establish the dated source record for this edition.