Michael Atingi-Ego: From insight to impact - operationalising data, AI and data governance for sustainable growth

Chief guest address by Mr Michael Atingi-Ego, Governor of the Bank of Uganda, at the 2025 Data Analytics, Artificial Intelligence & Data Governance Symposium, Kampala, 11 November 2025.

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Distinguished speakers and guests, ladies and gentlemen-good morning to you all.

I am deeply honoured to join you today as Chief Guest at this symposium-not merely as a central banker, but as a fellow traveller on Uganda's journey toward a data-driven future that holds the promise of transforming our nation's economic trajectory.

Let me begin by commending Task Managers Limited and Makerere University Business School for their vision in convening this critical dialogue. The theme you have chosen-"From Insight to Impact: Operationalising Data, AI, and Data Governance for Sustainable Growth"- captures precisely the inflexion point at which we find ourselves.

I. Let's Start by Understanding Our Moment in History

We meet at an extraordinary convergence point. Two very powerful technological forces are reshaping our world: the exponential growth of data and the rapid advancement of Artificial Intelligence.

Consider the scale of what we confront. In 2010, the world generated approximately 2 zettabytes[1] (or 2 trillion gigabytes) of data. By 2024, that figure reached 149 zettabytes-a seventy-fold increase. Yet here is the paradox: up to 90% of this information is unstructured, and a staggering 99% of all generated data remains unused. This represents the most substantial missed opportunity of our time.

Into this ocean of unexploited information has come Artificial Intelligence with an unprecedented ability to extract meaning from chaos, to transform unstructured data into actionable intelligence. Global AI investment reached $136.6 billion in 2024, with ChatGPT reaching 100 million users in just two months-the fastest adoption of any technology in human history.

Yet despite organisational adoption surging from 55% to 78% in a single year, immediate financial returns remain modest-cost savings below 10%, revenue increases below 5%. This "investment paradox" troubles some observers. I submit it signals something far different: transformation.

History teaches us that truly foundational technologies do not yield immediate returns. Electricity was first distributed in 1882, yet its major productivity impact came in the 1920s-40 years later-because factories had to be completely redesigned. The technology was ready long before society learned how to use it.

We are in precisely that phase now. Companies invest not just in technology but in complementary capabilities: new processes, organisational redesign, and workforce reskilling. These investments temporarily depress returns even as they lay the foundation for the surge that economic modelling projects will add $20 trillion to the global economy by 2030 and increase labour productivity by 40% by 2035.

The central question for Uganda is whether we will position ourselves to capture our share of this transformation, or remain at the periphery as data providers and technology consumers. The answer depends on the choices we make today about infrastructure, governance, skills, and our collective will to lead.

II. What is the Impact on our Financial Systems

At the Bank of Uganda, we understand that our core mandate-ensuring price stability and maintaining a sound financial system-can no longer be achieved through traditional tools alone.

Whatever it takes to fulfil our mandate in this new era, we will do. And today, "whatever it takes" means embracing data and AI as our most powerful instruments of oversight and intervention.

The AI-Powered Financial Institution

The financial services sector is experiencing game-changing transformation. In credit and risk assessment, AI algorithms analyse alternative data-mobile phone usage, satellite imagery-to establish creditworthiness for previously invisible populations. In Kenya, FarmDrive aggregates datasets to build credit scores for smallholder farmers. In Uganda, Ensibuko partners with banks to provide digital financial solutions, enhancing financial inclusion through innovation.

In fraud prevention, advanced AI techniques detect and prevent threats in real time, protecting the integrity of the financial infrastructure. In regulatory compliance, AI analyses millions of transactions to identify anomalies, reducing false-positive reports by 20-30% while improving effectiveness against financial crime.

Most revolutionary is the democratisation of sophisticated services. "Robo-advisors" make wealth management accessible to customers with low-balance accounts - financial inclusion not through charity but through technology.

The Digital Payments Revolution

Sub-Saharan Africa, hosting almost three-fourths of the world's mobile money accounts, has pioneered a payments revolution now studied globally. Fast Payment Systems like Ghana's GIP and Brazil's PIX enable real-time, low-cost transfers 24/7.

At the BoU, we are actively enhancing payment system interoperability, reducing transaction costs, and positioning Uganda as a regional leader in digital finance infrastructure. We recognise that efficient payment systems are engines of economic inclusion and productivity.

We are also exploring Central Bank Digital Currencies. China's e-CNY pilot demonstrates how digital currency can function both as a digital bank account and digital cash. We approach this with careful deliberation, ensuring any CBDC would strengthen rather than disrupt our existing ecosystem.

Building Trust Through Technology

Yet we must remain vigilant. When multiple institutions use similar algorithms, we risk herding behaviour that amplifies volatility. AI concentration among few technology firms creates dependencies potentially outside traditional regulatory frameworks.

Most troubling is algorithmic discrimination. AI models can perpetuate or amplify existing biases-facial recognition performing poorly on non-white individuals, credit algorithms disadvantaging minorities.

This is why responsible governance is existential. At the BoU, we are developing a Comprehensive AI Governance Framework ensuring all AI applications meet the highest standards of fairness, transparency, and accountability.

Paradoxically, the same technology creating these risks offers powerful solutions. Blockchain provides secure, transparent transaction recording. By embedding compliance rules into smart contracts and using Zero-Knowledge Proofs, we can verify regulatory compliance without exposing sensitive data-achieving the critical balance between privacy and oversight.

Because here is the truth: Innovation must never come at the expense of integrity. Trust is the cornerstone of finance. Without it, our sophisticated systems become castles built on sand.

III. How then Do We Guide Investment to this Area: Charting the New Geography of Capital

John F. Kennedy once said, "The time to repair the roof is when the sun is shining." In our context, the time to build digital infrastructure is before the next crisis, not during it.

Venture capital has been the primary engine of AI innovation. In 2024, global venture capital investment in AI surged to $110 billion, up 62% year-on-year, accounting for one-third of all global venture funding.

The United States leads with 74%, concentrated in hubs like Silicon Valley, New York, and Boston, while Europe's clusters-London, Paris, Munich-are closing the gap. China remains pivotal despite regional slowdowns, with PwC projecting AI to add $7 trillion to its GDP by 2030-nearly 20% of total output.

But the landscape is shifting-emerging markets like India and Brazil attract significant AI investment, signalling a broadening frontier.

The question for Uganda is what share of our future prosperity will be unlocked by intelligent use of data and AI.

Investing in the Foundation

AI innovation creates insatiable demand for foundational infrastructure: data centres, fibre optic networks, cloud computing capacity. Yet global distribution remains profoundly unequal. The United States hosts 5,375 data centres; Germany, 522; China, 448. Entire regions of Africa remain virtually absent from this map.

In attracting investment into this infrastructure, four factors stand out: reliable, affordable energy-increasingly renewable; high-speed broadband; accessible land; and a stable political and business environment.

For Uganda, this represents both a challenge and an opportunity. We must align our energy strategy with data-intensive computing demands, streamline licensing processes, and demonstrate that Uganda is not just a consumer of cloud services but a credible host for the infrastructure that powers the cloud.

Data as Investment Intelligence

At the BoU, we leverage advanced analytics to enhance decision-making. Our Research and Policy Directorate builds machine learning models to refine GDP and inflation forecasts. Precision reduces uncertainty-and uncertainty is the enemy of investment.

When we publish accurate forecasts, provide real-time data on financial flows, and offer gender-disaggregated insights into financial inclusion, we provide intelligence that enables capital to flow efficiently to where it can be most productive.

The message to investors is simple: When you trust the data, you trust the economy. And when you trust the economy, capital flows-creating jobs, building infrastructure, driving inclusive growth.

IV. Role of AI in Catalysing Socio-Economic Transformation

Beyond financial stability and investment flows, data and AI offer something more profound: the ability to fundamentally transform Uganda's socio-economic trajectory in alignment with Vision 2040 and National Development Plan IV.

Powering Productive Economies

AI drives productivity gains across every critical sector. In agriculture, AI-powered "agtech" improves resource efficiency through precision farming. The Twiga Foods platform in Kenya cuts food waste from 30% to 5%. In Uganda, the Eamiat project works with farmer cooperatives to equip them with post-harvest knowledge and technologies.

In natural resource governance, Uganda's position as a repository of critical minerals-cobalt, lithium, copper-creates enormous opportunity. AI can enhance geological surveys, create geoscientific databases, and support efficient exploration, ensuring that the value generated contributes to national development.

In healthcare, AI enhances diagnostic accuracy, particularly in medical imaging, addresses specialist shortages, and enables personalised care. In education, AI-powered tools customise learning content and automate routine tasks, addressing teacher shortages.

Addressing Core Development Challenges

The Covid-19 pandemic provided definitive proof of concept. Countries like Togo, Nigeria, and the DRC rapidly delivered emergency cash transfers without comprehensive social registries by combining satellite data with mobile phone data and machine learning-operational delivery at scale, demonstrating a new model now being integrated into mainstream development policy.

At the BoU, our commitment is reflected in strategic priorities: enhancing financial inclusion through FinTech, promoting digital payments, and building capacity in data science and AI. We are developing a Financial Inclusion Data Dashboard with gender-disaggregated insights enabling precise interventions.

Because in a data-driven economy, transformation is not a slogan-it is a measurable outcome.

V. How About the Human Imperative: Skills and the Future of Work

None of the above applications succeeds without human capital. Technology does not transform institutions-people do.

The Changing Nature of Work

AI is fundamentally altering what makes humans economically valuable. In high-AI-exposure occupations, we see declining demand for routine cognitive tasks and basic programming, but rising demand for management and business skills-strategy, leadership, oversight, judgment.

As AI handles technical "doing," the premium shifts to uniquely human capacities - asking the right questions, providing strategic direction, exercising judgment in ambiguous situations where data offers no clear answer.

Research distinguishes automation, which displaces labour, from augmentation, which creates new work. More concerning is job polarisation-new work shifting from middle-pay administrative and blue-collar roles toward low-pay personal service occupations, threatening to hollow out the middle class.

The Skills Gap

The human cost is immediate. 60% of white-collar workers fear redundancy due to AI, yet 96% believe AI can benefit their jobs. The disconnect lies in training-80% of white-collar and 76% of blue-collar workers demand more AI training than employers provide.

For Africa, AI preparedness is rated lowest worldwide due to skills, education, and infrastructure weaknesses. Without intervention, AI risks "premature de-professionalisation"-shrinking high-skill job space before economies develop them.

At the BoU, we invest heavily in human capital-training staff in Power BI, Python, R, Azure; establishing communities of practice; partnering with the IMF, FSD Uganda, and academic institutions.

I congratulate The Corporate Trainer platform for contributing to Uganda's digital skilling agenda. Private sector initiatives are essential for closing the skills gap at scale.

The path requires three actions: reorient foundational education for a digital-first future; launch national upskilling initiatives; and cultivate an AI-native entrepreneurial ecosystem. Because skills without economic opportunity are merely credentials.

Understanding Human Intelligence: The Cognitive Divide

To navigate transformation successfully, we must understand what distinguishes human from artificial intelligence.

Current AI systems are "prediction machines"-calculating probabilities from historical patterns, backward-looking, optimised where the past predicts the future.

Human cognition is fundamentally different. We are "causal engines"-developing cause-and-effect theories, asking "what if?" questions, building mental models, understanding why things happen.

Imagine an AI trained on every text written up to 1633. Asked about the cosmos, it would confidently support the geocentric[2] view-not because it's true, but because its training data supports that consensus.

What humans possess-what allowed Galileo to challenge consensus despite persecution, what enabled the Wright brothers to believe in flight when evidence suggested impossibility-is data-belief asymmetry: holding beliefs contradicting existing data.

AI exhibits data-belief symmetry-it cannot believe what data doesn't support. This makes it powerful for managing risk in stable environments but fundamentally unsuited for navigating uncertainty where the past offers no reliable guide.

The Strategic Framework

This suggests a clear deployment framework:

Deploy AI to exploit the known: Optimise, automate, scale processes where historical patterns hold-supply chain logistics, fraud detection, routine compliance, credit scoring.

Reserve human intelligence for exploring the unknown: Focus humans on tasks defined by uncertainty, novelty, causal complexity-developing business models, formulating strategy amid disruption, asking questions that frame problems AI will solve.

The most successful organisations and nations will master this symbiosis-harnessing AI not to replace people but to free them from the predictable and empower them to confront the unknown, create new tasks, generate novel knowledge, lead with purpose into an uncertain future.

VI. The Governance Imperative: Building Trust

All of this depends on trust. Yet trust is eroding. Confidence in AI companies to protect data fell from 50% to 47% between 2023 and 2024.

This erosion is not irrational. We have witnessed algorithmic bias, AI-generated "deepfakes," privacy violations, and "hallucinations" generating false information. The response cannot be to slow innovation, but neither can we proceed recklessly.

AI has the potential to reduce wage inequality by automating high-skill tasks, but may simultaneously increase wealth inequality by concentrating returns to capital owners. Without proactive policy and building local capacity, AI may exacerbate cross-country inequality.

Globally, we see shifts from principles to legislation. The OECD AI Principles promote inclusive, transparent AI. The EU AI Act takes a risk-based approach. The Council of Europe's Framework Convention represents the first international treaty.

For Uganda and Africa, the challenge is developing governance that fosters innovation while mitigating risks through soft law, regulatory sandboxes, and hard law approaches.

At the BoU, our governance framework ensures rigorous validation, ethical data management, and central human oversight. We learn from innovations like Zero-Knowledge Proofs[3] demonstrating how to verify compliance without exposing sensitive data.

Because what we build through responsible governance is the social license to operate-the public trust enabling innovation to flourish.

VII. A Call to Action

My friends, Uganda stands at a crossroads. Down one path lies dependence-on imported technology, foreign expertise, external frameworks-risking premature de-professionalisation. Down the other lies agency-shaping our digital destiny, building systems reflecting our values, participating as creators.

The choice is ours. But standing still is not an option.

To policy institutions: Institutionalise data governance. Invest in digital infrastructure. Make evidence-based decision-making the standard.

To private sector innovators: Build ethical, inclusive, context-appropriate AI solutions. Invest in training-80% of workers demand more AI skills than you provide.

To academia and researchers: Bridge evidence with policy through applied data science. Your graduates and insights are transformation's raw materials.

To development partners: Support Africa in building foundational AI capacity. Finance infrastructure, skills programs, governance frameworks.

To all gathered here: Commit to collaboration. Build bridges between government and industry, regulators and innovators, researchers and practitioners.

VIII. Conclusion: Turning Insight Into Impact

Ladies and gentlemen, "From Insight to Impact" is more than a theme. It is a mandate.

We know AI is transformative. We know it requires patient investment. We know it can strengthen financial systems, guide investment, and enable transformation. We know it demands new skills, ethical governance, and human-AI symbiosis.

The question is whether we have the will, capacity, and unity of purpose to translate insights into tangible impact.

At the BoU, we have made our choice. We are transforming from a data-collecting institution into a data-driven central bank-where insight informs policy, evidence powers reform, analytics strengthen oversight, and innovation serves stability.

We will invest in technology, but more importantly, in people. We will advance digitalisation with digital defence. We will promote innovation while safeguarding integrity.

Because our measure of success is not system sophistication but how effectively those systems serve Ugandans. Not data volume but prosperity generated. Not AI advancement but contribution to financial stability, inclusive growth, and sustainable development.

The journey is a generational marathon. But every marathon begins with a step. Every transformation begins with a choice-to lead rather than follow, to act rather than observe, to build rather than consume.

Today, we choose to lead.

Let us work together-regulators and innovators, scholars and citizens, government and industry-to ensure data and AI serve the public good, strengthen financial systems, guide smart investment, and uplift all Ugandans.

On behalf of the BoU, I commit our steadfast partnership. Through responsible data governance, ethical AI adoption, and evidence-based policymaking, we will promote price stability and financial system soundness in support of Uganda's socio-economic transformation.

I thank Mr Arthur Ronald Arinaitwe and the organisers for this timely convening. I wish you fruitful deliberations. And I look forward to the day-not far from now- when we look back on this symposium as the moment Uganda decisively chose to turn insight into impact.

Thank you for listening to me. God bless!

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[1] A zettabyte is a unit used to measure extremely large volumes of data. Its scale is so vast that storing such quantities requires massive, distributed data centres - a measure often referenced in contexts such as big data, cloud computing, and global data transfer.

[2] A concept that places the Earth at the centre of the universe, with the sun, moon, stars, and planets revolving around it. This geocentric model was widely accepted in ancient and medieval times but has since been superseded by the heliocentric model, which correctly places the sun at the centre of the solar system.

[3] Zero-Knowledge Proofs (ZKPs) are a cryptographic technique that enables one party, called the prover, to prove to another party, called the verifier, that a specific statement is true without revealing any other information beyond the truth of that statement. ZKPs are essential for enhancing privacy and security across fields such as blockchain technology, authentication, and secure communications.