Analyzing Systemic Barriers to Digital Innovation: 
The case of Kenya, EAC, AU and the AfCFTA Protocol on Digital Trade

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• Presenting Author
  • Martin Mbaya – Strathmore University / University of Pretoria / ACTS

• Additional Co-authors
  • Brian Omwenga – University of Nairobi / Tech Innovators Network (THiNK)
  • Dr. Winston Ojenge – ACTS
  • Prof. Tom Ogada – ACTS
  • Matthew Njuguna – Strathmore University 2023 BCom Graduate

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Framing the conversation: AfCFTA, Digital Economy, Common African Market

• National Innovation System
  • Actors, linkages and rules

• Holistic Innovation Policy Regimes at different levels
  • National, regional, continental and global

• Business and Human Rights
  • Do major corporate entities have a burden of care for all actors in their value chain?

• Sustainable Development Goals
  • 17 goals, 169 targets, 247 indicators

• AfCFTA Protocol on digital Trade
  • An ICT Innovation Ecosystem
  • An Innovative Governance System (interests, institutions and implementation)

Source: Nairobi Leo, WIRED, Firstpost
“Kenya began collecting the digital service tax (DST) on January 1, 2021, targeting revenues earned by digital service providers including US tech giants Google, Netflix, Meta, Twitter and Microsoft could face steep rises as regional tax authorities proposed a uniform five per cent Digital Service Tax (DST) across the economies of the East Africa Community bloc. PHOTO: Furiat

But the taxman now finds itself in a dilemma two years later, faced with two different models of computing the tax amid growing pressure to abandon its hardline stance and join other countries that have adopted a globally negotiated unified solution.” SOURCE: Business Daily, February 22nd 2023
What are systemic barriers to digital innovation? Example 2: The case of Digital Learning in Kenya

A March 2020 study by a US research team (Hodges et al. 2020) coined the phrase “Emergency Remote Teaching” (ERT) to describe how COVID-19 related institutional constraints drove digital learning adoption among various universities. ERT is a form of digital learning involving “a temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances”. According to Hodges et al. (2020), many universities canceled “all face-to-face classes, including labs and other learning experiences,” and “mandated that faculty move their courses online to prevent the virus that causes COVID-19.”
The Policy Process Model is anchored in political systems theory and provides a systematic way of moving from a policy problem to a solution working through institutions with a focus on AI and Africa’s Demographic Dividend.

**CONTEXT:** What are systemic barriers to digital innovation?

**POLICY PROCESS**  
(Cloete & de Coning)  
1. Problem definition  
2. Policy design  
3. Policy implementation  
4. Policy evaluation

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*Mbaya, Mudida and Omwenga 2022*
**EXAMPLE 3: AI in Kenya through a Practitioners Guide**

AI from a perspective of policy design/formulation (policy options and policy instruments/tools)

- Dr. Lawrence Nderu (JKUAT)
- Dr. Winston Ojenge (ACTS)
- Martin Mbaya (Strathmore University)
- Brian Omwenga (University of Nairobi)

**DEFINITIONS:** Artificial Intelligence (AI); AI Practitioners; AI Developers; AI Users

**POLICY INSTRUMENTS / TOOLS:** “Other than the principles of ethical AI, another dimension of best practice in using and deploying AI involves identifying tools that actors can use in the policy process with a focus on AI. Such tools can be applied in the four steps of the policy process model: problem definition, policy formulation, policy implementation, and policy evaluation. Importantly, different tools can be used to address dilemmas at one or more steps of the policy process model, focusing on AI. Examples of some tools and the steps they can apply are the Tony Blair Institute’s AI Readiness Scorecard Toolkit, GAEIA Ethical Dilemma Template (https://gaeia.world/), Constructions of Public Office Kenya Scenarios (https://warwick.ac.uk/fac/arts/history/research/centres/ehrc/research/current_research/constructionspublicoffice/kenya/scenarios), and Kenya National Action Plan on Business and Human Rights (https://globalnaps.org/).”

**CONTEXT:** What are systemic barriers to digital innovation?
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**EXAMPLE 3: AI in Africa through AI4D**

AI from a perspective of policy implementation (projects and programmes)

**Cameroon**

**University of Yaounde I**

- Dr. Messi: parallelization of machine learning models
- Donald: parallelization of recurrent neural networks for hate speech detection.
- Brice: Medical image captioning
- Mogo: reduce the time of graph analysis application using machine learning techniques

**Kenya**

**African Center for Technology Studies**

- Caroline (HR) – Using AI for background checks
- Fiona (Communications) – Using AI to identify appropriate images for use in marketing posters
- Alfred (Communications) – Using AI in social media
- Marvin (Procurement and Logistics) – Using AI to track individuals and materials during all event phases e.g. automated check-in and lost luggage

**PROJECT WEBSITE:** [https://africa.ai4d.ai/](https://africa.ai4d.ai/)

**PROJECT PURPOSE:** Our mission is to improve the quality of life for all in Africa and beyond by partnering with Africa’s science and policy communities to leverage AI through high-quality research, responsible innovation, and talent strengthening.
Conclusion and Recommendations

• African Policy focused Think Tanks should prioritize **Technology Forecasting, Technology Foresighting, Technology Prospecting** and **Technology Assessment** for Emerging Technologies like Artificial Intelligence in support of national, regional and continental governments through global partnerships
  • Example: GPSDD (GIZ); AI4D (SIDA/IDRC); November 2023 convening (Microsoft, IBM, AUDA-NEPAD, University of Pretoria)

• The AfCFTA Protocol on Digital Trade should pilot in practical ways how internet access, payment systems and physical movement of goods and services can benefit anyone transacting
  • Pilot in 10+ African countries: Kenya, South Africa, Senegal, Ethiopia, Rwanda, Ghana, Cote D’Ivoire, Cameroon, South Sudan, Burundi, Nigeria and Egypt
  • Learn from content creators!
My ongoing research spread out over the next many years focuses on Responsible AI and ethics with an emphasis on: policy; sustainability, innovation and human rights.

We are experimenting constantly too in society!

**PhD Primary Research Question:** What are the systemic barriers to digital learning innovation in Africa as experienced by universities?

**M. B. O. N. A. ? Framework on responsible AI**
- Me
- Bias
- Ownership
- Natural Intelligence
- Artificial Intelligence

**Project Research Question:** Are National Action Plans on Business and Human Rights an effective responsible business conduct policy instrument?
EXAMPLE 3: AI in Kenya through ACTS and Konza

Konza hosts key institutions like the Africa Center for Technology Studies - ACTS (inspired by SPRU in UK) and KAIST Kenya (inspired by KAIST in S. Korea) that drive innovation in AI.

ACTS

A Brief History

The Africa Center for Technology Studies (ACTS) is a knowledge development research think tank on emerging applications of science, technology and innovative policies for sustainable development in Africa. ACTS was established in 2005 and is led by Dr. Thomas M. Kariuki. ACTS is part of the ACTS Network, a global partnership of universities and research institutions that aims to strengthen the capacity of African countries to address the challenges of sustainable development.

Konza (Kenya)

Konza is a planned city in Kenya that is being developed as a hub for technology and innovation. It is located on the coast of the Indian Ocean and is expected to be completed in 2025. Konza hosts key institutions like the Africa Center for Technology Studies - ACTS and KAIST Kenya that drive innovation in AI.

https://www.acts-net.org/about/acts

IMAGE SOURCE: Internet

https://konza.go.ke/project/kenya-advanced-institute-of-science-technology/

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AI Practitioners from various National Innovation Systems, joined us at ACTS and CJLF as we celebrated the legacy of late Prof. Calestous Juma on Thursday December 15th, 2022 virtually and launched his book ‘The University Drop In’ in June 19th, 2023 at Strathmore University.

https://www.calestousjuma.org/

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Thank You!

WEBINAR LINK: CENTER FOR GLOBAL DEVELOPMENT

https://youtu.be/Hva1hswlOtY?si=T_KUCCDdURZy27o

We meet again virtually on Friday December 15th, 2023 to celebrate Prof. Juma’s legacy – JOIN US!