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Research and Education Networks, Development, and the Digital Transformation of the Policy and Practice of African Higher Education

Higher education in Africa has been perceived by many as a way to further development goals, specifically by creating a sense of national unity, nurturing collective self-reliance, and reducing social inequalities (Samoff & Carroll, 2004). Oketch (2016) claimed that the best way for universities to impact development in Africa is by expanding access and improving the quality of higher education. Often these objectives are discursively framed as building an emerging African knowledge economy (Molla & Cuthbert, 2018), leading to calls for significant and systematic change in higher education. As a result, international development organizations, IFIs, continental bodies, and regional associations have sought new modalities and tools in higher education to impact African development, particularly the use of information and communication technology (ICT).

In Africa, however, ICT, the development, availability, and use of, has several challenges to overcome: a lack of institutional infrastructure, sufficient bandwidth, and limited ability to employ teaching and learning technologies in the classroom (Kituyi & Tusubira, 2013). This is compounded by broader social barriers; less than 10% of young people have access to higher education in many countries in Africa (Ilie & Rose, 2016). Moreover, critiques of Western technopostivism inherent to the ICT policy discourse have surfaced misgivings related to the performance outcomes and appropriateness of ICT adoption in Africa (Njenga & Fourie, 2010) and further uncover a lack of will on the part of policymakers to create comprehensive, contextually appropriate ICT strategies across Africa (Ojo, 2106). Using a multi-phase, mixed methods research approach, I explored the work of organizations outside of formal policymaking, national research and education networks (NRENs), in Southern and Eastern Africa and their role in diffusing ICT and transforming African universities.

Research and Education Networks

Increasingly research and education networks (RENs) are being tapped as regional and national strategies for improving technology use at universities. In 2006, the Association of African Universities created the REN program to support ICT initiatives, to influence ICT policymaking, and to promote REN creation more broadly on the continent (Johnson, Hirt, & Hoba, 2011). Within this context, RENs are made up of researchers, faculty, administrators, and technology specialists who oversee datacenters, provide high speed internet and gateway e-infrastructures, and train faculty and staff at member ministries, institutes, research centers, and universities. These organizations function outside of formal higher education and ICT policymaking, but connect to important institutional agents that influence the policy landscape.

ICT4D

ICT4D is a dynamic social process that capitalizes on digital technology advances, such as internet-based and mobile service artifacts, and subsequent proliferation, to transform human development in developing countries (Heffernen, Lin, & Thompson, 2016). When considered within the ICT4D paradigm, NRENs labor under two dominant discourse communities: policy landscapes: "This perspective considers ICT innovation in developing countries as a process of diffusion of knowledge"(Avgerou, 2010, p. 3); and the practice arena: "the development and use of ICT artifacts···in the local context of a developing country"(2010, p. 4). These discourses framed this research.

Methods

Using a multi-phase mixed methods design, the focus of the research was on the 16 NRENs in Southern and Eastern Africa. These are the most robust regions of NRENs. The first phase of the study focused on the NRENs as cases. Five cases were selected for investigation from a total of 16 members, using critical case sampling. This phase sought to construct typologies based on prevalent dimensions of the cases related to

national development initiatives, policymaking, and policy implementation. Data collection entailed in-depth semi-structured interviews with NREN leaders and document collection. Analysis led to a typology that aggregated data across cases, guided by the following questions:

1. How do NREN leaders describe the ways in which they contribute to ICT4D via interactions with key policy makers and policy influencers?
2. What dimensions typify NREN involvement in policymaking?
3. In what ways do NRENs stimulate and connect to ICT artifacts at member universities?
4. What heuristics emerge when considering NREN cases constructed from the qualitative and quantitative phases of the study? After the construction of the typology, I then surveyed all 16 NRENs focusing on several key elements of the policy landscape: networking, governance, policy formation, diffusion, and adoption. Data analysis was conducted via statistical tests (frequencies and regressions models) focused on the first two research questions. The final phase of the study entailed identifying 5 new cases and interviewing new CEOs not previously involved in the first phase and focused on the 3rd research question on ICT artifacts at universities. I collected NREN stories and examples within the practice arena related to the ICT4D framework.

Findings

The final analysis answered the final research question and resulted in empirically-established cases that capture NRENs as policy actors within the ICT4D policy landscape and connected their work to practice arenas encompassing ICT artifacts and applications at African universities. Three ideal types emerged –hierarchical, collaborative, and situational –related to their policymaking efforts. Key university ICT artifacts emerged from NREN activities that addressed specific development issues: new business startups (that addressed employment development), researcher collaboration via cloud and high performance computing (that addressed climate and agricultural development), and new learning modalities (that addressed educational access and life-long learning development), among others.

Significance

African higher education is on the precipice of being an authentic driver in development, so it is past time an Africanized ICT discourse overtake the policies and rhetoric of the Global North pushed through pervasive technopositivism. NRENs could spearhead this effort, because of their ability to diffuse ICT innovations in African universities and to transform institutions. The creation of such a discourse could lead to improved policymaking, enhanced contextualization of ICT initiatives at universities, better buy-in from higher education actors, and meaningful development outcomes.

Summary

Sub-Theme

SMART Governance: Services and tools

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