Absence of a National Policy

ICT Incorporation in Uganda's Higher Education Institutions

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An Overview of Uganda's Higher Education Institutions

Uganda's higher education (HE) system has massively expanded since its liberalization in 1993 (Saphina, 2017) with the introduction of neoliberal policies allowing both the private sector and the state to participate in its offering. This was aimed at providing more opportunities to Ugandans in different geographical locations to access higher education (Bisaso & Achanga, 2023). According to *Uganda's University and Other Tertiary Institutions Act 2001*, the Ministry of Education is the overall coordinator and regulator of Uganda's education. Below the ministry is the National Council for Higher Education (NCHE), a semi-autonomous body mandated to supervise all higher education institutions in Uganda. In the current setting, HE in Uganda includes universities; other degree awarding institutions (ODIs) such as Uganda Management Institute (UMI), which offers degrees up to the doctoral level; and other tertiary institutions (OTIs), such as Makerere Institute of Social Development (MISD), which are limited to only diploma programmes (Bisaso & Achanga, 2023). All these categories of HEIs include both public and private ones (Ministry of Education and Sports, 2019). According to NCHE's State of Higher Education Report for 2020/2021, there were 246 HEs in Uganda (NCHE, 2023). Of these, 9 were public universities,[1] 48 were private universities, 19 were ODIs, and the rest (170) were OTIs. In terms of ownership as per the 2020/2021 NCHE report, the majority (74%) of the HEIs in Uganda were privately owned, leaving only 26% under public ownership. This signifies that most of the HEIs in Uganda are privately owned, operating with the goal of profits.

Uganda is an active member in the international arena and subscribes to protocols from the United Nations (UN), African (AU), and the East African Community (EAC), as well as the international Network of Quality Assurance Agencies in Higher Education (NCHE, 2020/2021-2024/2025 strategic plan, NCHE, 2020). As such, it follows the African Union's ten-year strategic plan (2014), *Science, Technology and Innovation Strategy for Africa* (STISA, 2014–2024), that guides the development of science, technology, and

innovation on the continent (Daniels, 2017; Iizuka et al., 2015) and stresses the need for ICT infrastructure development such as access to broadband internet, stable electricity, and basic telecommunication services, among others.

ICT Policy Development in Uganda

ICT incorporation in Uganda is a mandate of the Uganda Communication Commission (UCC), National Information Technology Authority Uganda (NITA-U), and Ministry of ICT through regulatory and monitory roles. ICT was liberalized in the country in 1996 after the adoption of the telecommunication policy to increase access to and utilization of ICT services (Ministry of ICT, 2014). The telecommunication policy was enacted in the same year to increase competition and investment in the sector to increase both the quality and availability of telecommunication services. This also led to the privatization of Uganda posts and Telecommunication Corporation. The liberalization led to an increase in the number of telecommunication companies in the country, with over 20 operators currently licensed. The number of telephone subscribers has increased steadily from 49,518 in 1996 (Econ One Research, Inc, 2002) to 33.1 million in 2022, with a mobile phone penetration rate of 60% (UCC, 2022). The cost of telecommunication has reduced significantly (UCC, 2022). Wireless networks have developed, and mobile phones adopted by most Ugandans, although stability and cost remain stumbling blocks for ICT usage in the country (Ariani et al., 2017; Okuda, 2023; Waiswa & Okello-Obura, 2014).

Several other policies have been developed in the ICT domain. The first was the National ICT Policy Framework, launched in 2003 (Ministry of Works, Housing and Communications, 2003), which set out the government's vision for the development of the ICT sector in the country (Ministry of ICT, 2014). This policy framework focused on four key strategies, including infrastructure such as telecommunication networks access to networks; human capacity building of citizens through education and training; applications such as e-government, e-health, and e-education; and regulation focused on creating a favourable regulatory environment for the development of the sector. Among the four, training of human capacity was the key, where collaborative efforts of the industry and the training institutions were recommended (Farrell, 2007). This policy also recognizes the need to embrace lifelong education for all, the goal of lifelong learning (3L), and assigns ICT integration into the education system as the main means to achieve this goal (Farrell, 2007).

In 2004, assessment for the e-readiness of Uganda was conducted by the United Nations Conference on Trade and Development (UNCTAD). This assessment revealed that Uganda's e-readiness was low in three of the four aspects of Uganda's 2003 policy: ICT infrastructure, human capacity, and e-government. This assessment also made several recommendations for improving Uganda's e-readiness. Besides increasing investment in ICT infrastructure, improving the skills and knowledge of people to use ICT,

and strengthening e-government initiatives, this exercise recommends the promotion of the use of ICT by businesses and encouragement of ICT use by individuals and communities. Subsequently, an ICT working group was formed and further recommended the formation of an ICT ministry to address the challenges of different aspects of ICT scattered in different government ministries, leading to poor coordination and implementation (Ministry of ICT, 2014). As a result, the Ministry of Information and Communication Technology (ICT) was established in 2006 to oversee the implementation of the National ICT Policy Framework (Ministry of ICT, 2014), signalling the government's commitment to ICT development.

To further enforce the development and implementation of policies, the National Information Technology Authority-Uganda (NITA-U) Act was enacted and passed by the parliament of Uganda in 2009 (NITA-U, 2009). This act established the NITA-U as a government statutory agency responsible for coordinating and regulating IT services in Uganda. It also provides technical support and advice for the use of IT in Uganda and promotes the development and use of e-government, e-commerce, and other e-transactions in Uganda. Furthermore, it regulates the procurement of IT hardware and software in the public sector; creates and manages the national databank; sets standards for IT planning, acquisition, implementation, and security; and regulates the electronic signature infrastructure and other related matters as used in electronic transactions in Uganda.

Three acts were enacted in 2011, fortifying ICT regulation. These were the Electronic Signature Act, Electronic Transactions Act, and Computer Misuse Act. The Electronic Signatures Act recognizes the legal validity of electronic signatures and documents, providing a framework for digital certificates and certification authorities. The Electronic Transactions Act promotes electronic transactions by recognizing electronic records, contracts, and signatures as legally valid and enforceable while emphasizing the preservation of integrity and authenticity in digital interactions. The Computer Misuse Act, on the other hand, addresses cybercrime, unauthorized access, data interception, and offensive communication in digital spaces. Collectively, these acts aim to provide legal clarity for using ICTs in Uganda, facilitate electronic commerce, and safeguard cybersecurity. In addition, the National Electronic Government (e-Government) Policy Framework was developed in the same year to ensure online accessibility of all government services and opportunities for community participation in a friendly, transparent, and efficient manner for all sections of society.

In 2014, the National ICT 2003 policy was revised (Ministry of ICT, 2014). This revision further highlighted the role of developing human capacities to use ICTs as one main lag in adopting ICTs (Ministry of ICT, 2014) and where the forthcoming focus for the government would be. This 2014 policy revision requests a review of curricula at all levels of education, aiming to improve ICT investment; improve teacher skills; establish educational resource

sharing; and promote open, distance, and e-learning (ODeL) modes of study (Ministry of ICT, 2014). It also establishes ICT as one of the subsidiary subjects in the Upper Secondary (Advanced Level) curriculum (UCC, 2014b) while a new Lower Secondary Curriculum calls for the integration of ICTs across the entire curriculum, which could develop digital skills for all students (MoES, 2020). Furthermore, to improve the practical skills of students and teachers, between 2008 and 2014 the government, through UCC, has set up and equipped over 1,300 School ICT Labs. In addition, the government set up the Uganda Institute of ICT (UICT) as a Centre of Excellence for ICT Training, Applied Research and Consulting to provide ICT Skills-based and market-driven training and applied research (MoES, 2020). Besides learners and focus on general education, the National ICT policy revision also focuses on the marginalized; women, youth, and people with disabilities, and advocates equal participation and promotion of ICT as an alternative career for this group. Special arrangements for marginalized groups were created, e.g., ICT programmes for women. This revision also emphasized the importance of adopting cost-reducing measures to counter the high cost of equipment, installation, and maintenance. This revision also recognizes the implications and/or risks that may result from failure to mainstream ICT in society and highlights the cross-cutting nature that affects ICT development, e.g. infrastructure development, legal and regulatory framework, as well as the role of other sectors plays including government ministries, Ministry Departments and Agencies (MDAs), and the private sector (Ministry of ICT, 2014).

In 2016, the Ministry of ICT was renamed to the Ministry of ICT and National Guidance (MoICT&NG) and was given an additional mandate to oversee national ICT guidance in Uganda. This includes tasks such as promoting national unity and cohesion and countering harmful propaganda. In the same year, the second national development plan (NDP II, with the theme of "Strengthening Uganda's Competitiveness for Sustainable wealth creation, employment, and inclusive growth") was launched to support Uganda's Vision 2040. NDP II similarly emphasized ICT as a crucial sector in the country and ICT infrastructure and digital skills training as key strategies. To support the objectives of NDPII, the National broadband policy was developed in 2018 (MoICT&NG, 2018), emphasizing the role of broadband internet as a critical enabler. The Third National Development Plan (NDP III) also prioritizes the use of ICT in education (National Planning Authority, 2020).

On October 14, 2022, the Ugandan President signed into law the amended Computer Misuse Act, 2022, recognizing the fast technological advancements since the enactment of the principal act in 2011 and the need to update the regulatory landscape. The amendment broadens one key provision in the principal act regarding the offence of unauthorized access and adds new criminalization of activities such as unauthorized sharing of information about children and abuse of social media. The launching of the national digital transformation Roadmap in 2023 by the Ugandan government signifies

government readiness to support ICT development. This is in addition to efforts like establishing the ICT ministry to guide ICT development and integration earlier in 2006 as well as the recognition of ICT role in the national development plan, including the current Third National Development Plan (NDP III) for the country.

The National ICT Policy in Education and Higher Education Sectors

As mentioned above, ICT skills and human capacity are repeatedly recognized in various national ICT policies as key strategic areas. Not only that, the Ugandan government also specifically recognizes the role of ICT in knowledge dissemination will accelerate social-economic development (Ministry of ICT, 2014). Uganda's Ministry of Education and Sports recognizes the need to adopt global ICT standards in terms of assessment, training, and certification in its draft digital agenda report (MoES, 2020). In this report, the ministry admits that a national ICT in education policy is essential for achieving the country's digital agenda, including SDG4 which aims for an inclusive and equitable quality education (Miao et al., 2022).

In May 2020, the Ministry of Education and Sports constituted a technical committee to spearhead and fast-track the development of the Education Digital Agenda Strategy (EDAS) and ICT in education policy. Aligned with the Second National Development Plan (NDP II), which advocated for human capital development in the sector, and based on other existing strategies and plans developed by other sectors, the EDAS 2021–2025 provides both a Rationale and Action Plan for integrating ICT into teaching, learning, assessment, sports, and administration (Ministry of Education and Sports, 2020). The strategy also aims to establish a framework that harmonizes ICT initiatives for teaching, learning, and management of the education and sports sectors. In 2021, the Ministry of Education and Sports developed the Digital Education Standards and Guidelines (DESG) for the education and sports sector, providing a framework for the effective use of ICTs in education in alignment with the EDAS 2021–2025 (Ministry of Education and Sports, 2021). DESG covers the following areas:

- Management and Governance: The DESG guides the management and governance of ICT in education, including the development of ICT policies and strategies, the allocation of resources, and the monitoring and evaluation of ICT projects. Additionally, it also guides to ensure that the deployment, usage, and services provided by all educational institutions meet the requirements of Education Digital Agenda Strategy (EDAS);
- ICT infrastructure and systems: It guides the development and maintenance of ICT infrastructure and systems, including computer networks, software, and hardware;

- Pedagogy: Provides standards and guidelines on effective e-learning pedagogy and delivery as well as the implementation of blended learning;
- Content development: On five aspects, including approaches of content development, software and tools, process of content development, quality of content development, and finally the contemporary and future approaches;
- Training and professional development: Provides guidance on the professional development of lecturers/teachers/instructors (often the e-learning facilitators and the content developers) in institutions;
- Adoption and diffusion of e-learning: Includes standards and guidelines on strategic planning, operationalization, awareness raising and implementation, monitoring and evaluation, recognition, and awards.

DESG can benefit HEIs by providing a framework for the effective use of ICT, promoting equality and access to the institutions, and promoting research and innovation. However, these standards and guidelines do not provide clarity on the roles and responsibilities of stakeholders in the implementation of ICT in education (Muyinda, 2021). Additionally, they lack a comprehensive plan for monitoring and evaluation (Muyinda, 2021) and hence there are challenges in identifying the progress of ICTs in education and areas of improvement. Furthermore, the standards and guidelines are not clear, but they require adequate funding and resources to be addressed effectively, yet the DESG doesn't indicate the source of the funding.

In the higher education sector, the Uganda National Council for Higher Education (NCHE), a government body mandated to directly supervise HEIs, developed minimum standards for ODeL Programmes in 2019 (NCHE, 2019) in line with the national ICT policy. These minimum standards were designed to guide HEIs in the design, implementation, and delivery of quality ODeL Programmes, highlighting the need for adequate internet bandwidth, well-equipped laboratories, and robust servers. In addition, NCHE highlights ICT in its strategic plan 2020–2025 as one of the themes and reveals plans to support resource mobilization to build human resource capacity (NCHE, 2017). In June 2021, NCHE further developed guidelines for the Adoption of an Emergency ODeL System by the HEIs in the wake of the COVID-19 pandemic. This guideline aims to help HEIs to resume teaching and learning activities remotely during lockdown. The guideline also provides a checklist of requirements for accreditation of ODeL systems as well as requirements for implementation of ODeL.

To this end, drafting of the education sector ICT policy is reported to have started way back in early 2000 (Farrell, 2007), but this is not yet realized (Hosman, 2010). In fact, a study by Mukhula et al. (2021) reveals that even integration in the curriculum, management, and coordination is still low. In the absence of a sector policy, it is also hard for the different regulators to specify the necessary qualifications and training a teacher and/or a facilitator should attain or attend to ensure smooth learning for all categories of learners.

According to Mukhula et al. (2021), policy affects implementation. Davis et al. (2019) note that despite the importance of ICT in service delivery, policy implementation remains a constraint in Uganda's local government. The Ugandan government continues to adopt policies to guide specific government programmes, for instance, the provision of agricultural extension services in the country is guided by the National Agricultural Extension Policy (NAEP) (MAAIF 2016; Mushemeza, 2023). The policy specifies the different roles of the government departments and agencies and the policy strategy stipulates the desired qualifications of the individual actors in agricultural extension services delivery. Hence, the absence of a national sector-specific ICT policy in education (and HEIs) to guide ICT integration also means that HEIs often have to use their strategic plans as the guiding tool for ICT integration and development. This will no doubt affect integration due to a lack of standards and enforcement. Kaliisa and Michelle (2019) emphasize the need for sector-specific policy if the ICT integration in HEIs is to flourish.

ICT Infrastructure Development in Education and Higher Education Institutions

ICT-based education and its effectiveness can only be achieved in the presence of adequate infrastructure (Gupta & Hayath, 2022). However, ICT infrastructure and ICT service provision remain a major stumbling block in the adoption and integration of ICT in the education sector in the sub-Saharan region (Bariu, 2020), Uganda included (Semeon, 2019). Although not unique to HEIs, infrastructure-related challenges manifest for Ugandan HEIs include underdeveloped ICT infrastructure, high internet (bandwidth) costs, and high electricity costs among others (Farrell, 2007). In its 2020/2021 State of Higher Education report, NCHE similarly recognized and echoed the challenges of bandwidth and access to resources. The report specified that the number of computers available for student access (students own + shared) in HEIs in Uganda are only 20,823, which gives a ratio of 12 students per computer (NCHE, 2023).

Reviewing the growth of ICT infrastructure, it is notable that ICT infrastructure in Uganda has bloomed following the liberalization of the telecommunication sector, particularly after the establishment of the Rural Communication Development Fund (RCDF[2]) in 2001, which targeted improving universal access to telecommunications (Farrell, 2007). In partnership with the Ministry of Education and Sports, UCC has implemented the RCDF1 (between 2003 and 2009), RCDF II (between 2010 and 2016), and RCDF III (between 2017 and 2023), focusing on access and usage of communication (UCC, 2024). Critical to note is that the RCDF has been renamed to Uganda Communication for Universal Service and Access Fund (UCUSAF) to improve digital inclusivity in rural and urban Uganda (UCC, 2024). RCDF majorly focused on setting up internet connectivity for the

established laboratories, retooling of ICT teachers, installation of virtual science content, and ICT training for communities (UCC, 2014b). By the end of 2014, 1,027 laboratories had been set up in government secondary schools, 43 in tertiary institutions, 9 in universities, and 7 in health training institutions (UCC, 2014a). Internet connectivity was set up for 816 computer laboratories, 960 teachers had been retooled, virtual science content was installed in 634 laboratories, and 62,000 community members were trained (UCC, 2014a). In 2017, the RCDF policy was revised, coming up with RCDF III 2017/2018-2021-2022, whose focus was broadband rollout. Several developments have taken place including the launch of 22, 3G base stations by the Commission (UCC) in partnership with MTN Uganda in 2019. These marked the start of the much-anticipated network capable of covering the entire country with broadband internet service.

Although NCHE has developed minimum standards and guidelines for ODeL (NCHE, 2020), these guidelines can only adequately inform the adoption, but a national policy is required to guide implementation and operationalize strategies to ensure the establishment of a structure for integration and define the roles of each stakeholder. On the ground, ODeL has been adopted by several universities (albeit at very slow adoption rates) while the majority of the institutions did not meet the requirements of ODeL (NCHE, 2022). According to Bisaso and Achanga (2023), only 47 HEIs equivalent to only 17% applied for and were eventually approved to roll out the ODeL system during the COVID-19 lockdown. NCHE also reported unlimited internet bandwidth and access to e-resources. Some instructors had to resort to using their personal devices and smartphones to access the internet, making teaching expensive for them: one reason that might explain resistance to integrating ICTs into their instructional practices (Nyakito et al., 2021; Ujeyo et al., 2022). This resulted into minimal or intermittent student interactions with facilitators and unequal learning outcomes for students; many graduates don't have the skills to operate highly sophisticated software or equipment (Bwire et al., 2020). This unequal access due to connectivity and gadgets also implies greater reliance on costly expatriates to manage digitized service delivery (Mariyam & Saeed, 2021). Often, service providers/ICT experts are hired from outside Uganda to manage software for HEIs and other government departments.

Human Capacity Development and Information Literacy

New ICT skills and competences need to be frequently retooled (Rana, 2018) as technological advancements are made by the day. In the absence of information literacy and capacity-building initiatives to improve information literacy, ICTs cannot be used effectively to improve educational practices (Li et al., 2019). Despite the existence of policies, programmes and activities aimed at capacity development (MoES 2022), Messina and Tabone (2012)

found very limited knowledge of technology and how to integrate it into pedagogy and context among many academic staff in HEIs. In another study by Bwire et al. (2020), it was emphasized that the major challenge to adoption of online learning was the lack of necessary skills for development of online courses. Ujeyo et al.'s (2022) study of a case study at Busitema University also highlights lack of knowledge and inadequate skills, among the reasons for low levels of ICT adoption by academic staff.

The Ugandan government commits itself to developing and retooling its ICT-talent-building mechanism through the adoption of globally benchmarked training and certification standards (Gillwald et al., 2019). One such initiative is the establishment of the Uganda Institute of Information and Communications Technology (UICT), the only government institution specializing in the training of mid-level technicians. UICT is managed by the UCC, and It offers practical-oriented ICT training at certificate and diploma levels as an alternative to the theoretically grounded degrees offered by universities and other tertiary institutions in this same professional area. The institute provides education and training in all fields related to the communications sector, including telecommunications services, computer engineering, and information technology and business management.

Partnerships

Public-private partnerships (PPPs) are common in ICT for education initiatives (Sarvi et al., n.d.), for leveraging joint resources, respective competences, and strengths in terms of ICT infrastructure and quality educational resources (Semeon, 2019). One most notable PPP in Uganda's higher education is the Research and Education Network for Uganda (RENU, also known as Uganda's National Research and Education Network, NREN), which aims at allowing ICT-enabled collaboration for Uganda's education and research institutions. RENU was founded in 2008 by vice chancellors of Ugandan universities and chief executive officers (CEOs) of some research organizations such as the Infectious Disease Institute, International Institute of Tropical Agriculture, and Mbale Clinical Research Institute among others, with a major focus on allowing for ICT-enabled collaboration for Uganda's education and research institutions (RENU, 2021). It provides high-speed internet network, web hosting, web conferencing, and cloud services among others to its member education or research institutions at lower costs (The Daily Monitor, 2021). RENU has also introduced eduroam, offering secure Wi-Fi that allows connectivity when staff, lecturers, and students move from one institution to another, sometimes even in other public places (RENU, 2021). During the outbreak of COVID-19, RENU extended eduroam in over 300 hotspots (within institutions) in the country, most notably Kampala, Mukono, and Wakiso metropolitan areas. In 2022, Renu Introduced a pocket-sized routing device called Eduroam on the Go, further improving

access by enabling connection to eduroam and the internet anytime, anywhere (Uganda National Council for Science & Technology, 2022). RENU introduced the Shared Bandwidth Capacity (SBC), which enables a number of HEIs to use a range of a specific bandwidth rather than for each subscribing for a dedicated link, enabling smaller institutions a more affordable option for the conventional dedicated links. RENU engineers also provide Direct Engineering Assistance (DEA) to member institutions, e.g. ICT staff at universities to manage and maintain their ICT infrastructure. In addition, RENU with its partners like UBUNTU NET Alliance and INSAP also donates network equipment to selected member institutions as part of the DEA programme (INASP, 2016).

ICT Usage: Institutional Policies and Readiness

The Qingdao Declaration (UNESCO, 2015) emphasized that the application of ICTs in education can be the basis for the achievement of all sustainable development goals (SGDs). The declaration also emphasized access, equity, quality, and learning outcomes as the key pillars of lifelong learning. Greater use of ICTs in education is also associated with benefits including; increased access to education, especially for those from remote areas, improved efficiency of decision-making through timely information (Miao et al., 2022) and fostering the development of 21st century skills (e.g. critical thinking, creativity, emotional intelligence, problem-solving, etc.) (Manyasa, 2021), that are essential to efficiently and effectively access and process vast repositories of information and knowledge. As technology is dynamic and requires individuals to continue adoption and learning, learning agility increasingly becomes crucial. However, all can only be effectively implemented with the presence of well-developed policies and implementation plans (UNESCO, 2011).

From the institution's point of view, universities can integrate ICT use in many aspects, including; teaching and learning, other training, research, outreach, and administration. However, Ujeyo et al. (2022) report limited actual application in all key university functions in Uganda's HEIs: teaching and learning, research, and community engagement. They also report a general tendency of ICT usage in Uganda's HEIs limited to general communication, information sharing (email and memos), and management as well as content creation. Similar to the national focus on ICT infrastructure, the focus of many HEIs in Uganda has been to ensure steady internet availability/access and stability (Omoda-Onyait & Lubega, 2011). This is often accompanied by the provision of basic ICT training: all universities have introductory computer classes (both staff and students). HEIs have also come up with various initiatives to improve their students' ICT competencies, for instance, through didactic innovation, ICT support, or the adoption of blended teaching (Mukhula et al., 2021).

The outbreak of COVID-19 also forced many Uganda universities to continue teaching and learning through Learning Management System (LMS) such as Moodle for both students and staff. LMS such as the Makerere University Electronic Learning (MUELE) System that were not used before the outbreak of COVID-19 are now occasionally used. The National Council for Higher Education is promoting blended learning. However, less focus has been geared towards the quality and format of the content as the emphasis is on technology (Bwire et al., 2020). The inadequacy of teachers to transform their material to suit online delivery modes is still a valid bottleneck. Instructors lacked the necessary skills required to transform their materials to suit online delivery modes (Tweheyo & Mugarura, 2021) and develop effective online courses with well-aligned learning outcomes suitable for different students (Bwire et al., 2020).

At the time of the writing of this chapter, only three universities have ICT policies from online searches. These include Makerere University Kampala (MUK), Mbarara University of Science and Technology (MUST), and University of Kisubi (UniK). Additional queries were put through to two other universities, and the responses received were also negative. MUK is the oldest university in the country, having been established in 1922. Like MUK, MUST is publicly owned and was formed in 1989. The University of Kisubi was established in 2015 and is privately owned. Hence, the following policies for the above-mentioned universities were reviewed:

• Makerere University ICT policy 2016–2020;
• The University of Kisubi (UniK) ICT policy 2020;
• Mbarara University of Science and Technology Information and Communication Technology policy 2019–2024

The following further examines these three policies to assess the readiness of ICT integration in Uganda's HEIs.

Table 3.1 indicates different approaches to ICT integration, likely partially due to the absence of a national sector policy. Although all three policies stress the need to support the targeted users through training for staff and students, the trainings are budgeted for at the department level for MUK, while MUST and UniK are silent about the source of funding for the training. Only UniK emphasized the context for the policy, which was to guide ICT usage to achieve university goals. Another example is that despite the relevance in all spheres/aspects of university management and service delivery (teaching, research, and outreach), however, each university has prioritized specific areas (see the "policy scope" row). For instance, MUK has guidelines under its ICT policy regulations at the different departments and units while for UniK the regulations mainly focus on the use by students and visitors. In MUK, special roles have also been assigned; for instance, the council committee on quality assurance on ICT and gender was charged with

Table 3.1 Existing ICT Policies for Some of the Universities in Uganda

University	Makerere University (MUK)	University of Kisubi (UniK)	Mbarara University of Science and Technology (MUST)
Targeted Users Areas of Application	Staff, Students, and Visitors Teaching and learning Research Administration		Teaching and learning Research Community Outreach Administration
Policy Scope	• ICT Management and Governance • Software Development and Acquisition • ICT Skills Capacity Building and service support • ICT Procurement and Software Licensing and Ownership • Special Needs ICT Usage	• Acceptable Use and User Guidelines • Computer Lab and Equipment • E-Learning • Monitoring and Evaluation	• ICT Management and Governance • Infrastructure Management and Capacity Building • ICT Procurement Disposal • Special Needs ICT use
Sources of Funding	3% of the university total budget is for ICT integration	Not specified	University annual budget
Stakeholders for Implementation	• Directorate of ICT • Council Committee on Quality Assurance • ICT and Gender Department	• ICT Department • Directorate of ICT and Quality Assurance • University Management • Academic Boards of Faculties	• Students, staff, and visitors • MUST computing services • ICT committee • University management • University Council
Monitoring and Evaluation	• Directorate of ICT • Council Committee on Quality Assurance • ICT and Gender	• Directorate of ICT and Quality Assurance • University Management	• Under the leadership of MUST computing services • With the following indicators: computer to student ratio, computer to staff, internet bandwidth, staff and students using internet
Capacity Building	Focus is to support all ICT users through training and other support services	ICT directorate	MUST computing services

advocacy for adoption and utilization as well as effective implementation, which can help the students and other staff to know who to contact when in need of ICT services and the kind of support they can get and is required of them for effective use of ICTs. Another example of the difference is that in MUST, key integration strategies regarding ICT infrastructure development require each unit (faculty) to develop a plan to acquire computer equipment for every financial year. This is not the case with Makerere and UniK. MUK and MUST also outline sources of funding for ICT integration, while this is not mentioned in UniK.

The policies also indicate different levels of comprehensiveness (e.g. seen from all rows of the table, particularly the empty cells, which means no information for that particular aspect): MUK's policy exhausts all necessary policy areas, such as the key partners/departments for implementation, the roles and responsibilities of each partner, the sources of funding, and also recognizes the special groups (women) who are usually marginalized. It defines the procedure for ICT integration to ICT-related activities in learning, teaching, research, and administration. The UniK university policy, on the other hand, focuses primarily on the users only, particularly in terms of guiding the users (employees, students, and visitors) and also the roles of the different partners or units in charge but without sustainability strategy/plan and integration. The main aim is to bar illegal use. The ICT budget also varies with universities; for instance, 3% of the total budget for MUK, while others remain silent about their commitment. Because of the difference in the need, it's also hard to determine whether whatever amount committed to this is sufficient or not, or whether a budget based on the numbers of targeted users, e.g. on total student population, is an effective way to benchmark budgets. The three policies for these universities speak volumes about the role of ICTs in HEIs in Uganda; though many institutions lack specific policies for ICT integration, the global trends in digitizing services including education propel all institutions to embrace ICTs. Though ICT infrastructure development is still a challenge for most universities in terms of equipment, including personal computers for both staff and students, having policies in place is a clear signal for readiness to integrate ICTs. This is because policies guide investment in infrastructure and integration.

Conclusion

Translating policy components into action is the most crucial part of policy formulation (Tezera 2019). This can be achieved by ensuring that both micro- and macro-level actors are working towards achieving the same goals (Siddique 2016). Though the liberation of ICT in Uganda has led to ICT development and use in the country, the absence of a national policy in Uganda, however, remains a stumbling block for monitoring, innovations, and advocacy. Integration in education is still low though Uganda subscribes to a

number of international ICT protocols; more investments are needed in ICT infrastructure. It is important to ensure that teachers and students have access to the minimum basic requirements, such as personal computers, stable internet, and data for proper instruction, learning, and interaction. This requires strategic plans and budgeting for both the government (education ministry and perhaps ICT ministry) and schools, which in turn requires the allocation of resources for ICT activities. In this regards, a national sector policy could serve as a guide to assess the necessary resources needed by universities to meet the minimum standards for ODeL Programmes and streamline access to and utilization of ICT services to all targeted users, especially the students. A specific national ICT in education policy can further be used to optimize the usage of ICTs in the improvement of accessibility to quality education and the development of lifelong learner competencies (Asian Development Bank, 2023).

Notes

1 Makerere University, Mbarara University of Science and Technology, Kyambogo University, Busitema University, Muni University, Gulu University, Kabale University, Lira University, Soroti University (Ministry of Education and Sports, 2019), and the Mountains of the Moon University which joined from 1st July 2022, are the public universities in Uganda at the time of writing this chapter.
2 The project encompasses several key components, including the expansion of digital infrastructure, capacity-building initiatives, support for digital entrepreneurship, the facilitation of cross-border trade, and the harmonization of digital regulations and standards. Interventions address location, physical inability, gender, and cost barriers (Gillwald et al., 2019).

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