



POLICY BRIEF

Innovating Doctoral Education and Training in Uganda for Research and Development: Important Actions Needed

Irene Etomaru, Fred E. K. Bakkabulindi and Tom D. Balojja
East African School of Higher Education Studies and Development
College of Education and External Studies

Makerere University

mondairyrene@gmail.com; balojjatomd@gmail.com; fekb@cees.mak.ac.ug

Uganda aspires to progress towards achieving middle-income status by 2040 as expressed in Uganda Vision 2040 (Government of Uganda, 2013). To attain the middle-income status and improved competitive advantage in the global knowledge-based economy, Uganda needs a strong research and innovation system. This cannot be realised without a critical mass of doctorates/researchers who can train innovative researchers, undertake translatable research and generate innovations. Although the most current figures are not readily available, there is acute shortage of a critical mass of doctorates/researchers in Uganda. There were only about 37 researchers per million inhabitants in Uganda by 2010, and only 26 by 2014, well below the world average of 1,083 (UNESCO, 2015). Yet, doctoral education and training capacity in both public and private universities/institutions in Uganda is very low. Only about 1,197 PhDs have been awarded in Uganda between 1970-2020. Without a critical mass of doctorates, creation of a knowledge based-economy in Uganda as expressed in NPD111 (GoU, 2020) cannot be achieved by 2040. This brief provides policy direction and practical actions necessary for innovating doctoral education and training in order to create a strong research and innovation system in Uganda.

INTRODUCTION

The National Development Plan-NDP111 2020/ 21-2024/ 25 aims to harness and sustainably use Uganda’s natural resources for the benefit of the current and future generations. Among the 18 programmes to attain this drive is the innovation, technology development and transfer programme to create a knowledge based-economy. This is aimed at increasing Uganda’s global innovation index, gross expenditure on

R&D, business sector spending on R&D, and increasing the number of Intellectual Property rights registered (GoU, 2020). To realise this, there is need to increase the number of researchers per million inhabitants in Uganda. A careful analysis of UNESCO Institute of Statistics trend data shows that the higher the number of researchers per million inhabitants, the more progressive a nation seems to be. For instance, trends in countries like the US, China, Japan, Republic of Korea attest to this fact (UNESCO, 2015).

The only gateway to increasing the number of researchers per million inhabitants to boost the R&D and innovative capacity of the economy is to train a critical mass of doctorates who can train innovative researchers, undertake translatable research and generate innovations. This cannot be attained without a strong doctoral education and training system. However, doctoral education and training capacity in Uganda is very low (See Table 1). There is a glaring deficiency in the numbers of doctorates, the quality of the doctorates, their international

competitiveness and relevance to Uganda’s development agenda (Etomaru, Bakkabulindi & Balojja, 2021; Kasozi, 2019; UNCST, 2012; Wamala & Ssembatya, 2013). This scenario is a huge bottleneck to progressing towards the middle-income status and improving Uganda’s innovative capacity in the global knowledge-based economy.

Table 1

Totals for PhDs Awarded by Universities in Uganda 1970-2020

University	Time Period	Total	Percentage
Gulu (GU)	2013-2020	15	1.5
Kyambogo (KyU)	2018	02	0.2
Makerere (Mak)	1970-2020	923	90.2
Mbarara University of Science & Technology (MUST)	2014-2019	74	7.2
Uganda Management Institute (UMI)	2018-2020	11	1.07
Bishop Stuart University (BSU)	2012	01	0.6
Busoga (BU)	2014	01	0.6
Islamic University in Uganda (IUIU)	2001-2019	14	8.1
Kampala International University (KIU)	2011-2020	85	49.4
Nkumba (NU)	2009-2019	55	32.0
Uganda Christian (UCU)	2018-2020	06	3.5
Uganda Martyrs (UMU)	2004-2020	10	5.8
Total		1197	100.0

Source: Etomaru, Bakkabulindi & Balojja (2021)

Uganda has now had three national development plans (NDP1, NDP11 & NDP111) (GoU, 2010, 2015, 2020) which like their parent Uganda Vision 2040 (GoU, 2013) only imply the importance of the doctorate in national development. Doctoral education and training is not prioritised anywhere in the national development strategy. Yet, the quality of a country’s knowledge/research system depends on the quality of the doctoral education system. Against this backdrop, in this brief we highlight what needs to be done in order to innovate doctoral education and training so it better supports Uganda’s development needs.

APPROACH

This brief is based on the findings of a study on the state of doctoral education and training in Uganda done by Capability Enhancement Project for Innovative Doctoral Education at Ugandan Universities (CEPIDE). The aim of the study was to generate evidence-based information to guide decisions on actions necessary to produce more and quality doctorates to meet the high-level knowledge and skills demand in Uganda’s growing economy. We collected data at national level through review of documents and FGD with the

National Council for Higher Education (NCHE). At the institutional level, we reviewed documents and interviewed 49 participants from 14 institutions/universities providing doctoral education and training. In this brief, we provide policy and practice guidance on how doctoral education should transform to address issues of the numbers of doctorates, the quality of the doctorates, their international competitiveness and relevance to Uganda’s development agenda.

KEY FINDINGS

1. Doctoral education and training capacity in both public and private universities/institutions in Uganda is low

Only about 1,197 PhDs have been awarded in Ugandan universities/institutions between 1970-2020. The total of PhDs awarded by public universities in Uganda between 1970-2020 is 1,025, of these, 923 (90.2%) were awarded by Makerere University. Private universities awarded only 172 (9.8%) PhDs between 2001-2020. Therefore, only Makerere University has some capacity for doctoral education and training.

2. There is inequality against females and non-STEM fields in doctoral education and training in Uganda.

Of the 1, 025 PhDs awarded by public universities between 1970-2020, only 240 (23.4%) were female. Of the 172 PhDs awarded by private universities between 2001-2020, only

42 (24.4%) were females. In private universities, of the 172 PhDs awarded between 2001-2020, only 19 (11%) were awarded in STEM fields. In public universities, 699 (68.1%) of the 1,025 PhDs awarded between 1970-2020 were in STEM fields, only 326 (31.9%) were in non-STEM fields. This is an indicator of lack of capacity for science education in private universities/institutions in Uganda..

3. Systemic constraints affect innovative doctoral education and training in Uganda. Our findings have highlighted systemic constraints, unless addressed, it is unlikely that doctorates trained in Ugandan universities/institutions will be more relevant to national development needs and internationally competitive. The prominent systemic constraints are:

(a) Funding constraints. There is no direct government funding for doctoral education. Doctoral education and training is largely dependent on funding from development partners and donors, and student tuition fees. This translates to poor quality postgraduate training environment in Ugandan universities/institutions. Inadequate exposure to rich research environments limits the development of research excellence and the innovative ability of the doctorates; leads to low through-put rates; and lowers the quality and relevance of doctoral research outputs. Doctoral research agenda is not well aligned to national development needs. Doctoral research is driven by individual interests of fee-paying students and that of the donors and

development partners.

(b) Lack of diversification of doctoral programmes. The conventional traditional PhD by research only model limits opportunities for cross-fertilization, and therefore lowers the relevance of the PhD outside specific disciplinary boundaries.

(c) Inadequate doctoral supervision and mentorship capacity. Shortage of the critical mass of academic staff with PhDs in Uganda translates into acute shortage of doctoral supervisors and mentors. Universities/institutions have no option but to retain inadequately prepared supervisors with low capacity for supervision and mentorship. This lowers the quality of the doctorates and doctoral research outputs.

(d) Lack of exposure to the relevant industry and inadequate cross-disciplinary research training. Lack of institutionalized mechanisms to link doctoral programmes to the relevant industry and other disciplines, particularly in the non-STEM fields, lowers opportunities for cross-fertilization through boundary spanning. The relevance of the doctorates and doctoral research outputs outside specific disciplines and in the world outside the academia is limited.

(e) Inadequate international networking. Insufficient international knowledge sharing limits full development of the knowledge creation capacity of doctoral students; sharing of good practices for doctoral programme development; and further development of

knowledge products. Doctorates trained in Uganda are therefore less competitive internationally.

(f) Insufficient transferable skills training. Mechanisms to develop, assess, examine and evaluate transferable skills are not clearly embedded in doctoral programmes. The current assessment and examinations procedures and practices are insufficient, they do not provide for comprehensive evaluation of doctoral learning outcomes. Consequently, doctoral candidates are bound to remain ill-prepared to fit in other settings outside specific academic disciplines.

(h) Insufficient QA for the doctoral level of education. The quality of the doctoral research environment and doctoral supervision and mentorship in Ugandan institutions/universities is low due to insufficient QA at the doctoral level.

ACTIONS NEEDED AT THE NATIONAL (SYSTEMS) LEVEL

1. Integrate doctoral education and training into national development planning

Government of Uganda should integrate doctoral education and training in national development planning within the context of the innovation, technology development and transfer programme to create a knowledge based-economy, and the human capital development programme to improve productivity of Ugandans

expressed in NDP111. To achieve this the following actions are essential:

(a) The National Planning Authority should create an interconnected national strategy for research and production of high-level knowledge and skills needed for Uganda's growing economy. This can be done by bringing together the various elements of planning for research and high-level skills for national economic and social development of the relevant ministries and government agencies such as Ministry of Education and Sports, the National Planning Authority, Ministry of Science and Technology, the Ministry of Labour and Social Development, Ministry of Public Service, UNCST, and NCHE among others. Doctoral education and training should be prioritised in the harmonised national strategy.

(b) Government of Uganda, through the National Planning Authority, should invest significantly and directly in doctoral education and training. The government should make doctoral education and training investment decisions based on high-quality doctoral programmes in areas of national need. Funding should be less institution focused, and more programme-focused. For instance, the government should catalyse cultural change in doctoral programme design by awarding funding to doctoral programmes that are cross-disciplinary and preparing students for both academic and non-academic careers through linkages with the relevant industry.

(c) The National Planning Authority should set national targets for producing doctorates in order to address the acute shortage of the critical mass of researchers in the country. After a national audit of critical skills gaps, a ten-year plan for increasing the numbers of doctorates in Uganda by a certain percentage should be developed. The proportion of increase in doctorates should target fields that directly impact national economic development and social innovation.

2. Relevant international cooperation models that can foster training of internationally competitive and locally relevant doctorates should be institutionalized

(a) The Ministry of Education and Sports together with the NCHE should create a national prestigious fellowship programme which includes a maximum of two years of study at a foreign HEIs

(b) Government of Uganda through the Ministry of Education and Sports and NCHE should fund domestically supported joint degrees or double degree doctoral programmes or sandwich doctoral programmes as instruments of internationalization.

3. Take affirmative action to address equity and access concerns

(a) The Government of Uganda through the Ministry of Education and Sports and the NCHE should take affirmative action to address access and equity concerns in regard to females, non-STEM fields and PWDs through targeted funding schemes.

ACTIONS NEEDED AT THE REGULATORY LEVEL

1. The NCHE should apply strong quality assurance measures to doctoral programmes

To ensure that investments in doctoral education and training are appropriately managed and that doctoral education and training is fit for purpose, the following actions should be undertaken:

(a) The NCHE should introduce a sufficient and well-structured legal framework necessary for programmatic, personal and institutional evaluation. The framework should adequately regulate the structure of doctoral programmes and curricula, support systems, staffing and the award of the doctoral degree. A key factor affecting the quality of doctorates trained in Uganda is lack of adequate and rigorous quality assurance mechanisms for doctoral programmes, and the ability to demonstrate consistency of standards across varied programmes.

(b) NCHE should undertake comprehensive audits and tracer studies to determine the quality of doctorates and doctoral research outputs. Comprehensive audits and tracer studies at the doctoral level have not been done.

(c) NCHE should review the Uganda Higher Education Qualifications Framework (UHEQF), particularly level 9 for the doctoral level to align doctoral education

to the demands of the knowledge economy. Desired attributes at the doctoral level should be made more comprehensive, taking into account a broad range of transferable skills demanded by the knowledge economy. The Researcher Development Framework developed by the Careers Research and Advisory Centre [CRAC] (2010) could be contextualized to open up dialogue about the attributes of doctoral graduates relevant for the knowledge economy.

(d) The NCHE should develop comprehensive evaluative frameworks and mechanisms to evaluate the quality of doctorates and the socio-economic relevance of doctoral research outputs at both programme level and institutional level. Currently, comprehensive evaluative frameworks and mechanisms to assess the quality of doctorates and the socio-economic relevance of doctoral research outputs are non-existent.

2. The NCHE should differentiate universities and other degree awarding institutions by function and degrees

Currently, as our findings indicate, its only Makerere University that has capacity to conduct sufficient and diversified research and train doctorates. Thus:

(a) Makerere University should be given a special status for post-graduate training. Through institutional restructuring, centres for excellence in doctoral training based in different fields of study should be established at Makerere

University.

(b) To avoid duplication and resource wastage, selected universities/institutions should offer differentiated doctoral programmes based on sufficiency of the critical mass and infrastructural capacity.

3. Government of Uganda, through the NCHE, should develop a national strategy to train a critical mass of doctoral supervisors

(a) Specialized capacity building training courses for innovative doctoral training for all supervisors certified by NCHE should be instituted. Supervisors of doctoral candidates should undergo formal training to guide doctoral students in the process of creating original contribution to knowledge and translating research excellence into practical outcomes beyond the academia. (b) To qualify to supervise at the doctoral level, supervisors should have a certificate of competence issued by the NCHE.

ACTIONS NEEDED AT THE INSTITUTIONAL LEVEL

1. Universities/institutions should diversify doctoral programmes.

The conventional, traditional PhD by research only has become inapt to the current labour market needs of the knowledge economy; solving the issue of graduate employability outside of the aca-

demia; and easing knowledge transfer between the industrial/professional world and the academia. Therefore:

(a) Universities/institutions should shift from offering the traditional PhD by research only to the taught PhD or PhD by course work and dissertation. To ensure structural diversity, cohort-based and course-based taught PhDs are more favourably structured.

(b) Other models of the doctorate such as the PhD by publication, the integrated PhD, and a wide array of Professional and Practice-based doctorates should be offered. The new forms of doctoral programmes are more responsive to the demands of the knowledge economy.

2. The role and funding of Graduate Schools should be underscored.

Graduate Schools provide effective supportive structures especially where supervisory capacity is constrained as is the case in Ugandan universities/institutions. Therefore:

(a) Where they are not already existing, graduate schools should be established to coordinate and develop overall guidelines for the doctoral education process.

(b) Where they already exist, the capacity of graduate schools should be enhanced to offer capacity building training for supervisors, administer evaluation surveys for continuous improvement of doctoral programmes among other functions.

3. Universities/institutions should establish Centres for Doctoral Training as additional support structures to give across-campus support for doctoral students.

Centres for doctoral training are effective in responding to doctoral students' felt needs in regard to generic development of skills. It has become a common trend for doctoral students to seek support elsewhere on pertinent issues such as presenting doctoral research, developing transferable skills, for example, multi-media production skills for achieving research impact, and developing pedagogical competencies to teach in HEIs. Such services should be offered to doctoral students in a formal institutionalized manner.

4. Universities/institutions should design blended doctoral programmes.

ICT infrastructure should be developed as an instrument for internationalisation. Increased use of ICT would attract international expertise as supervisors, mentors, and to teach. ICT infrastructure would also ease access to productive international networks such as African Research Networks that may lessen the risk of brain drain.

5. Universities/institutions should conduct tracer studies to collect Alumni/Alumnae data.

Alumni/Alumnae data should be used to redesign doctoral curricula to make doctoral programmes more relevant, for mentoring doctoral candidates, and for their career planning.

6. Universities/institutions should operationalize the UHEQF into learning outcomes frameworks to guide processes such as doctoral programme design, doctoral supervision, assessments and examinations, and evaluation of doctoral programmes.

Supervisors should ensure dual focus on the development of discipline specific research competence and transferable skills in the doctoral supervision process. Students' progress reports ought to be guided by relevant learning outcomes frameworks as points of reference.

7. Comprehensive assessment tools for measuring and evaluating transferable skills in addition to discipline specific knowledge and skills should be developed and used in doctoral assessments and examinations, and evaluation of doctoral programmes.

Currently, there are no comprehensive tools to evaluate the competencies of doctorates and the relevance of what they contribute to society.

8. Universities/institutions should create learning communities or community of scholars to provide a stimulating research environment for doctoral students.

Through such communities, renowned international and national scholars should be invited to give seminars to students, the communities could link students to research centres, Alumni/Alumnae networks and other support services.

9. Dedicated posts for mentoring doctoral students should be institutionalized in universities/institutions.

For instance, institution of the post of graduate assistantship for mentoring doctoral candidates to increase future doctoral supervisory capacity

10. MoUs should be signed to strengthen and elaborate the relationship between universities/institutions and the relevant industry.

CONCLUSION

The way doctorates are trained affects the quality of a country's knowledge/research/innovation eco-system, and every other level of the education system. In order to attain the creation of a knowledge-based economy by 2040 a vibrant doctoral education system should be developed in Uganda. This requires commitment from stakeholders at all levels.

ACKNOWLEDGEMENT

This work was funded by Government of Uganda through Makerere University Research and Innovations Fund (Grant number MAK-RIF-RIF1/CEES/004)

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This work was funded by Government of Uganda through
Makerere University Research and Innovations Fund.
Grant Number: MAK-RIF-RIF1/CEES/004)