DOCTORAL EDUCATION
IN COMMONWEALTH AFRICA

COMMONWEALTH TERTIARY EDUCATION FACILITY
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FOREWORD

Universities are important engines of development. These institutions of higher learning are entrusted with responsibilities to develop educated citizens for nation building and skilled workers for the economy. Apart from their teaching, training and educating functions, universities also play a pivotal role in advancing and disseminating knowledge through research and service. This is even more crucial in developing nations, where universities are expected to act as beacons to influence and provide leadership and direction for the development and betterment of society.

Underlying all these important activities is the pivotal role of doctoral education in developing the next generation of scholars, researchers, academics and public intellectuals for the advancement of universities and nations at large. In response to this, the Commonwealth Tertiary Education Facility (CTEF) initiated and funded the Doctoral Education in Commonwealth Africa (DECA) project in 2015, after receiving a mandate from the 19th Conference of Commonwealth Education Ministers (19CCEM) and with strong support from the Association of Commonwealth Universities, the Commonwealth of Learning, the International Association of Universities, and the Africa-Asia Development University Network. We were delighted to benefit from the participation of country experts from Botswana, Cameroon, Ghana, Kenya, Lesotho, Malawi, Mozambique, Nigeria, Rwanda and Tanzania, as well as receiving valuable input from researchers in the field of doctoral education from Australia, Malaysia, the Netherlands, South Africa and the United Kingdom. The key findings and twenty recommendations were subsequently presented at the 20th Conference of Commonwealth Education Ministers (20CCEM) in 2018.

This publication is a collection of country case studies on doctoral education, together with a synthesis report that was presented to 20CCEM. While the recommendations in the synthesis report can act as inputs for policymakers, university leaders and academics to develop doctoral education in their respective systems, institutions and programmes, the collection of country case studies is also a valuable body of resource material to illustrate the state of doctoral education across these countries. This is only made more important by the fact that in many of these countries, doctoral education has not been given priority and is under-researched.

I would like to take this opportunity to thank everyone involved in the DECA project, not only the researchers and country experts but also stakeholders and partners who have been generous in providing feedback and input to enable the successful completion of the project. I am confident that with this publication, which is one of the two inaugural publications of CTEF together with 'Financing Tertiary Education: Policy Options for Small Island Countries of the Commonwealth Pacific', represents a key step forward for CTEF in achieving our mandate as encapsulated in the tagline 'Generating Knowledge and Sharing Good Practices'.

PROFESSOR DATO' DR. MORSHIDI SIRAT

DIRECTOR, COMMONWEALTH TERTIARY EDUCATION FACILITY

PREFACE

DOCTORAL EDUCATION IN COMMONWEALTH AFRICA: AN OVERVIEW

Doctoral education is recognised as the crucial platform in developing the next generation of scholars, researchers, academics, scientists and advanced knowledge workers. The development of these talents is vital to the future of higher education systems and universities, as well as being a driver of innovation and economic growth in the knowledge ecosystems of economies and nations.

In consultation with various stakeholders including the Association of Commonwealth Universities, the Commonwealth of Learning, the International Association of Universities, the Africa-Asia Development University Network, scholars of doctoral education and country experts, the Commonwealth Tertiary Education Facility (CTEF), recognised the importance of understanding the development of doctoral education, specifically in the region of Commonwealth Africa. A policy brief was therefore prepared and presented at the 19th Conference of Commonwealth Education Ministers (19CCEM). The policy brief was endorsed, and a mandate was given to CTEF for the study.

A team of researchers was commissioned to examine doctoral education across Commonwealth African countries in terms of their policies and practices at the system and institutional levels. The research project was divided into two phases. The first was a scoping study to identify the issues and challenges that are common as well as unique across these countries. An Issue Paper was produced from the engagements and inputs from various stakeholders.

From the Issue Paper, the second phase focused on ten Commonwealth African countries. In each country, a researcher or a team of researchers was commissioned to prepare a country report that critically discussed the state of doctoral education, issues, challenges and ways forward. The reports and presentations by the country teams were consolidated in a synthesis report that was presented at the 20th Conference of Commonwealth Education Ministers (20CCEM).

This book presents the overview of the Doctoral Education in Commonwealth Africa project. Chapter 1 is a reproduction of the synthesis report that was presented at the 20CCEM. The chapter covers a broad discussion of doctoral education in the region in terms of national policy and funding, the different models of doctoral education, the important educational process of supervision in doctoral education, as well as issues concerning talent development, disciplines and subject matters, and quality assurance. A total of twenty recommendations were proposed, which may be considered at the national, system and institutional levels to enhance the quality of doctoral education.

The remaining are country chapters, arranged alphabetically. Chapter 2 explores doctoral education in Botswana. As this is a relatively young higher education system, the chapter examines the challenges of doctoral education in its infancy, as well as discussing the opportunities and potential of doctoral education and the higher education system of Botswana. The next chapter focuses on Ghana. Employing a qualitative approach, this chapter illustrates the purpose of doctoral education, the

processes involved in developing students, as well as the funding, networking and linkages in the doctoral process.

Doctoral education in Kenya is presented in Chapter 4. Among the higher education systems represented in this book, Kenya's is arguably one of the most established in terms of doctoral education. Although Kenya has quite a number of doctoral programmes and the government has attempted to make a doctoral qualification the minimum entry requirement for academic jobs, there remain issues and challenges concerning quality, supervision, capacity, financing and infrastructure within doctoral education, which the chapter critically examines. The fifth chapter focuses on Malawi, where higher education is still at an early stage of development. The chapter discusses a number of challenges and barriers in the development of quality and the expansion of the higher education system, which may be addressed through efforts to develop doctoral education and ensure quality in producing future talents for the Malawian higher education system.

Chapter 6 is about doctoral education in Nigeria. This chapter examines the policies and practices of doctoral education in this western African country, specifically in terms of the issues of talent, infrastructure, funding and educational processes. Rwanda also has a relatively young higher education system, but is a nation with vast economic potential. The seventh chapter explores the policies and initiatives taken to develop Rwanda's higher education by increasing the proportion of doctoral-qualified academics in its system. The last country chapter, Chapter 8, is about Tanzania. Higher education in Tanzania has undergone rapid development in the last two decades, and this has increased the demand for academics with doctoral education. This chapter critically examines the state of doctoral education in Tanzania, particularly in terms of policy, funding, infrastructure and education processes.

SYNTHESIS REPORT

Doctoral Education in Commonwealth Africa: A Synthesis of the Issues, Challenges, Good Practices and Ways Forward

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INTRODUCTION

Quality Education is the fourth of the seventeen Sustainable Development Goals. One of the targets in this goal involves an increase in the supply of qualified teachers. In the context of higher education, this target suggests an increase in the supply of quality academics in universities. Although it is overly simplistic to assume that the factor that determines quality of education is the qualifications of the teaching personnel, this assumption has been one of many driving forces in advocating an increase in the number of academics with a doctoral degree in higher education. Such a practice of increasing the number of doctoral graduates may not be an issue in mature higher education systems, but it can be a significant challenge to systems that are still developing. The challenge, as MacGregor (2013) aptly noted, is a conundrum whereby producing more doctoral graduates will require more doctoral supervisors, but having more supervisors will require more PhD graduates. The conundrum sums up the quantitative difficulties, but the overall development of doctoral education also involves many other pertinent issues and challenges that determine the quality of doctoral education and higher education.

This paper synthesises the issues and challenges of doctoral education across countries in Commonwealth Africa. Informed by country-specific research commissioned in Botswana, Cameroon, Ghana, Kenya, Lesotho, Malawi, Mozambique, Nigeria, Rwanda and Tanzania, as well as synthesising the issues and challenges, this paper also aims to share good practice in pointing the way forward to strengthen doctoral education for the sustainable future of higher education in Commonwealth African countries.

THE CONTEXT: DOCTORAL EDUCATION IN COMMONWEALTH AFRICA

The emergence of knowledge economies or the knowledge society has positioned knowledge as a valuable commodity for development, productivity and competitiveness (Castells, 1993). Knowledge workers have also been suggested to be a new form of capital (Schwab, 2012). Universities, traditionally recognised as the main knowledge institutions in a society, have become engines of development, attracting unprecedented attention from governments and policymakers around the world. Doctoral education has been traditionally recognised as a crucial platform which, on the one hand, prepares the next generation of disciplinary scholars and academics to cater for the expansion of universities and the sustainability of higher education. On the other hand, doctoral graduates are also considered to be advanced knowledge workers who are essential drivers of innovation due to their high levels of research skill. Hence, the rapid growth in the numbers of doctoral graduates has become a global phenomenon which shows no sign of slowing down (Cyranoski et al., 2011).

Africa as a whole, including member states in Commonwealth Africa, is joining this global phenomenon in wanting to increase numbers of doctoral graduates. The ten member states that took part in this project have all shown an increase in the number of candidates enrolled in doctoral education, albeit with some differences in the degrees of their increase. For instance, the enrolment of PhD candidates in Tanzania almost doubled within a year, from 470 candidates in 2012 to 832 in

2013 (see Chapter 8). Even in Rwanda, where doctoral education is relatively recent and began with a very low base, the number of candidates enrolled increased more than tenfold within two years, from 12 candidates in 2013 to 169 in 2015 (see Chapter 7).

Although doctoral education in the region is growing, there remains a lack of systematic and research-informed studies to understand the development of doctoral education across African countries, especially in terms of the challenges in policy, implementation and practice (Cloete, Mouton & Sheppard, 2015). The exception to note, perhaps, is the case of South Africa, where a comprehensive study of doctoral education in the country has been undertaken (see Cloete, Mouton & Sheppard, 2015). In addition, there are several other studies and initiatives led by organisations such as the International Association of Universities (IAU), which examined one university in each country across Benin, Cameroon, Kenya, Nigeria, Rwanda and Senegal, as well as the Higher Education Research and Advocacy Network in Africa (HERANA) which studied eight flagship sub-Saharan African universities.

With the mandate given to the Commonwealth Tertiary Education Facility at the 18th Conference of Commonwealth Education Ministers (CCEM), a study was commissioned to examine doctoral education in Commonwealth Africa and to influence doctoral education policy in the region through the sharing of good practice and pointing the way forward to strengthen doctoral education among Commonwealth African countries. In recognising that Commonwealth Africa, despite its shared heritage, is not a monolithic entity, this paper discusses the case of doctoral education across ten [1] of the eighteen member states. The ten countries in this paper shall be categorised into two broad groups to facilitate a systematic discussion. Group 1 consists of Botswana, Cameroon, Ghana, Kenya, Nigeria and Tanzania, where doctoral education has been established in the higher education system and is developing. Conversely, Group 2 includes Lesotho, Malawi, Mozambique and Rwanda, where doctoral education is relatively new with a tiny proportion of candidates in higher education enrolled at the doctoral level.

The following sections of the paper explore the issues and challenges in terms of national policy, funding, models of doctoral education, supervision, talent development, doctoral programmes, and quality assurance. The final section provides some policy recommendations for consideration in the development of doctoral education in Commonwealth African, specific member states and their universities.

NATIONAL POLICY AND FUNDING

While governments and policymakers across Commonwealth Africa have introduced strategic plans or policies to steer the development of higher education in their respective countries, doctoral education has rarely featured in such plans or policies. Even if doctoral education is mentioned, this

[1] *Inputs from six countries (Botswana, Ghana, Kenya, Malawi, Rwanda and Tanzania) became chapters in this book. The remaining four countries (Cameroon, Lesotho, Mozambique and Nigeria) provided inputs through presentation and written notes. The chapter from Nigeria was re-written after the project based on input received earlier.*

level of education is not prioritised. For instance, in Botswana tertiary education is part of the country's Education and Training Sector Strategic Plan (2015–2020), but doctoral education is not given any emphasis in the national plan, and it is left to universities to plan and strategise for its development. Likewise, there is no specific policy on doctoral education in Tanzania, and this level of education has only been seen as a means to enhance the quality of teaching and research staff in universities.

Even in the case of South Africa, which arguably has the best developed higher education system and the highest number of doctoral graduates in Africa, the focus on doctoral education in the National Development Plan was as a key to unlock a virtuous cycle, enhancing the quality of higher education by raising the minimum qualification for academics to PhD level (Cloete et al., 2015).

The lack of a specific emphasis and priority on doctoral education in terms of national policies and strategies signifies a lack of acknowledgement of the contribution and importance of preparing more and better quality doctoral degree holders in the sustainability of higher education, as well as in the growth and development of the knowledge economy. Furthermore, as the number of candidates enrolled for doctorates increases rapidly, the absence of an explicit national policy or strategy also underlines the lack of articulation of the intended model and purpose of the doctorate. In other words, why does a nation want to have more doctorate holders? An articulation of the purpose of the doctorate is important, regardless of whether the national expectation of doctoral graduates is to improve the quality of teaching and research in universities, or whether these doctors are seen as advanced knowledge workers needed to drive the growth of the knowledge economy. This expectation of the purpose of the doctorate is important to translate into practice in terms of the development of a suitable model of doctorates in different countries, given that national needs and contexts differ considerably, and different models will suggest and facilitate different structures and content in the preparation and training of doctoral candidates.

The lack of a national focus on doctoral education also has implications for the funding of doctoral education. Funding in this respect is two-fold, coming from universities and individual candidates. Institutional funding for doctoral study concerns financial resources for the development of doctoral programmes, as well as facilities such as libraries and laboratories. Due to the lack of a national focus and direction specifically for doctoral education, there is no dedicated funding for universities in these systems for the education and training of doctoral candidates – unlike in the case of universities in the United Kingdom and many other places, where dedicated funding is allocated to universities for the development of transferable, generic and soft skills across doctoral programmes. Furthermore, when there is a national direction for doctoral education, institutional funding for research can also be channelled strategically into specific areas according to local needs, thereby developing not only research capacity but also the wider pool of talents in required areas.

In terms of individual funding for doctoral candidates, there are slight variations across the different Commonwealth African countries. In general, a large majority of candidates are self-financed and their pursuit of a doctorate is on a part-time basis. Many of these candidates are academics employed in universities and colleges, and hence they have to juggle work and their doctoral studies. As a result, the attrition rate for doctoral education is much higher than at other levels of higher education, and even if candidates do not drop out, the length of time taken to complete a doctorate is typically much

longer. In some countries, like Mozambique and Lesotho, there is no funding for doctoral candidates at all, and this lack of funding for individuals also has a direct impact on the availability of research equipment and infrastructure, ultimately affecting the overall quality of research.

The above description is fairly common across the countries examined. However, there are also variations in terms of individual funding for doctoral education that are worth a mention. Two major funding avenues for individuals come in the form of loans and scholarships. In the case of Tanzania, the government has introduced a loan system for staff in universities to support them to pursue doctorates in Tanzanian universities. Apart from this national loan initiative in Tanzania, several other countries also offer scholarships for doctoral candidates. A large number of these scholarships are initiated through foreign governments, international cooperation agencies and donors. It is interesting to note that a majority of these foreign scholarships are driven by northern/developed countries, and the recipients will pursue their doctorates in these foreign countries. The downside of this foreign support is brain drain, as many talented scholars, researchers and academics may choose to remain abroad instead of returning to their home countries. Besides foreign scholarship, there are limited scholarships to support doctoral candidates to pursue their doctorate locally, although Rwanda is the exception here. In many instances it was claimed that aspiring doctoral candidates may find it easier to get scholarships to pursue their doctorate abroad, compared with securing financial support either through scholarships or loans to do a doctorate in their local universities.

DOCTORAL EDUCATION MODEL

It is not surprising that most Commonwealth African universities have maintained a colonial legacy, whereby the model of doctoral education remains very much like the British Doctor of Philosophy, which is itself rooted in the European/German model based on Humboldtian principles. This model of doctorate typically refers to a relatively unstructured apprenticeship where a novice scholar works under the tutelage of an established scholar to develop disciplinary knowledge that is evidenced through the thesis (Cowen, 1997; Louw & Muller, 2014; Park, 2007). The supervisory relationship is a central feature of this model, and the educational processes evolve around the thesis whereby the milestones are proposal defence, submission of thesis and the *viva voce* (oral examination).

Conversely, there is also an alternative model, commonly known as the North American model, which is much more structured with greater focus on integrated taught coursework. Candidates are usually required to complete a piece of coursework lasting for two years and pass the Qualifying Examination, before they begin conducting research under the supervision of a panel of supervisors (USNEI, 2008).

Although there seems to be a global trend of convergence between these two models, most doctoral programmes in Commonwealth African universities still follow the former pattern. Clearly there are pros and cons with each of these models, as well as differing 'pedagogy' and outcomes between them. Hence, the adoption of a particular model for doctoral education, or a particular direction of change to enhance doctoral education, may need to consider the needs and contexts of universities, the higher education system and the nation itself. On the one hand, the European model has a far greater emphasis on developing research within the domain of a particular discipline, although in recent years

many European universities, including British institutions, have included generic and transferable skills in their doctoral programmes (Byrne, Jorgensen & Loukkola, 2013). On the other hand, the North American model, by integrating a taught Master's degree into the doctorate, may be a better model to develop academics who are more versatile with a broader disciplinary knowledge base as well as a narrow research focus.

There is no right and wrong between these two models, but rather a continuum that Commonwealth African universities may consider according to their purposes and needs. For instance, if doctoral graduates are expected to become advanced knowledge workers who will drive the development of the knowledge economy via specialised, advanced and ground-breaking research, intensifying the research component in doctoral education may be the way forward. Instead, if doctoral graduates are expected to serve as academics and researchers in enhancing the quality of higher education, developing a broader knowledge base among candidates may be a better option. Currently across the ten Commonwealth African countries in this study, only universities in Botswana and Kenya have begun to require doctoral candidates to undertake taught coursework in research methodology as well as disciplinary-based courses. Even here, however, the great majority of doctoral programmes are still unstructured, and it is largely left to the supervisors and students to chart their own course of study.

SUPERVISION

As the dominant model of doctorate is centred on supervision, any understanding of doctoral education needs to focus on supervisors. On the one hand, there is an acute shortage of qualified academics who can supervise doctoral candidates. Especially in Group 1 countries where the numbers of doctoral candidates are increasing, there is a shortage of academics who are eligible to supervise, and this has resulted in a high student-per-supervisor ratio, with supervisors often having to supervise a large number of not only doctoral candidates but also Master's students. In the case of a university in Ghana, it was reported that 85 percent of doctoral candidates had difficulties in accessing their supervisors.

Furthermore, there are universities, such as those in Kenya, which have guidelines that stipulate a doctoral candidate must be supervised by at least two academics with doctorates in their subject area and methodology. Although such guidelines may increase the student-per-supervisor ratio, they are nonetheless important to ensure quality of supervision. This quantitative deficit is also made worse by brain drain of senior academics, as in the case of Nigeria. This deficit is much more serious in Group 2 countries, such as Malawi, where only 16 percent of academics have a doctorate and hence are qualified to supervise.

On the other hand, the shortage of qualified supervisors and the high student-per-supervisor ratio also has consequences for the development of doctoral candidates as the quality of supervision is likely to be compromised. The small numbers of qualified supervisors, who usually have to juggle teaching responsibilities at undergraduate and Master's level as well as supervisory, administrative

and managerial responsibilities, are often overburdened. In some cases, doctoral candidates may be neglected or inadequately supervised, resulting in delayed progress or attrition.

It is also important to point out a lack of incentive within most systems and universities for supervisors to supervise doctoral candidates. Low remuneration for academics and a lack of any recognition or reward system may be observed across the countries in this study. For example, in Tanzania and Botswana the supervision of doctoral candidates is not considered in the allocation of workload or as a promotion criterion. The lack of incentive or reward for supervisors can be seen in the case of a highly rated university in Tanzania, where a supervisor is paid only USD50 for successfully graduating a doctoral candidate. Similarly, in Malawi, although supervisors receive monetary compensation for doctoral supervision, this may not be as lucrative as research grants or consultancy, and hence lower priority is assigned to supervision.

Concerns about supervision also involve development and training for supervisors. Many supervisors in Commonwealth African universities are given supervision roles by virtue of their doctoral degree and seniority. Relevant training that is essential for supervisors to enable them to supervise more effectively is lacking. In Group 1 countries like Botswana, there is an absence of training programmes to prepare supervisors for their supervisory roles. The situation is even more serious in Group 2 countries such as Lesotho, Malawi and Rwanda, highlighting a dire need for capacity building among supervisors in terms of supervising and mentoring doctoral candidates. Even in public universities funded by the state, allocation is at times not sufficient to cater for staff development, especially in doctoral supervision where there has been a lack of priority and focus in policy and strategies. Good practices can be observed in other Commonwealth countries where universities have formal training for supervisors to prepare them to supervise more effectively. In addition, other related training programmes, such as co-supervision, team supervision and co-publication by supervisors and doctoral candidates, can be a way to enhance the quality of doctoral supervision.

TALENT DEVELOPMENT

We now take a slight diversion to look at the issue of brain drain in relation to the development of doctoral education, since this phenomenon has led to a serious shortage of talent in higher education and research. In turn, this has implications for doctoral education. Countries like Nigeria, Rwanda and Tanzania are losing their academic talent to the public sector, private companies, industries and civil society, and, more worryingly, to other developed nations. This problematic situation is acutely experienced in Nigerian universities, where it is estimated that between 5 and 18 percent of academics leave their institutions. As a result, the student-to-academic ratio has worsened, to the detriment of teaching and academic research. Likewise in Rwanda, while some expatriate academics with doctoral degrees have returned to their home countries, many local academics with doctorates have left universities to seek jobs with better pay.

Specific to the situation in Commonwealth Africa, doctoral education also has a crucial role to play in reproducing and sustaining an ageing academic profession. On top of the shortage of academics, many of the existing academic staff are nearing retirement age. This situation is particularly critical in Nigeria,

Rwanda and Tanzania. Due to limited funding and the extended time taken to complete a doctorate, many academics with a doctorate are relatively advanced in age, in their late forties or older. By the time a doctorate holder becomes a competent academic and is ready to effectively supervise doctoral candidates themselves, he or she will be nearing retirement. In some countries, like Botswana and Kenya, there is a gap between young academics and older ones. Thus, the ageing and small population of supervisors, coupled with the absence of a full generation of academics with doctorates in the thirty-to-forty age bracket, ready to replace the older supervisors, leads to a serious academic talent shortage in universities.

In general, while many Commonwealth African universities have struggled to retain their academic talent, especially those with doctorates, and while those who have stayed on have aged and there is a need for new blood, at the same time many of the talented young candidates who win scholarships to go abroad to study for their doctorate do not return, further exacerbating the serious shortage of talent. The provision of quality doctoral education in Commonwealth African universities is one of the key initiatives to address brain drain and develop these talents. At the same time, enhancing the higher education system and environment is equally crucial in retaining academics.

DOCTORAL PROGRAMMES

Across Commonwealth African universities, there is a wide range of courses offered at the doctoral level. These courses can be categorised into the following areas, with some of their specialisations:

1. **The Humanities** include: Literature in English, Linguistics, Development Studies, Theology, Religious Studies, Geography etc.

2. **The Social Sciences** include: Business Studies, Law, Economics, Business Administration, Strategic Management, Entrepreneurship, Financial Management, Public Management, Agricultural Economics etc.

3. **Education** includes: Sociology of Education, Curriculum, Innovative Education, Science Education, Business Education etc.

4. **The Sciences** include: Engineering, Science and Energy, Information Technology, Renewable Energy and Environment, Agriculture, Forestry and Fisheries, Health Sciences, Animal Sciences, Bio-technology, Mathematics etc.

While the selection of courses appears to be wide, a large proportion of the courses are actually in the social sciences and education. For instance, in the University of Botswana, out of forty-five doctoral programmes, twenty-six are in education and seven in the social sciences, with only five in engineering and technology and three in the sciences. Although education is a crucial area that can influence the next generation, the over-dominance of doctoral programmes in this area may perhaps suggest a mismatch between the needs of universities, higher education, the scientific community and the economy against the number of doctoral graduates produced. Interestingly, some of the disciplines

that may appear to be important for the future of these countries and the region appear to be missing or are not mentioned, such as mineral engineering, oil and gas engineering, marine and ocean studies, tourism and hospitality, software/coding engineering, the performance arts or actuarial science. There is also no indication of how doctoral programmes are promoting sustainable development.

The high number of doctoral programmes in education and the social sciences, as compared to the sciences and technology, suggests the possibility of limited infrastructure and facilities. As we know, research in science and technology is an expensive endeavour and requires laboratories and consumables that are costly. Universities also appear not to be well-resourced, and doctoral programmes appear to be constrained by inadequate technological infrastructure, including poor internet connectivity due to low bandwidth. Consequently, this has an adverse impact on collaborative research across institutions and the continent, equally with regard to the dissemination of research findings. The low utilisation of technology, especially information and communication technology, as well as low subscriptions to e-resources/journals/online resources, are common issues. Hence, there has also been a lack of utilisation of open educational resources (OER) for teaching and learning, research, curriculum development and the production of textbooks, which potentially would reduce the cost of doctoral programmes. It is also not clear to what extent the findings of doctoral research and theses are shared with others through the internet, as in universities in other parts of the world.

QUALITY ASSURANCE

Although doctoral education is not specifically emphasised in national policies and strategies for higher education in most Commonwealth African countries, nevertheless doctoral education has been incorporated in quality assurance (QA) policies and frameworks. Among the Group 1 countries, recent higher education policy reforms intended to benchmark against international good practice have facilitated the inclusion of QA into doctoral education. Similarly, a survey on students' experiences with their supervisors, which has become a form of monitoring tool, has already been put in place in Kenya as part of QA. However, apart from Kenya, systematic processes to capture candidate experiences are not prevalent in the doctoral education QA systems in other countries.

The Standards for Higher Education and the National Policy on Quality of Postgraduate Research and Training have been established by the Commission for University Education to oversee the implementation of QA in Kenyan higher education institutions. These documents serve as concrete guidelines for universities to develop their internal QA systems and contribute to the attainment of national aspirations, and have enabled Kenyan universities to operationalise strong and cohesive external and internal QA and regulatory frameworks. In the university in Botswana, however, although policy frameworks have been created to ensure the quality of doctoral education, these are often not fully observed. One example of this lack of adherence is the absence or non-appointment of a Board of Examiners to support the doctoral education programme.

Even in Group 2 countries, QA frameworks are well developed. In Lesotho, QA is perceived as critical since it ensures programmes are trusted, attractive, relevant, and add value. The Council for Higher Education prescribes the Minimum Accreditation Standards that every programme must achieve for

continuous self-evaluation. In Rwanda, although the National Qualifications Framework for Higher Education has been established to monitor and evaluate the quality of accredited education programmes, actual academic quality remains an issue of concern. In Mozambique the National Qualifications Framework of Higher Education, instituted in 2009, specifies outcomes of doctoral programmes, encompassing high level cognitive, affective and psychomotor domains. QA is also included as one of the six areas outlined in Mozambique's new Higher Education Strategic Plan 2012–2020. In Malawi the National Council for Higher Education: (1) accredits universities to offer higher education; (2) promotes and coordinates higher education; (3) harmonises admission standards across all public universities; (4) determines, maintains and regulates standards for teaching, examinations, academic qualifications, and academic facilities; (5) develops a national qualifications framework compatible with regional and international standards; and (6) designs and implements institutional quality assurance systems for higher education (Mambo et al., 2016). However, despite these institutional efforts, higher education in Malawi is observed to be lacking in the cohesive policy direction that could create a platform for doctoral education to drive national development. The Council has yet to produce any QA criteria and standards pertaining to doctoral education. It is notable that doctoral education is not prominently featured in Malawi's National Education Sector Plan (2008–2017).

Many universities in Group 1 countries have established tools for internal monitoring and evaluation of the quality of doctoral education. For example, in Kenya internal mechanisms for monitoring the progress of doctoral candidates are under the purview of the relevant schools of postgraduate studies. Although handbooks are made available describing the processes, with instruments for feedback and tracking of supervision, the implementation of the monitoring and evaluation framework is at times not congruent with the intent. Likewise, in Botswana, despite the availability of monitoring and evaluation mechanisms in universities, there were times where reports were not traceable, and this is an indication of a possible misalignment between intended and actual transactions that could compromise the quality of doctoral education.

Similarly in Group 2 countries, although doctoral education is still not as significant as other levels of higher education, the implementation of QA monitoring and evaluation mechanisms may be considered to be well in train. The National University of Lesotho has adopted the Commonwealth of Learning Review and Improvement Model and engages in regular benchmarking exercises through external examinations, while in Rwanda the Higher Education Council monitors and evaluates HE quality and standards, including those for doctoral education. However, there are also shortcomings, such as in the case of Malawi where QA in doctoral education is intended to involve institutional mechanisms and external examiners. However, due to financial constraints, universities that once relied on overseas or foreign external examiners have begun to utilise local examiners. External examiners from the private sector are engaged to moderate examinations and review course outlines (Mambo et al., 2016).

There is a lot more variation in terms of the specific monitoring process for doctoral candidates across countries and universities. On the one hand, there are universities that employ several milestones to ensure the progress of doctoral candidates. For example, in Kenya candidates have to submit their proposal, submit their thesis to be examined by three examiners, and finally take an oral examination. However, in Botswana doctoral candidates who do not have work experience have to enrol for two

semesters of coursework before they can transfer their candidature to the doctoral level. These milestones have the function of monitoring the progress of doctoral candidates. On the other hand, in the case of Tanzania there is an absence of monitoring once a candidate has been assigned to a supervisor. Hence, if the candidate encounters difficulties such as accessing the supervisor, or problems with their studies that compromise the quality of the research or their doctoral education, the institution would not be in a position to intervene.

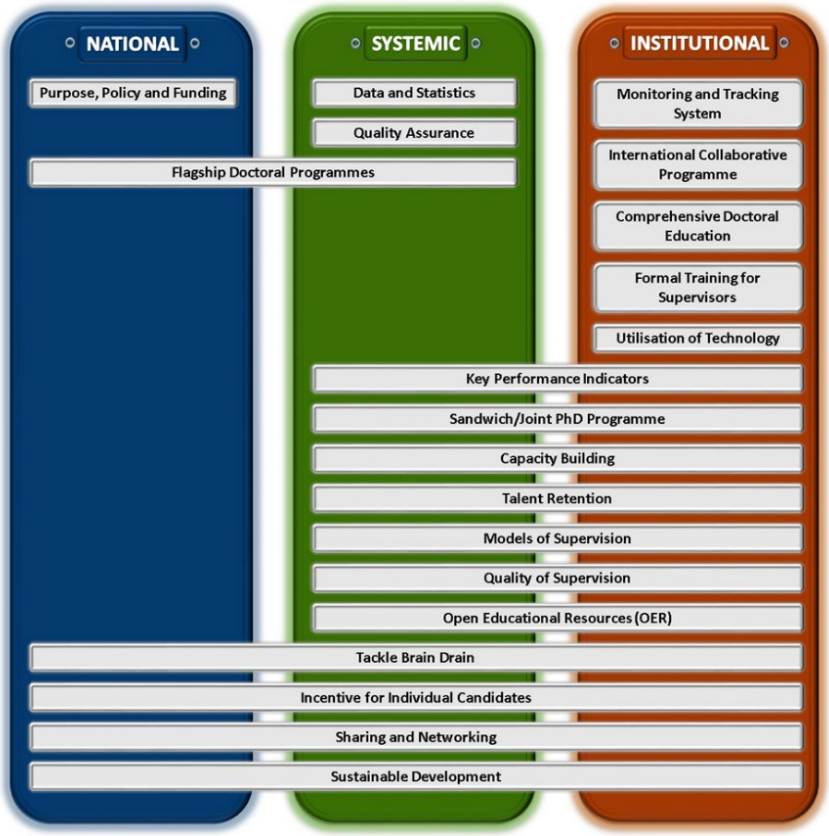
CONCLUSION AND RECOMMENDATIONS

Reviewing doctoral education across ten Commonwealth African countries has demonstrated some common trends, in that enrolment in doctoral education is increasing, but there remains plenty of room for improving the quality of doctoral education and enhancing the support for individual candidates, supervisors and institutions in the provision of doctoral education.

The following policy recommendations, informed by good practice and tailored specifically for Commonwealth African and country-specific contexts, are aimed at giving options for the development of doctoral education. These recommendations are divided into three domains: national, systemic, and institutional.

The recommendations for the national domain focus on macro policymaking, and the actors at this level are Ministers and other legislators. The systemic domain comprises higher education agencies such as the Ministry of Higher Education or its equivalent and the National Qualifications Agency, and the recommendations will involve bureaucrats and policymakers. The institutional domain comprises universities where policies are put into practice within their respective institutions. However, there are also recommendations that are at the interface of two or more domains and which will thus require joint attention and the collaboration of actors across different domains if they are to be implemented.

Figure 1.1: National, Systemic and Institutional Domains



Source: Authors

1. National Domain

a. Purpose, Policy and Funding – set a clear national purpose for doctoral education. Doctoral education cannot be treated as an isolated function in higher education. The purpose of doctoral education has to be specific according to the needs of the national context, and compatible with the direction of development for the country's respective higher education systems and socio-economic conditions. In turn, the purpose and direction is expected to inform the development of national policies and initiatives on doctoral education. A clear national policy is essential for universities to operationalise doctoral education at the practice level in order to meet the aspirations encapsulated by the national purpose and direction. Importantly, strategic funding for doctoral education, including research activities, talent development and infrastructure development, can be used as a policy tool to steer the direction of development for doctoral education towards fulfilling the potential that doctoral education can bring to the nation.

2. Systemic Domain

a. Data and Statistics – collect national data and statistics on doctoral education, including institutional, disciplinary and individual data and statistics. The availability of data and statistics concerning doctoral education, ranging from the

systemic to individual levels, is crucial to provide empirical-based policymaking and quality enhancement of doctoral education.

b. Quality Assurance – QA frameworks and their implementation could be further enhanced by the development and implementation of more instruments and processes for continuous quality improvement. This could involve tracer studies of doctoral education graduates and employer surveys.

3. Institutional Domain

a. Monitoring and Tracking System – the issue of supervisor quality could be improved by the implementation of a tracking system for supervision and learning for formative assessment, and a system for summative assessment for supervision and supervisors. This assessment may be based on instruments suitable for the Commonwealth African diaspora, based on adaptations or modifications of the Postgraduate Research Experience Survey (PRES) (Oxford Learning Institute, 2008), the Postgraduate Research Experience Questionnaire (PREQ) and the Malaysian Postgraduate Research Student Experience Questionnaire (MyPREQ) (Koo & Pang, 2016).

b. International Collaborative Programme – instead of adopting the north-driven scholarship programme, universities should develop collaborative programmes with other universities in the regional or globally. This may be an exchange of academics to teach specific courses, or research attachments for doctoral candidates over a semester or a year. As a way to further enhance international collaborative programmes, a university could partner with universities abroad, or participate in a consortium of universities across different countries to develop the programme. However, an important point to note is that the international collaborative programme is unlike a joint PhD, whereby the awarding university remains the university in which a student registers his or her candidacy.

c. Sharing and Networking – to enhance QA in doctoral education, particularly in supervision and learning, universities in Commonwealth African countries must strategise to develop doctoral education networks and smart partnerships so as to optimise the deployment of human and physical resources and infrastructure. Universities from more developed Group 1 countries could provide benchmarks, support and share best practice with Group 2 countries. Successful graduate schools could be allocated additional resources and promoted as flagship or model schools for Commonwealth Africa.

d. Comprehensive Doctoral Education – universities in Commonwealth Africa must strengthen national research and innovation strategies and align these with doctoral education research. Comprehensive research apprenticeship programmes for doctoral candidates would also equip them with the research knowledge and skills needed for on-time programme completion.

e. Formal Training for Supervisors – formal training of doctoral supervisors should be undertaken, especially in how to prepare doctoral candidates and undertake assessment and moderation. Such a step would improve the quality of doctoral preparation and supervision. A formal Academic Professional Development Centre or equivalent should be established in universities in order to support the development of greater teaching and supervision capacity, and to deliver more effective professional training in the country/region. Furthermore, for new supervisors some form of training and certification should also be considered to ensure they have the basic knowledge and skills to supervise, rather than merely repeating the ways in which their supervisors supervised them. Instead, they should be equipped with the latest know-how, as well as other relevant approaches to handling doctoral students such as coaching and mentoring.

f. Utilisation of Technology – universities should invest in robust information technology so that they can leverage it for networking and collaboration with other universities across the continent and abroad. Efforts should also be considered to encourage the dissemination of findings from doctoral theses and research, via the internet for wider circulation, engagement and visibility. Inevitably, the availability of technology and the dissemination of theses/research in the public domain also entail elements of accountability and quality assurance, where everyone has access to the *magnum opus* and the student, supervisors and examiners are all held accountable for the quality of the work.

4. National-Systemic Bi-Domain

a. Flagship Doctoral Programmes – to consolidate the limited resources, Government and universities may develop flagship doctoral programmes that focus on a specific area based on national needs in a particular university. For instance, to begin with there should only be one PhD Programme in Agricultural Science in the country, based in the university that is most advanced or which has the best potential in that particular area. Resources and expertise must be channelled to develop the programme to ensure that the research has maximum impact for the development of agriculture, and that the graduates have the knowledge, skills and capabilities to advance agricultural science. Then, once the flagship programme has accumulated a critical mass of experts, consideration may be given to developing another programme in a similar area but with a slightly different focus or approach. The flagship doctoral programme approach will ensure consolidation and efficiency in utilising limited resources.

5. Systemic-Institutional Bi-Domain

a. Key Performance Indicators – to a certain extent, the measurement of Key Performance Indicators (KPIs) such as research outputs and publications could be used to indicate the quality of doctoral education. It is suggested that these indicators be identified by countries and universities to ensure the KPIs of supervisors and candidates can be measured.

b. Sandwich/Joint PhD Programmes – instead of channelling foreign scholarships to send local talents abroad, thereby contributing to brain drain, candidates may be sent abroad for a year to attend courses or be attached to a laboratory/research centre in a foreign university, and candidates may also be jointly supervised by local and foreign supervisors. The PhD award could then be granted as a joint PhD degree, or by the local university.

c. Capacity Building – there is a need to build the capacity of local academics. This intervention must aim to achieve the 'pipeline imperative' by strengthening capacity at all levels – not only of new academics with PhD qualifications, but also including postdoctoral fellows and young researchers. They will serve as a pathway to create a corps of committed researchers and scholars who participate actively in the country's knowledge economy.

d. Talent Retention – quite often, senior academics retire from universities when they are still very productive. In this regard, the government could reconsider the retirement age for academics, at least as a short-term measure to ensure that institutions are staffed by qualified personnel until long-term solutions are found.

e. Models of Supervision – complementary and alternative models of supervision should be considered. Existing supervisory capacity may be increased if the traditional model of one-to-one supervision were replaced with more feasible models such as cohort supervision, group or project supervision, cross-institutional co-supervision, and supervisory committees.

f. Quality of Supervision – there is a need for Commonwealth African countries and universities to develop or amend policies and guidelines to emphasise doctoral supervision. The supervision of doctoral candidates must be considered in the remuneration, reward and recognition systems of universities. With such a system in place, there is a need to ensure that the number of candidates supervised by each supervisor is manageable.

g. Open Educational Resources (OER) – the adoption of OER policy frameworks should be encouraged in order to facilitate the collaborative development of resources, publication, and sharing courses and other resources through e-platforms. The adoption of OER would also help poorly-resourced universities to

cut of the cost of learning materials (journals, books and other learning media resources) for candidates, thereby lowering the cost of doctoral programmes.

6. National-Systemic-Institutional Multi-Domain

a. Tackle Brain Drain – to reduce brain drain, there should be a more healthy work environment. Universities could insist on an optimum level of student intake under current circumstances, to address workload problems among potential supervisors and release some energy for both basic and applied research. Universities could also provide institutional support for mentoring programmes, starter grants and innovation grants for junior scholars, increase research and conference grants, and forge research links with other institutions in Africa and abroad, as well as with governments and the private sector. There is a need for a strategy for developing and retaining the next generation of academics through scholarship with bonds.

b. Incentives for Individual Candidates – universities should consider offering time off and fully-funded scholarships or awards to pursue doctoral degrees, especially among academics in universities. More funding schemes would support the uptake of doctoral study within Africa.

c. Sustainable Development – all doctoral programmes should embrace sustainable development and demonstrate how that particular discipline contributes to the world we want in terms of a sustainable future and improved livelihoods.

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BOTSWANA

Scoping Challenges, Strengths and Potential of Doctoral Education in Botswana

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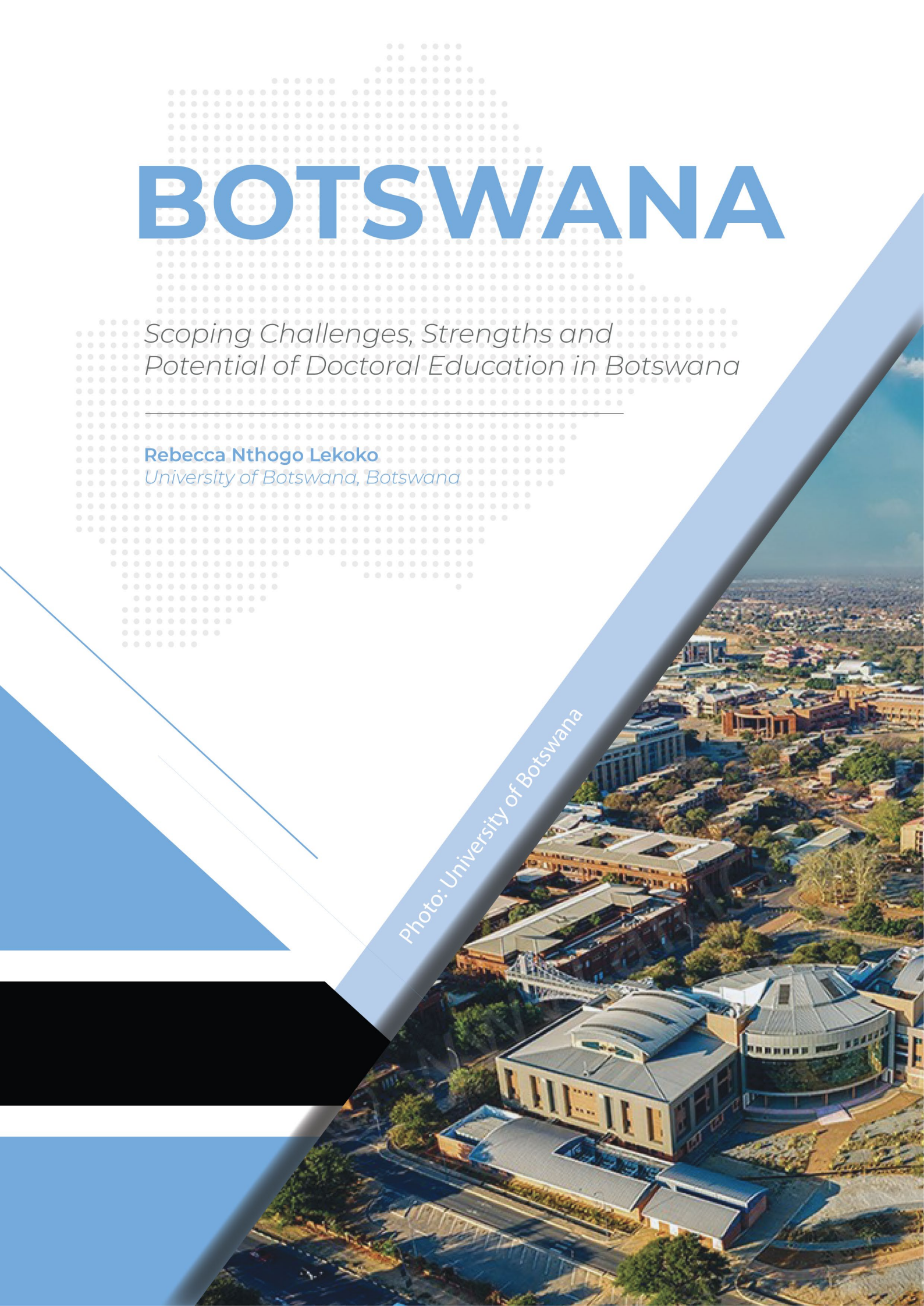


PURPOSE

The notion of doctoral education (DE) presupposes the existence of other levels of education. What distinguishes DE from lower levels of education is that it is aimed at imparting high orders of skill in order to drive improvement in all sectors of the economy. It also qualifies graduates for higher-earning positions, thus contributing to fulfilling the need for motivated and productive workers. It is inspiring for countries to aspire to and support education of this nature. The purpose of this paper is therefore to share experiences of doctoral education in Botswana, with a view to highlighting its challenges, strengths and potential. These characteristics must be explored to pave the way for recommendations, particularly relating to the need for government support in the form of developing and implementing robust national doctoral education policies.

BACKGROUND

In 2011 Botswana, a landlocked country in southern Africa, registered a population of 2,038,228, an increase of 1.9 percent from the 2001 census (Statistics Botswana, 2014). This country "has over the past 40 years been amongst the list of countries with the fastest growing economies in the world, characterised by an impressive record of prudent macroeconomic policies and good governance", as stated in the Education and Training Sector Strategic Plan (ETSSP 2015–2020; Republic of Botswana, 2015, p. 6). The ETSSP further states that the track record of achievement that Botswana has been experiencing has moved this country from the list of the least developed and poorest countries in the world to being an upper-middle income country (Republic of Botswana, 2015, p. 6).

Botswana's success is mostly attributed to the discovery of diamond just after independence and an increase in revenue from the non-mineral sector; this propelled a huge increase in educational provision in the country (Republic of Botswana, 2015). Public education, especially the first twelve years of schooling, was made free, although not legally binding, and the government of Botswana remains the main sponsor. To date, "primary education is free for nationals and refugees while non-nationals pay a subsidized fee" (https://www.unicef.org/botswana/communication_15199.html). However, in January 2006 the government introduced school fees in secondary schools as part of its cost sharing/cost recovery strategy. As the then Minister of Local Government and Rural Development Mr Siele said, "the fees were at a level equivalent to 5 percent of the cost that Government incurs in providing for secondary education, with a provision for exemption for orphans and other needy children." Many children thus have access to the first twelve years of schooling, excluding a few children with disabilities, those who live in rural and remote settlements, the children of farm workers and others in difficult or disadvantaged environments.

Access to tertiary education is limited, and this forms part of the main discussion of this paper. As the government continues to place more emphasis on education as a tool to help Botswana to transit from an agro-based economy to an industrialised one in order to compete with other countries, there is more recognition of education as a human right; hence the government's commitment to raise educational standards at all levels of education (UNESCO, 2010). The Botswana Education and Training

Sector Strategic Plan (ETSSP 2015–2020) has made it clear that for this country to reach its goal of prosperity for all, employment creation, the eradication of poverty and becoming an innovative nation, education and training as well as the acquisition of entrepreneurial, managerial and technological capabilities should all be priorities (Republic of Botswana, ETSSP, 2015, p. 8). The country also aspires to have a system of education that empowers citizens to adapt to the changing needs of the country as the world changes (UNESCO, 2010). None of these aspirations and commitments can be achieved without paying attention to doctoral education, a higher level of education that is considered the hallmark of a dynamic, educated and informed nation, and which drives the formation of a knowledge-based economy.

GENERAL OVERVIEW OF THE BOTSWANA EDUCATION SYSTEM

The current policy framework guiding education in Botswana is the Education and Training Sector Strategic Plan (ETSSP 2015–2020). The ETSSP was inspired mainly by the shortcomings of the current education systems, including educated unemployment, restricted access to quality education, and closed access to disadvantaged groups including the rural populace, minority ethnic groups and people with disabilities. Essentially, the "ETSSP is intended to strengthen the match between qualifications and labour market requirements, thereby ensuring that education outputs are more closely aligned to future employment needs. It will also facilitate improved outcomes for all learners by addressing issues of quality, relevance, access, equity and accountability across the entire sector, from Pre-Primary school to Tertiary level" (Republic of Botswana, 2015, p. 6). This commitment by the Government of Botswana implies more resources directed to the education systems. In actual fact, education in Botswana has always been given priority in the national budget. The education sector is said to receive the largest share of total government expenditure; for example, expenditure on education averaged 28 percent of the total national budget in the years 2006/7 to 2009/10 (Republic of Botswana, 2015). However, not all levels of education benefit; doctoral education is not clearly marked as one of the priority areas, though there is a mention of tertiary education. The dominant priorities are:

1. Early Childhood and Pre-Primary Education (ECE & PPE)
2. Primary Education (PE)
3. Secondary Education (SE)
4. Teacher Education and Professional Development (TEPD)
5. Tertiary Education (TE)
6. Technical Vocational and Education and Training (TVET)
   (Republic of Botswana, 2015, p. 9)

The Government of Botswana has been spending on the education of children, starting between the ages of five and eight and ending somewhere between the ages of sixteen and eighteen (primary to secondary education). These are children in public schools. As stated in the ETSSP 2015–16, "parents are charged a 'co-payment' for education, but the children of those in lower income groups receive free education and free school meals are provided to all school pupils" (Republic of Botswana, 2015). Students are enrolled in higher education (university) after successfully completing the 7-3-2 system

of education with grades that meet the required points to enter tertiary education. More emphasis and support is provided for undergraduate degrees. The 2008 Tertiary Education Policy makes it clear that this level of education is specifically targeted at Batswana aged eighteen to twenty-four years, to enable them to have access to a quality tertiary education that is responsive to every element of their personal well-being (Ministry of Education and Skills Development, 2008). In effect, graduate studies including doctoral education have never been prioritised in the Tertiary Education Policy or in the current Education and Training Sector Strategic Plan (ETSSP 2015–2020).

HIGHER EDUCATION ACCESS AND PARTICIPATION

Tertiary Education in Botswana is provided by both public and private institutions. Education at this level is mostly government-sponsored. The Ministry of Education and Skills Development through the Department of Tertiary Education and Financing, working closely with the Human Resource Development Council (HRDC), coordinates the funding of higher education. Funding is more like a low interest loan because students are expected to pay it back after completing their tertiary education. Mostly, this type of funding applies to undergraduates (Certificate to First Degree programmes). It may be said that tertiary education in Botswana is not free, though it is true that more than 80 percent of students in public tertiary institutions like the University of Botswana have been sponsored by the Government of Botswana. Also, the system of repayment has not worked well in the past and perhaps to date. Graduate studies, especially for academic staff of higher education institutions at Master's level, are becoming common, but doctoral education funding from the Government of Botswana is uncommon or unsupported.

Programmes are offered by a number of tertiary institutions in Botswana, the oldest being the University of Botswana. A high majority of government-sponsored students attend the University of Botswana and its affiliated institutions such as colleges of education, nursing institutions, colleges of agriculture and the Botswana International University of Science and Technology (BIUST) (Republic of Botswana, 2015).

Despite enormous spending on education, challenges such as a shortage of skilled labour at all levels and across sectors, as well as educated unemployment, continue to grow. Many Batswana are accustomed to formal labour market opportunities requiring certain technical skills. Because of a lack of diversification, formal labour market opportunities have become very limited, thereby excluding some graduates of the higher education system. Unemployment has been reported at about "18% from 2009 to 2010", and this was said to have increased to 20 percent in 2013 (Republic of Botswana, 2015, p. 11). This mismatch between job opportunities and the skills of graduates is a concern for the nation, and the higher education system has been tasked with producing graduates who can meet the demands of local economies.

Early in the twenty-first century, Botswana realised that its dream of having an 'Educated and Informed Nation' by 2016 would not be achieved without a tertiary education system that is relevant, dynamic, accessible, equitable and internationally competitive (Government of Botswana, Ministry of Education and Skills Development, 2008). The 2008 Tertiary Education Policy was thus developed as a

strategic response to the need to promote the role of tertiary education in the preparation of the country's high-level human resources, as well as the development of research and innovation capacity. The main goal for the Policy is "to ensure that by 2026 more Batswana aged 18–24 years have access to a quality tertiary education that is responsive to every element of their personal well-being, social progress and economic development and which advances to the fullest extent possible their potentials for learning and their individual capacities in a manner that will further their aspirations and contribute to the development of a globally connected and prosperous nation" (Government of Botswana, Ministry of Education and Skills Development, 2008). However, while this policy is replete with a plethora of well-developed and targeted implementation strategies, the country lacks a strategy for developing its citizens to doctoral level.

PROVIDERS OF DOCTORAL PROGRAMMES IN BOTSWANA

Records indicate that tertiary education in Botswana is provided by twenty-seven public registered institutions and fifteen private registered institutions as of 2012 (http://www.tec.org.bw). The University of Botswana (UB) is among the few of these institutions that have attained the status of University. The UB has held this status since its inception in 1982. It is only recently (during the last five years) that other institutions such as Botho, Baisago and the Botswana University of Agriculture were granted university status. In addition, there is the Botswana University of Science and Technology (BIUST). BIUST is an international university whose establishment was supported and sponsored by the Government of Botswana, and which started its first semester in August 2011. Although BIUST has doctoral students in both faculties (that is, Sciences and Engineering and Technology), it has not yet graduated any doctoral students, and therefore the University of Botswana, which has a track record of enrolment and graduation of doctoral students, is used in this paper to scope the challenges, strengths and potential of doctoral education in Botswana.

Academic institutions are granted university status by a national accrediting body using internationally and nationally set standards. In the context of Botswana, an institution is granted university status when it offers both graduate and undergraduate programmes – for example, from certificate to doctoral levels. Registration and accreditation of institutions at tertiary level is overseen by the Botswana Qualifications Authority (BQA), previously known as the Botswana Training Authority (BOTA). This entity was enacted through the Botswana Qualifications Authority Act No 24 of 2013 (http://www.bota.org.bw/?q=node/195). Therefore, there are colleges, centres and schools operating at the tertiary level that have not attained the status of a university because of the nature of their provision, as indicated above. For a long time the University of Botswana was the only institution offering doctoral studies in Botswana. As already stated, the Botswana University of Science and Technology (BIUST) was established with a strong component of doctoral studies, but since its programme is still in its infancy, it cannot not be appraised in this report.

THE UNIVERSITY OF BOTSWANA

The University of Botswana was established on 1st July 1982 by an Act of Parliament. The formal inauguration of the University of Botswana took place on 23rd October 1982 (University of Botswana, Undergraduate Academic Calendar, 2015/16). The UB actually began life as a part of a larger university system known as the University of Bechuanaland (Botswana), Basotoland (Lesotho) and Swaziland (UBBS), which was founded in 1964 to reduce the three countries' reliance on tertiary education in apartheid-era South Africa (https://en.wikipedia.org/wiki/University_of_Botswana).

After Botswana and Lesotho became independent in 1966 the university was called the University of Botswana, Lesotho, and Swaziland (UBLS). In 1975 Lesotho withdrew from the partnership and established its own national university, and what was the UBLS became the University of Botswana and Swaziland (UBS). For several years a joint University of Botswana and Swaziland existed, until in the early 1980s the university was amicably divided into two separate national universities, the University of Botswana and the University of Swaziland. Since its establishment in 1982 the University of Botswana has continued to be actively involved in the national development of Botswana, especially engaging in "improving the quality and in expanding the quantity of the human resources needed for development and to act as repository of the collective knowledge and experiences of the nation and the world" (University of Botswana, Undergraduate Academic Calendar, 2015/16, p. 10).

The University of Botswana has taken a strategic decision to become a research-intensive institution by 2021. The UB has realised that it cannot achieve this important vision without robust graduate programmes. Research is a hallmark of quality doctoral studies, and producing original research is an integral component of doctoral studies at the UB. In fact, this institution has offered graduate-level programmes of study since 1983, and in 1996 it established a School of Graduate Studies with the remit of coordinating all aspects of graduate student programmes, from recommendations for approval by senate to quality management as well as admission through graduation. PhD enrolments commenced in the academic year 1995/96, and the first research student graduated in 1998/99 (UB School of Graduate Study Calendar, 2015/16, p. 2).

The UB has recommended research-intensive doctoral programmes. A prospective doctoral candidate goes through a Master of Philosophy degree, and after the completion of two semesters of full-time academic work the student is recommended "either for transfer to the PhD programme or for continuation as an MPhil candidate" (UB School of Graduate Studies Academic Calendar, 2015/16, p. 9). Students who fail to transfer to doctoral studies are those who cannot write and defend a convincing research proposal to demonstrate their research astuteness. It should also be noted that the students who are required to go through a MPhil programme before proceeding with a PhD are those without previous research experience. When an applicant is found to have rich research experience, such a candidate "may be admitted directly into a PhD programme, upon recommendation of the Departmental Board and approved by the School of Graduate Studies" (UB School of Graduate Studies Academic Calendar, 2015/16, p. 9). PhD candidates must complete a thesis consisting of original research and representing a significant contribution to their discipline, field of study or area of expertise.

ACCESS AND PARTICIPATION IN DOCTORAL PROGRAMMES

The University of Botswana is the only institution in Botswana offering doctoral programmes. Table 2.1 presents the UB Faculties and related doctoral specialisations/programmes.

Table 2.1: UB Faculties and their Doctoral Programmes

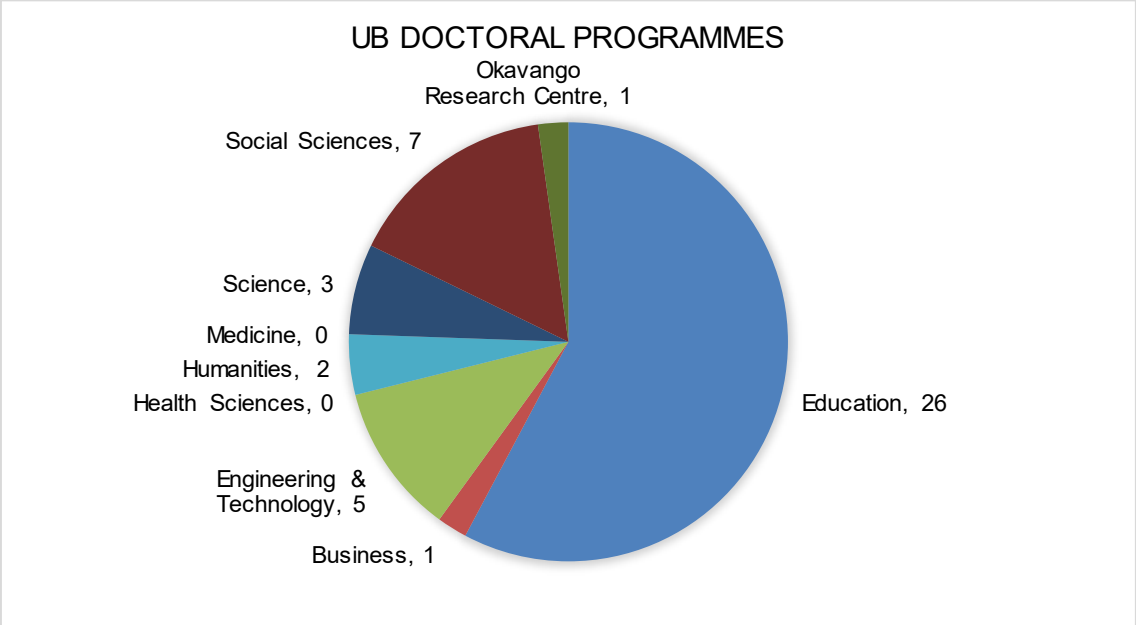
Faculties	MPhil/PhD Programmes						
Business	**Business**						
Education	Adult Education	Counselling and Human Services	Educational Management	Gender Education	Research and Evaluation	Curriculum and Instruction	Mathematics Education
	Science Education	Language Education	Social Studies Education	History Education	Geography Education	Measurement and Evaluation	Infant Education
	Food and Nutrition	Textile and Clothing	Home Economics	Physical Education and Coaching	Exercise Science	Sports and Recreational Management	Sports Psychology
	Special Education	Educational Technology	Early Childhood Education			Environmental Education	
Engineering and Technology	Engineering	Design	Technology	Built Environment		Project Management	
Health Sciences							
Humanities	African Languages and Literature			Theology and Religious Studies			
Medicine							
Science	Chemistry		Computer Science			Physics	
Social Sciences	Economics	Public Administration	Political Science	Political Studies	Social Work	Sociology	Statistics
Okavango Research Centre	Natural Resources and Management						

Source: UB (2015a)

Table 2.1 indicates that six UB Faculties, including the Okavango Research Centre (ORC), offer doctoral programmes in their respective specialisations. Doctoral candidates are admitted first on an MPhil programme. They are expected to satisfy the requirements of an MPhil before proceeding with research at PhD level. They are expected to take at least one or two courses in research methodology, and other combinations of courses as recommended by the Faculty MPhil/PhD Coordinating Committee. Only in exceptional circumstances will the School of Graduate Studies, acting on a recommendation from the FoE MPhil/PhD Coordinating Committee, exempt a student from such courses. These courses are carefully selected to take a student through a research proposal and defence before being conferred the status of doctoral student. On achieving this status, a student is expected to engage in empirical research leading to the submission, examination and doctoral viva (defence) of their original thesis.

Figure 2.1 below indicates the actual number of doctoral programmes in each faculty.

Figure 2.1: UB Doctoral Programme

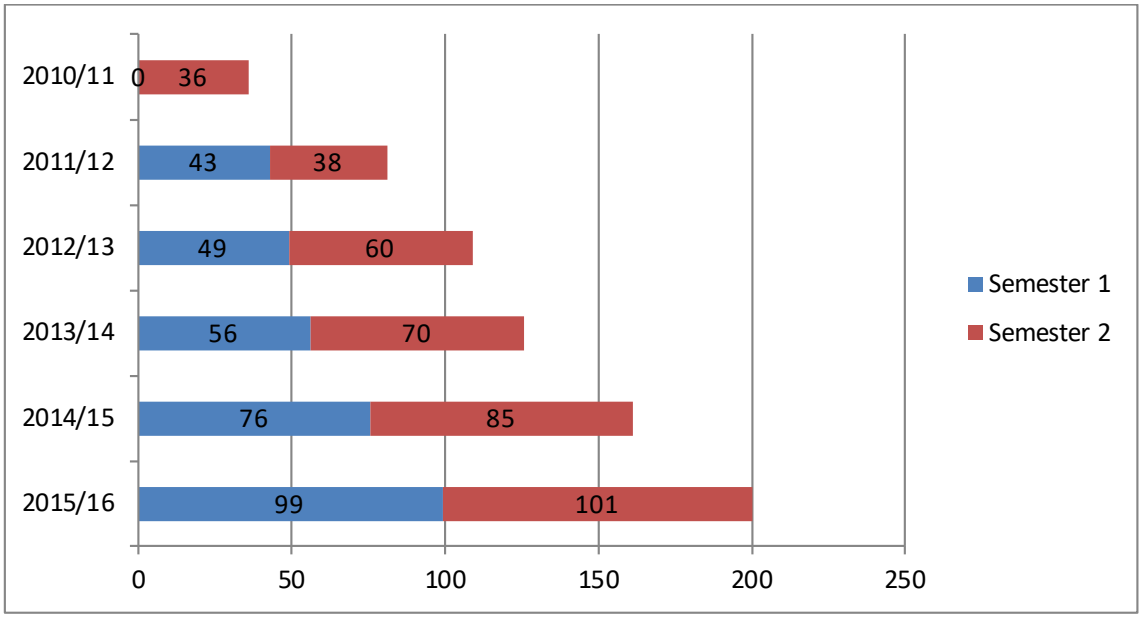


Source: UB (2015a)

The Faculty of Education is the largest with eight departments offering doctoral degrees, namely Adult Education, Educational Foundation, Language and Social Science Education, Mathematics and Science Education, Physical Education, Health and Recreation, and Primary Education. About twenty-six doctoral programmes are offered in this Faculty. Other faculties with sizable numbers of departments offering doctoral degree programmes are Social Sciences with seven doctoral programmes and the Faculty of Engineering and Technology with five specialisation areas of doctoral study. Others like the Faculties of Science (three), Humanities (two) and Business (one) have few doctoral programmes, including the Okavango Research Centre with only one programme. In all, the UB currently offers forty-five doctoral programmes.

Enrolments in these programmes are indicated below. However, these enrolments have been grouped according to Faculties, not areas of specialisation. The enrolment numbers presented in Figure 2.2 span a period of six years, from 2010 to 2016. It is clear that there has been an increase in enrolment; the number of PhD students grew from 36 in 2010/11 to 81 in 2011/12. It continues to grow steadily: 109 in 2012/13; 129 in 2013/14; 161 in 2014/15; and 200 in 2015/16. This expansion is aligned with the UB's strategic direction of becoming a research-intensive university. To achieve this objective, there is a need for an increase in graduate enrolment and research output. With this goal in mind, it is anticipated that graduate enrolment will continue to increase considerably over the next few years. As Thompson, Kirkman, Watson and Steward (2005) have observed, this kind of expansion places greater importance on the quality of supervision. Supervision and mentoring of doctoral students will be highlighted in this report as a challenge for the University of Botswana. However, despite the challenges of supervision, some students continue to graduate. Table 2.2 below presents the graduation numbers for all faculties for the years shown.

Figure 2.2: Enrolment Numbers (2010–2016)



Source: UB (2015a)

Table 2.2: Graduate Student Graduation Statistics

Programme	Year				
	2011	2012	2013	2014	2015
Master's	213	185	181	197	261
MPhil	4	0	4	5	5
PhD	10	4	13	16	19
Total	**227**	**189**	**198**	**218**	**285**

Source: UB (2015a)

The table above indicates low completion rates compared to enrolment numbers. However, it was not easy to obtain attrition statistics or reasons for non-completion because a systematic analysis has not yet been done. From the completion numbers, it can be inferred that most doctoral candidates do not complete or take a long time to complete. Given that many are self-funded and retain their full-time employment, delays in completion or even non-completion should be expected. In addition, the University of Botswana has nothing in place to retain their doctoral students, such as scholarships or campus employment.

STRENGTHS OF THE UB DOCTORAL PROGRAMME

1. The University of Botswana has in place good plans and preparations for its doctoral students. It has an established School of Graduate Studies (SGS) staffed with expertise that can drive quality programmes. It also has state of the art infrastructure like classrooms, equipment, library and graduate halls, as well as study places conducive to effective doctoral learning experiences.

2. As may be expected, there are general guidelines that outline various stages of the doctoral degree, ranging from entry requirements, processes of registration, progression including supervision and mentoring, through to completion. These are comparable to international requirements or standards.

3. The SGS follows an academic calendar updated yearly that outlines general and specific regulations for those wishing to enrol in doctoral studies.

4. The University of Botswana continues to witness an increasing enrolment of doctoral students. In 2010/11, for example, it registered 36 students. Since then the numbers have been increasing; in 2015/16 it enrolled 101 students (almost three times the figure in 2010/11). PhD students are thus increasingly forming a significant proportion of the student population.

5. Through its Office of International Relations and Partnership the UB has forged partnerships with institutions across continents, and these can be extended to benefit doctoral education.

CHALLENGES OF DOCTORAL PROGRAMMES

1. General Challenges

a. Despite the much-celebrated benefits of doctoral education, countries differ in terms of the priorities given to the advancement or promotion of this level of education. In Botswana, doctoral education is not among the key strategic priorities set out in the current Education and Training Sector Strategic Plan (ETSSP 2015–2020). This has an adverse impact on the development, advancement and promotion of doctoral studies in Botswana; for example, the Government of Botswana, who is the main sponsor of education in the country, does not directly sponsor any of the doctoral education offered in Botswana. This lack of sponsorship brings some challenges: closed/restricted access; a lack of support services; as well as students opting to study on a part-time basis to retain full-time employment in order to pay for their tuition, leaving them with insufficient time to study. Deprivation of this level of study may mean that

Botswana will not fully achieve its aspiration to become an informed and educated nation with professional skills to drive commitment to its knowledge-based economy.

b. Despite the fact that the University of Botswana has a well-established School of Graduate Studies, adequately staffed and complemented by full and associate professors as well as senior lecturers to offer supervisory and mentoring services, there is a tendency for Batswana to reject graduate degrees offered locally in preference for study at reputable foreign institutions.

c. Currently, doctoral students studying at this university are self-sponsored. Paying tuition fees has proved to be a key stumbling block to access, progression and completion. Those who are sponsored by their institutions study abroad rather than locally.

d. Since its inception in 1982, the UB has depended on government funding. In the context of a recent decline in government resources to support Batswana to study even locally, hoping for government-sponsored expanded access to doctoral education may be unrealistic. Another issue that further reduces access is increases in tuition fees. The UB is a market-oriented institution and makes no special consideration for doctoral students when tuition and other fees are increased. Many potential doctoral students are excluded by this, except the few who are in better-paying jobs or who are from well-off families who can afford to sponsor themselves.

2. Challenges Specific to Doctoral Education at the University of Botswana

a. The University of Botswana also faces challenges such as weak supervisory personnel, a heavy workload for supervisors, and a lack of targeted incentives to supervisors. Beyond financial constraints, some doctoral students take a long time to complete while others abandon their studies. Also, there is limited or no information about the impact of doctoral education, whether on the academic community or in terms of its contribution to the knowledge-based economy or workplaces. These challenges cannot be addressed without the existence of a policy or strategic framework for education at doctoral level.

b. The University of Botswana School of Graduate Studies (SGS) Academic Calendar (2015/16) contains some regulations that are meant to ensure quality. However, there is evidence of benign neglect in some of these regulations. For example, each Faculty has to have a Board of Examiners, with the composition of this Board clearly spelled out. Without singling out the Faculty of Education, it is among a number of faculties without this important body. A lack of monitoring and evaluation reports made it difficult to obtain an overall picture of all Faculties.

This failure to observe important guidelines compromises the quality of doctoral education.

c. The Academic Calendar (2015/16) also specifies guidelines for the selection of supervisory committees. It clearly states that CVs shall be reviewed for evidence of an appropriate level of experience and/or current scholarly work. It remains to be confirmed whether this is indeed the practice. In some faculties this regulation is certainly not adhered to. There is no thorough vetting of who can or cannot supervise and mentor doctoral students. Many are allocated supervisory tasks merely on the basis of having gone through doctoral degrees themselves and attained senior lectureships or professorships.

d. Mentoring of doctoral students is left in the hands of supervisors who may not have the necessary resources to do it well. No arrangements are made to prepare and motivate supervisors for their supervisory roles. There are no induction workshops on supervisory skills; the teaching workload of doctoral supervisors does not differ from that of other staff members; and doctoral supervisors are judged according to the same PMS scale as other staff who are expected to engage in other professional and community services as well as research. The quality of the doctoral study experience is affected by all these demands.

e. Doctoral students are usually studying part-time while retaining full-time employment. This arrangement has its own problems. While the duration of the programme may be stipulated, some students take advantage of a regulation whereby they may be permitted to withdraw at any time for a period of up to two years. The regulation does not specify how many times a student may benefit from this regulation. Some of them apply, disappear for two years and then reappear and start afresh, subsequently disappearing again to come back at a later stage.

f. The absence of a doctoral forum or Pitso (in Setswana) robs doctoral students of the rich experience of sharing their ideas and research projects across faculties. These types of meetings can impart useful research skills and facilitate cooperation and collaboration, especially in areas of common interest.

g. Doctoral students at the UB get no special treatment compared to other students, even undergraduates. Of course, there are graduate halls and graduate laboratories, but in reality, there is no monitoring to ensure that these are used for the purposes of graduate students, particularly doctoral ones. Doctoral students are given no priority by the UB Office of Research and Development in the scrabble for meagre research funds. When they apply, they may be funded or rejected based on prevailing guidelines and the availability of funds.

SUMMARY AND RECOMMENDATIONS

The government continues to place great emphasis on education. Major documents such as the Education and Training Sector Strategic Plan (ETSSP 2015–2020), Vision 2036, the National Development Plan 11 and the Tertiary Education Policy make it clear that the development of human resources for job readiness and preparing Botswana for a knowledge-based and globally competitive economy remain priority areas for Botswana (Republic of Botswana, 2015). The ETSSP 2015–2020 makes it clear that for Botswana to address issues of unemployment, fight poverty and become an innovative nation, it has to reform its education system as a means of raising productivity and helping people to acquire entrepreneurial, managerial and technological capabilities (Republic of Botswana, ETSSP, 2015, p. 8). Against this background of interest, the increasing importance of doctoral education cannot be overemphasised. Generally, "doctoral education is seen as a key for the creation of new knowledge and human resources and thus a basis for building a globally competitive research community and a prosperous society" (Ecker, Kotmann, Meyer & Brandl, 2014, p. 22).

Important as it may be, doctoral education in Botswana is likely to continue to face serious challenges in terms of government sponsorship. The current decline in government resources to support even lower levels of education makes the prospects of improved sponsorship for doctoral programmes very slim. Suitable strategies are therefore needed to address the current closed access to doctoral studies. Perhaps universities need to build partnerships with strategic partners in industry in order to develop resources to sponsor and ensure high-quality doctoral studies. The introduction of student loans or grants may also be used to assist doctoral candidates to enrol and complete their studies. Through such concerted efforts, Botswana may achieve its dream of becoming a centre of excellence in tertiary education and attract foreign students to its doctoral programmes (Government of Botswana, Ministry of Education and Skills Development, 2008).

A partnership-based or unified tertiary education system is also needed to ensure that doctoral programmes are offered by those with resources, and to avoid duplication. At present, expecting private institutions to start offering doctoral education without independent funding models is an absurdity since they also look to the Government of Botswana for sponsorship. Many of these institutions are operating with very low enrolments because of the lack of government support or self-sponsorship. The prospects for them to introduce doctoral studies are remote. Botho University is the only institution that has indicated a desire to start a doctoral programme in 2017. If this institution works collaboratively with the University of Botswana duplication may be avoided, and working together will help to ensure quality doctoral study experiences.

Doctoral education is a hallmark of a dynamic, educated and informed nation, as well as facilitating the modern economic growth that Botswana aspires to. If closed access persists, this may lead to socio-economic inequality in a society where the level of achievement in tertiary education is a decisive factor in obtaining a well-paid job that translates into well-being and socio-economic security (Government of Botswana, Ministry of Education and Skills Development, 2008, p. 38). Thus, in the context of the recent reduction in public funding in education, Botswana should consider suggestions like those proffered by Weeks (2012). In his article entitled 'Why higher education's growth trajectory has stalled', Weeks makes some important observations in relation to Botswana. These include: a

decline in tertiary enrolment; a decline in financial resources to support Batswana to study either locally or abroad; the difficulty of sustaining funding allocations at a level that will ensure tertiary private institutions do not close; and the problem of having small, scattered public tertiary institutions. He calls for an amalgamation of these small institutions into multi-campus institutions, closing the ones that are no longer viable. This move, according to Weeks, would ensure that meagre resources are used carefully to sponsor quality education and to avoid the unnecessary introduction of new doctoral programmes in the context of declining financial resources to support education.

It is important to note that if the current closed or restricted access to doctoral studies continues, it may negatively affect the social and economic enrichment and growth of Botswana. Doctoral graduates are a hallmark of a dynamic educated nation and a thriving modern economy, so doctoral education is needed by each and every nation.

FUTURE RESEARCH

No study has been done to determine the impact of doctoral education in Botswana. Tracer studies should be carried out to determine competence-job fit and other contributions of doctoral graduates from the University of Botswana to the labour market, as well as to community and national developments. Also, studies are needed to evaluate the provision of doctoral education within the University of Botswana, focusing on challenges and variables such as supervisors' workloads, support services for doctoral students and the consequences of being a full-time worker and part-time student.

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GHANA

Doctoral Education in Ghana – Practices and Challenges

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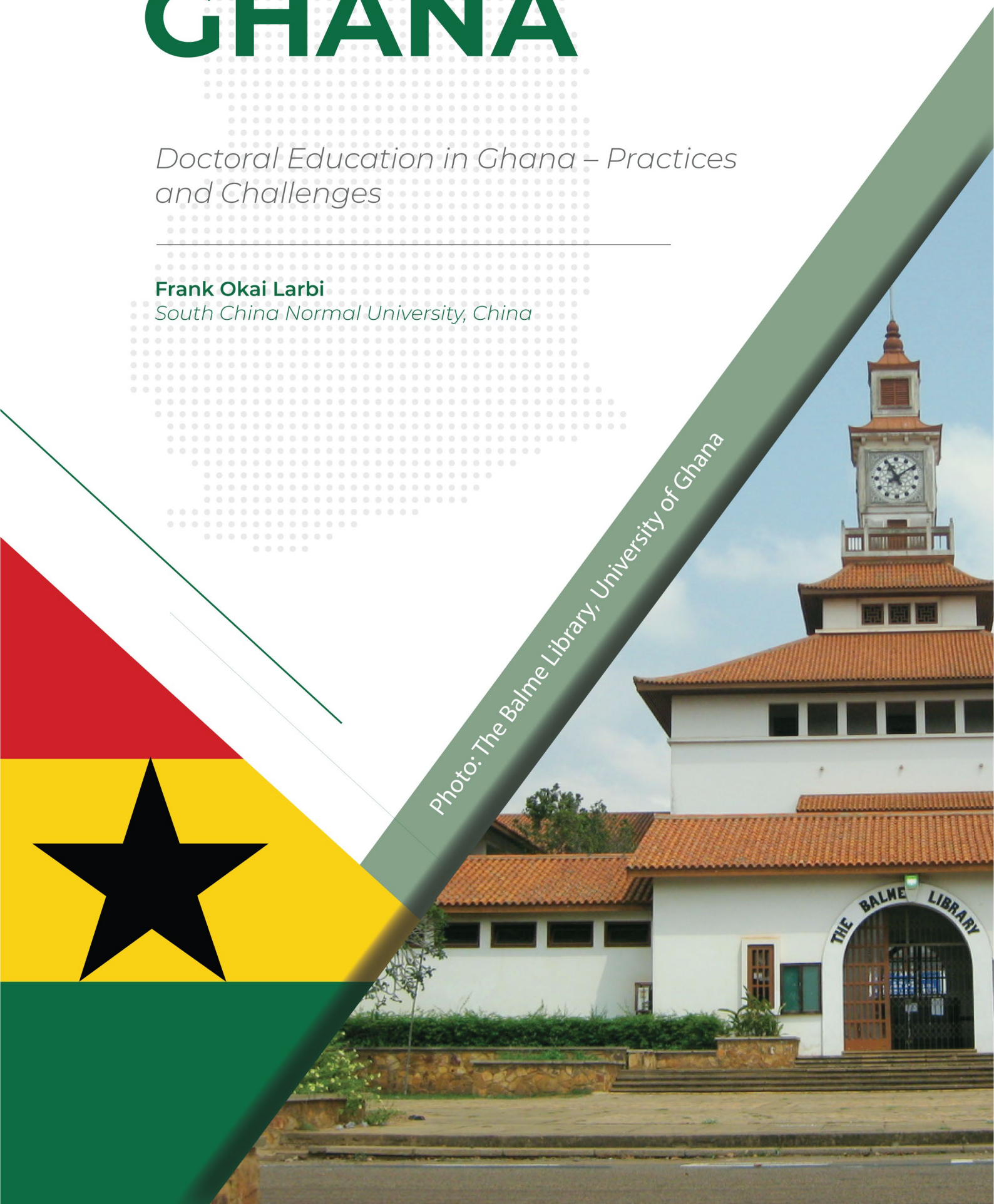

INTRODUCTION

The Doctor of Philosophy degree, abbreviated to PhD, is the highest academic certification in universities, awarded to students who have achieved all academic requirements set by the university and who are qualified to be a doctor in their specialised academic area of interest. There is variation in PhD programmes from country to country and from institution to institution in terms of the length of programmes. Generally, the minimum number of years for any PhD programme is three years. In Ghana, PhD programmes may be three or four years in duration, depending on the university and the type of programme.

Doctoral degree certificates are awarded to students who have demonstrated the formation and critical analysis of existing and new knowledge, via authentic research which is peer reviewed and which merits publication, and via a detailed understanding of applicable techniques and methodologies for conducting studies and complicated scholastic enquiry.

As part of its strategy to augment the quality of doctoral education (DE) in Ghana, in 2015 the University of Ghana hosted a two-day conference on doctoral students' research, themed '*Promoting PhD Research Excellence*', under the auspices of the Building Stronger Universities Phase II Project. This is an innovative idea that the university has adopted to fortify the delivery of quality PhD programmes in Ghana. The conference enabled doctoral students to develop their skills in making presentations at conferences, establish networks, and learn about new trends in PhD studies. Again, to ensure excellence in PhD programme delivery, one of the goals of the conference was to give doctoral students the opportunity to have their work critiqued by peers, and to share their research ideas and articles freely (University of Ghana, 2015). At the conference Professor John Gyapong, who is the Pro-Vice Chancellor, Research for Innovation and Development, noted: "The conference could be an excellent starting point for regular doctoral conferences among universities in Ghana" (University of Ghana, 2015). Since then the university has been working diligently to achieve the stated goals that emerged during the conference, despite the impediments it faces.

This study aims to understand the purpose of doctoral education (DE) in Ghana, investigating the administrative and other challenges that impede the successful delivery of DE in Ghanaian universities. The study is also intended to draw the attention of educational policy makers, professors and university administrators to some of the problems and challenges that we have uncovered. Areas of further study will be indicated for researchers to contribute to the improvement of DE in Ghana.

This study employed a qualitative research methodology, specifically structured interviews, to collect data from fifteen PhD students, three professors and three administrators in renowned public universities in Ghana on the subject of "challenges that impede successful DE delivery in Ghana, and practices that can help to mitigate those challenges and enhance the quality of DE in Ghana".

PURPOSE OF DOCTORAL EDUCATION IN GHANA

Education promotes the formation of human capital and long-term productivity. It is an important tool for the optimum development of a nation's human or manpower resources. Interestingly, each level of education yields a different effect on economic development; primary and secondary education have a greater effect on basic worker productivity, while higher education has a greater effect on technological innovation. According to Bogle (2010), the League of European Research Universities reports:

> *Doctoral programes prepare researchers to the highest level to make important contributions to frontier research. In addition, doctoral graduates are well prepared to take up roles in driving complex changes in society. Doctoral graduates deliver the advanced research skills necessary in professional sectors beyond frontier research and education: in applied research, in policy making, in management, and in many other leadership roles in society.* (Bogle, 2010, p. 3)

Likewise, doctoral education in Ghana is intended to train and prepare competent and knowledgeable researchers. Its primary purpose is to prepare researchers who will be able to contribute to filling the knowledge gap at both international and local level.

Doctoral education should be aimed at equipping students with the prerequisite skills and knowledge to understand the complexities of social and scientific research both locally and internationally. Again, doctoral education is about "the supply of high-quality scientists and engineers" as well as researchers in other fields, to support continuous innovation in competitive global markets (HM Treasury, 2002, p. 1). Ghanaian higher education is gradually producing high-quality scientists and engineers with the support of international organisations and companies that offer students short-term internships and on-the-job experience.

With regard to the above-mentioned purposes of doctoral education, students will be able to acquire the necessary and prerequisite skills and experience for research depending on relevant factors, such as the educational and research environment, the competencies of advisors, financial support, and international networking through conferences, workshops and seminars to understand international issues and aid comparative analysis. However, the challenges to Ghanaian doctoral education pose a threat to these aims, and hence this is an urgent need to address these complexities.

THE UNIVERSITY OF GHANA'S INTERNATIONAL RELATIONS TO AID DOCTORAL EDUCATION AND RESEARCH

The Carnegie Corporation of New York has granted US$2,940,000 to the University of Ghana to support doctoral education and early career faculty research capacity development (University of Ghana, 2016). The Carnegie Corporation of New York has collaborated with the UG in the quest to build the capacity of faculty members in training PhD students to be more innovative and produce

quality research. Since 2010 the corporation has helped with development of faculties. According to a report by the UG, since 2010 "the corporation has an extensive faculty development agenda that has benefited 80 PhD and 86 MPhil students so far" (University of Ghana, 2016). The new project, entitled Building a New Generation of Academics in Africa (BANGA-Africa), intends to support and augment doctoral and post-doctoral activities to improve doctoral training and develop the quality of research from the UG. Again, the project seeks to "enhance the proportion of PhD holders in UG faculties by supporting additional doctoral training and improve doctoral products in West Africa by strengthening the UG Pan-African Doctoral Academy (PADA)" (University of Ghana, 2016).

The BANGA-Africa project has three objectives to enhance the quality of doctoral education and research according to a report on the UG website, namely:

1. To consolidate the research capacity of early career UG faculty members in order to enhance their research productivity and ability to contribute effectively to global knowledge generation.

2. To further enhance UG faculty strength and improve the university's capability to deliver high-quality research and graduate training.

3. To strengthen the UG Pan-African Doctoral Academy (UG-PADA) into a strong centre for PhD scholarship, contributing effectively to the African voice in global academic discourse and African nations' development agendas.

CAREER PATHS THAT STUDENTS EXPLORE AND FOLLOW

Most PhD students are employed in either a private or a public institution; some of them regard PhD programmes as a stepping-stone for promotion in their career. However, it is a challenge for students who do not have secure jobs to find one, due to their salary requirements and job placement, especially in companies and industries. The most popular jobs for PhD students to be offered are teaching and research opportunities in tertiary institutions. Most PhD students in Ghana are already in the teaching field in tertiary institutions, studying in order to attain the fundamental qualification to be a lecturer in Ghana. On the other hand, students who pursue their PhD programmes abroad tend to be preferred for job placement in both public and private institutions due to their international experience, and because they are perceived to be abreast of innovation and new levels of technology.

With regards to the proliferation of higher educational institutions in Ghana, there is a corresponding shortage of lecturers with doctoral degrees to fill in the gap, and therefore universities are left with no option other than to recruit applicants with lower levels of qualification. Hence, the underlying rationale for pursuing a doctoral degree must be to enable lecturers to upgrade their qualifications to guarantee their professional positions. Most of the interviewees' responses were similar to the responses below.

> *I have been a lecturer in this university for couple of years now. I was recruited with a Master of Philosophy degree; however, with the recent edge to upgrade all lecturers to a doctorate degree, I decided to enrol to upgrade myself. Hence, after completion I will then have the pre-requisite qualification to attract promotions and other benefits in the profession.*
>
> *(response from a PhD candidate)*

Another student who is not yet in the lecturing profession responded as follows:

> *After my doctorate degree I will be looking for lecturing opportunities in the tertiary institution. With the high demand for doctoral applicants in the profession, I am optimistic that after the completion of my studies I will be granted employment in any of the higher institutions I apply to.*
>
> *(response from a PhD candidate)*

From the responses above, it can be inferred that most of the PhD students and candidates in Ghana are likely to pursue employment as lecturers and researchers in higher educational institutions. The study did not capture any responses of candidates who stated that they would pursue different professions aside from lecturing or researching in an educational or research institution.

STUDENT AND ADVISOR RELATIONSHIPS

In Ghanaian universities, from the first year of their studies until they graduate PhD students are assigned advisors with the same or similar research interests. Graduate student supervision includes guidance in relation to sound proposal preparation and defence, methodological choices, documenting and publishing their research, maintaining both supportive and professional relationships, as well as reflecting on the research process (Azure, 2016). Senior professors guide graduate students to train them and enhance their expertise. Students choose supervisors who are expert in their research areas to gain adequate assistance and experience from them.

There are many factors that determine the effectiveness of the supervision process between students and their supervisors: the social setting, the personalities of the supervisor and the student, the relationship that develops between them, the expertise of the supervisor, and other issues that vary between students (Abiddin et al., 2012). Effective supervision can be realised if there is frequent and efficient communication between students and their supervisors, regular meetings for discussions and evaluation of the student's performance, and assistance with the student's project and dissertation. On the other hand, factors that can hamper the supervision process are disinterest in advisors in relation to the student's topic, the unavailability of advisors due to their busy schedules, conflict between students' and advisors' ideas, and sluggishness on the part of students. All these are poor supervision habits that can be an impediment to students' academic achievements.

Some of the students interviewed asserted that they are unable to meet with their advisors frequently due to some of the hindrances mentioned above. Students would prefer to have ample time for meetings and the presentation of their research progress to their advisors; however, time constraints sometimes do not permit this. A study by Gawe (2015) showed that 85 percent of students are unable to access their advisors regularly for consultation and guidance. Hence, most of the participants asserted that they often got stuck during their dissertation writing or when they need academic assistance, due to the difficulty of scheduling meetings with their supervisors. As a result, some experienced a delay in completing their dissertation on time, which resulted in delayed graduation. On the other hand, however, a few participants reported that they were able to meet their advisors almost once a week, and received adequate mentoring and suggestions about their dissertation. However, much was not said about comprehensive assistance to help with their professional development.

Postgraduate study involves a level of investigation, criticising, questioning, analysing and synthesising research to add to existing knowledge, and therefore advisors need to strengthen the relationships between themselves and their students, and to render the necessary professional assistance to them. Even though advisors might be busy with research and administrative tasks, their students' intellectual work should not be compromised, and therefore measures should be taken to enable regular meetings and consultation between advisors and their students. Collaborative research work should also be encouraged to augment students' knowledge, skills and understanding in their areas of interest.

LACK OF FINANCIAL SUPPORT

Scholarship opportunities for doctoral education in Ghana are limited and it is difficult for students to be awarded funding. Therefore, most students sponsor themselves throughout their programme. According to participants who are pursuing their doctoral education at the University of Ghana, the annual tuition fee for a PhD in Business Administration is 12,000 Ghana Cedis, which was equivalent to USD$3,000 in 2016. Students have to pay 70 percent of the tuition fees before they are allowed to register in the first semester. All the participants mentioned that they were sponsoring their own doctoral education and funding their research throughout their study period, which was challenging for them. A few students indicated that their advisors were able to involve them in other research projects, which may be funded by the government or an institution. A lack of motivation and financial incentives hinders students from actively engaging in research work for publication and filling knowledge gaps; one PhD candidate discussed the low research and publication rates among doctoral students in Ghana:

> *I understand doctoral education is a level of professional development and research-based. However, because of lack of financial support to boost and motivate our research projects, most of us cannot explore more areas to research and contribute to the knowledge gap in academia. Research is financially demanding, and without funding or support it is difficult to embark*

> *on; hence we are limited to just trying to complete our dissertation for graduation.*
>
> *(response from a PhD candidate).*

Due to financial constraints, many students are unable to pursue a PhD in Ghana; instead, they search for scholarships in universities abroad to further their education.

OTHER CHALLENGES

Besides the issues detailed above, such as supervision challenges and lack of financial assistance, other challenges were also pointed out by the participants that impede the progress of quality doctoral education in Ghana. With regard to some of these challenges, most of the participants pointed out that access to academic literature in libraries can be a problem. One of the participants asserted:

> *Quality research demands the utilisation of good relevant academic materials to aid in finding authentic scientific and historical evidence. However, we lack current academic literature in the university's library to expedite our research. Individual students have to buy useful academic materials, which are not in the school library themselves, and hence, sometimes the cost involved deters me.*
>
> *(response from PhD candidate).*

Another challenge was the low attendance at international conferences by doctoral students. This was another result of financial constraints, and a lack of motivation to encourage the students to engage with and present their work at international conferences. This inability to attend and present at international conferences limits the chances of making international connections in academia and students' professional spheres. It also discourages students from sharing their research and ideologies and contributing to filling the knowledge gap. At the time of the interviews none of the participants in the study had attended any international conferences.

Other challenges to doctoral education in Ghana relate to poorly equipped science and technology laboratories and limited or poor internet access (Kale-Dery, 2018). This may be contributing to the slow development of science and technology in the country, thereby also contributing to Ghana's increasing reliance on developed countries for contemporary scientific and technological ideas and equipment. This situation is impeding the progress of research in the country among lecturers and researchers, not only among doctoral students, and therefore there is an urgent need for the government to invest significantly more resources in higher educational institutions in Ghana.

THE WAY FORWARD

Regardless of the existence of factors hindering the successful delivery of DE in Ghana, the section below details some suggested remedies from the participants interviewed, and from a literature review about existing practices in renowned universities.

INTERNATIONAL NETWORKING

The internationalisation of higher education is the practice of inculcating an international or intercultural dimension into the delivery of postsecondary education (Knight, 2003). The constituents of the internationalisation of higher education consist of establishing international branch campuses, joint research partnerships between institutions in different countries, the recruitment of foreign students and faculty members, a proliferation of exchange programmes, global competition for talent, and designing an international curriculum (Khorsandi, 2014). Some public and private higher educational institutions in Ghana have built international alliances and engage in cooperation with universities abroad to enhance their internationalisation activities, but these alliances and cooperative efforts should be more centred on students and staff development, as well as on research enhancement, in order to ensure the delivery of quality education in the partnered institutions. Besides institutional development, the internationalisation of higher education in universities promotes the country's social, economic, cultural and educational development. In fact, internationalisation is not the aim but the tool if universities want to improve the quality and level of their academic study.

> According to traditional measures the development of universities should be based on two things: teaching and research. Currently many American universities add social service to this list. However, in China universities nurture students and the impact of research knowledge. This is evidence that research and student empowerment should not be compromised. Ghanaian universities should focus on how to enhance and build upon students' knowledge and augment their creativity in research. It has become a popular global trend in recent times for higher education institutions to create mission statements and strategic plans to affirm their commitment to internationalisation (Hayle, 2008), through the creation of international networks among higher education institutions. The Ghanaian government and higher education institutional heads should institute pragmatic internationalisation approaches to allow both public and private universities to engage in strategic international cooperation with renowned universities abroad, in order to ensure the improvement of the higher educational system in Ghana.

FINANCIAL ASSISTANCE

In this contemporary global world, most socialist economies are being driven towards a neoliberalised or capitalist state. In a neoliberalised system, the state's influence on the market and trade sector is reduced, which leads to a commodification of goods and services. According to Kellner (2002, p. 292), "a wide and diverse range of social theorists are arguing that today's world is organized by accelerating globalization, which is strengthening the dominance of a world capitalist economic system, supplanting the primacy of the nation-state with transnational corporations and organizations". Many state governments have granted significant autonomy to the private sector due to neoliberalism, leading to the commodification of education, especially higher education, and thus limiting the number of students who can access it. Today's globalisation is a market-induced process (Mittelman, 1996). Due to this phenomenon, government financial aid to support postgraduate students' research is minimal. However, in order to enhance the quality of higher education and research projects in academia, universities should endeavour to collaborate with corporate entities and non-governmental organisations to support postgraduate students' research projects, and also to provide internship opportunities for them to enhance their skills in their professional spheres. Postgraduate students need financial support to participate in international conferences and international exchange programmes if they are to acquire the necessary exposure to international academia and build academic networks for their self and intellectual development.

CONCLUSION

Most of the universities offering DE in Ghana endeavour to provide quality doctoral programmes to produce skilful and knowledgeable researchers. However, some of the challenges discussed above are obstacles to achieving the provision of high-quality DE in Ghana. DE education focusses on innovation and research, which drives PhD students' knowledge and understanding to fill knowledge gaps in society. Therefore, the necessary support from the government, institutions, and advisors should not be compromised. This will help to ensure the quality of doctoral students in Ghana. Currently, the percentage of lecturers with PhDs in Ghanaian universities stands at 62 percent; a further 12.5 percent of lecturers are at different levels of their doctoral education, but 14.5 percent are yet to pursue a PhD degree (Kale-Dery, 2018). These figures demonstrate the need to enhance doctoral education in Ghana, enlarge the intake of new applicants and offer financial assistance.

In order to mitigate the challenges associated with doctoral education in Ghana, it is recommended that higher educational institutions with limited academic and scientific resources should partner and collaborate with well-equipped institutions, in order to enhance their capacity and research capabilities for doctoral education (Alabi & Mohammed, 2018). Educational cooperation leads to sharing of scientific ideas and resources in academia, which in turn enhances the quality of research by academics. Again, universities should endeavour to establish alliances or cooperate with corporate bodies and industries to sponsor research projects by academics.

A country without scientific research by academics is lacking in terms of its development, and therefore the government of Ghana should endeavour to invest significant resources in higher educational research by funding academics. The government should also intensively develop around three key universities in the country, with the aim of creating leading research universities in the West African sub-region. Finally, supervisors of doctoral students should intensify their supervision and mentoring roles to provide quality guidance and direction to PhD students in their academic research and dissertation.

A number of constraints meant that this study could not explore all the necessary aspects of enhancing doctoral education in Ghana. Therefore, future research should focus on suggesting further pragmatic measures to expand the scope of doctoral education, focussing on quality research and professional training in Ghana.

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KENYA

Current Strengths, Challenges and Policy Options for Doctoral Education in Kenya

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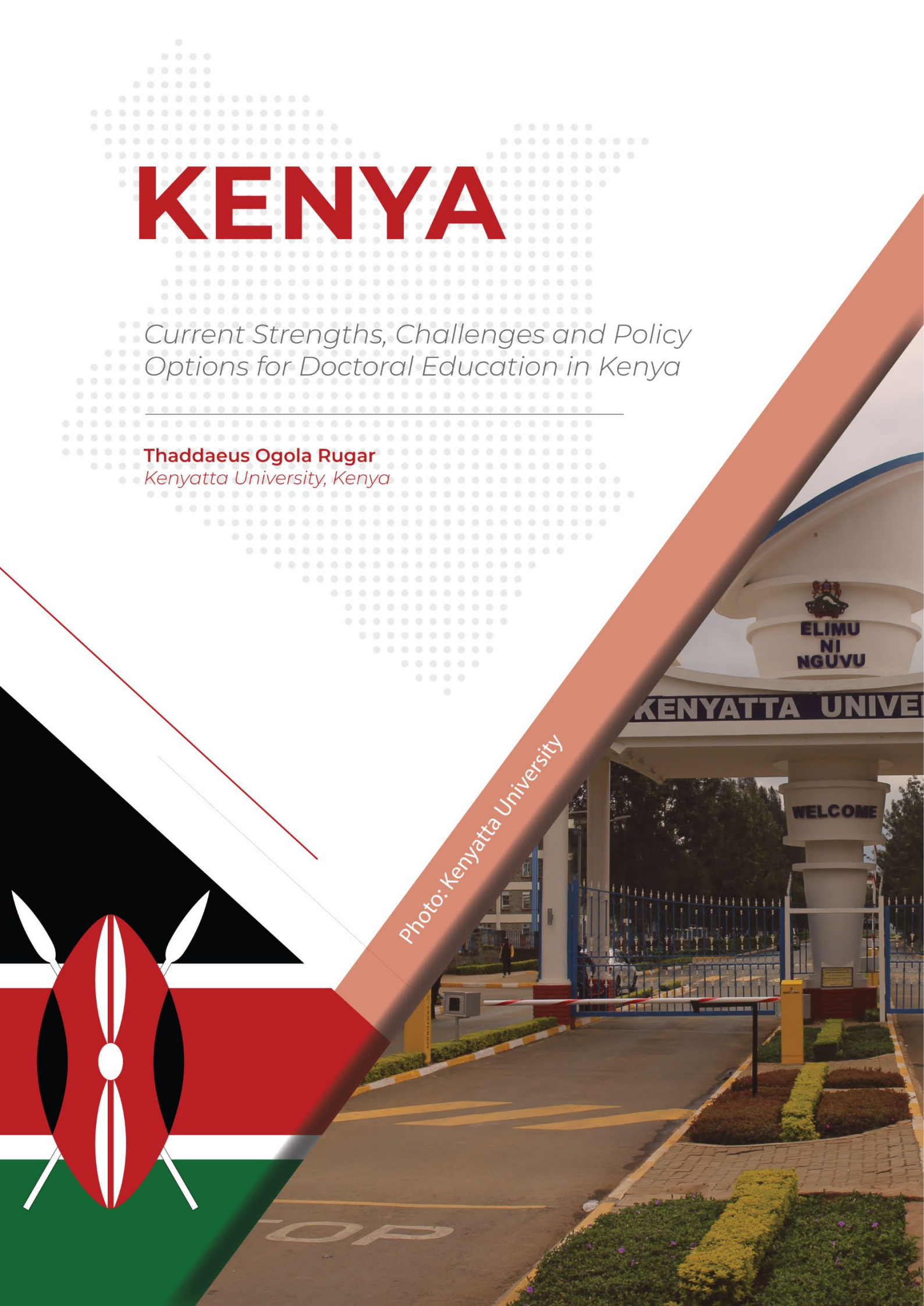

Photo: Kenyatta University

INTRODUCTION AND PURPOSE OF DOCTORAL EDUCATION IN KENYA

Doctoral education is the highest academic qualification offered in Kenyan universities. Its purpose is defined in the universities standards and guidelines under Precept 5: PROG/STD/02: Subsection (a) as: to "train research scholars and, in many cases, future university staff members" (Kenya, 2014, p. 48). It is a requirement that whoever intends to teach at university level must have qualifications one level higher than the level they are assigned to teach. This means that academics with Master's degrees are qualified to teach Bachelor degree level programmes. Teachers of Master's degree level programmes must possess a doctoral degree qualification and three years of teaching experience. In addition, the teacher is expected to show evidence of research through peer reviewed publications and supervision of research and theses (Kenya, 2014, p. 62). The requirements for teaching on doctorate degree level programmes are similar to those for teaching Master's level classes, except that the academics teaching and supervising doctoral level students should have additional teaching experience amounting to at least five years (Kenya, 2014). Data on academic staffing levels available from the Commission for University Education (CUE) (Mukhwana et al., 2016) have been compared to student populations per cluster in both public and private universities in Kenya. The results of this comparison are presented in Tables 4.1 and 4.2.

Table 4.1: Academic Staff to Student Ratio per Cluster in Public Universities

Cluster	No. of Staff	No. of Students	Ratio	Recommended Ratios*	Staffing Levels
Agriculture, forestry and fisheries	819	26,648	1:33	1:10	Under
Architecture	231	5,057	1:22	1:10	Under
Business and administration	1,883	93,331	1:50	1:18	Under
Computing	452	15,137	1:34	1:10	Under
Education (arts)	1,048	69,188	1:66	1:15	Under
Education (science)	144	26,772	1:186	1:10	Under
Engineering	761	21,710	1:29	1:10	Under
Environment	433	9,587	1:22	1:10	Under
Health and welfare	1,338	23,599	1:18	1:7	Under
Humanities and arts	962	40,179	1:42	1:15	Under
Journalism and information	248	11,298	1:46	1:18	Under
Law	210	3,642	1:17	1:18	Over
Life sciences and physical sciences	1,484	34,385	1:23	1:10	Under
Manufacturing	50	2,290	1:46	1:10	Under
Mathematics and statistics	431	14,396	1:33	1:10	Under
Security and conflict resolution	128	5,126	1:40	1:18	Under
Services	172	8,934	1:52	1:10	Under
Social and behavioural sciences	694	33,491	1:48	1:18	Under

Teacher training	124	5,673	1:46	1:18	Under
Veterinary	193	1,122	1:6	1:10	Over
Other	23	10,255	-	-	-
Total	**11,828**	**461,820**	**1:39**		

Source: Adapted from Mukhwana et al., 2016

Table 4.1 shows that out of 20 clusters of academic programmes in public universities, 18 were understaffed. It may further be noted that the most understaffed cluster in public universities in Kenya is Education (science). Only two areas, Veterinary medicine and Law, were overstaffed. This implies inadequate capacity among public universities to deliver higher education as the demand for human resources to serve the academic needs of existing universities is yet to be satisfied. The experience in private universities only varies slightly, as indicated in Table 4.2.

Table 4.2: Academic Staff to Student Ratio per Cluster in Private Universities

Cluster	No. of Staff	No. of Students	Ratio	Recommended Ratio*	Staffing Levels
Agriculture, forestry and fisheries	84	267	1:3	1:10	Over
Architecture	0	0	0	1:10	-
Business and administration	1,199	26,893	1:22	1:18	Under
Computing	441	7,513	1:17	1:10	Under
Education (arts)	417	10,181	1:24	1:15	Under
Education (science)	8	3,660	1:458	1:10	Under
Engineering	1	162	1:162	1:10	Under
Environment	79	256	1:3	1:10	Over
Health and welfare	415	6,979	1:17	1:7	Under
Humanities and arts	673	5,960	1:9	1:15	Over
Journalism and information	112	3,325	1:30	1:18	Under
Law	166	3,519	1:21	1:18	Under
Life sciences and physical sciences	31	184	1:6	1:10	Over
Manufacturing	0	3	-	1:10	-
Mathematics and statistics	84	438	1:5	1:10	Over
Security and conflict resolution	0	764	-	1:18	-
Services	24	407	1:17	1:10	Under
Social and behavioural sciences	308	4,882	1:16	1:18	Over

Teacher training	3	1,272	1:424	1:18	Under
Veterinary	9	26	1:3	1:10	Over
Other	119	1,239	1:10	-	-
Total	**4,173**	**77,929**	**1:19**		

Source: Adapted from Mukhwana et al., 2016

As shown in Table 4.2, out of 20 clusters of programmes in private universities, 7 were overstaffed. The remaining 13 clusters, 65 percent of the total, were understaffed, further aggravating the demand for academic staff in universities. The situation is critical in the areas of Education (science), where one lecturer is available for every 458 students, and in Teacher training, where there is one lecturer for every 424 students, in comparison with the recommended ratio of 1:10 in both subject areas. This reflects a very wide staffing gap that is yet to be filled. Further staff analysis is presented in Table 4.3.

Table 4.3: Academic Staff Qualification per University Category

University category	Academic Staff Qualifications					Total	%
	PhD	%	Master's	Bachelor's	Diploma		
Public chartered universities	4,215	75.21	5,661	1,004	530	11,410	**70**
Public university constituent colleges	133	2.37	292	100	78	603	**4**
Private chartered universities	923	16.47	1,936	168	43	3,070	**19**
Private university constituent colleges	113	2.02	91	6	2	212	**1**
Private universities with LIA	220	3.93	713	87	3	1,023	**6**
Total	**5,604**	**100**	**8,693**	**1,365**	**656**	**16,318**	**100**
%	**34**		**53**	**9**	**4**	**100**	

Source: Adapted from Mukhwana et al., 2016

Table 4.3 presents academic staff qualifications, with the aim of indicating the general academic levels among staff in both private and public universities. As can be seen from Table 4.3, only 34 percent of academic staff hold doctoral qualifications. The majority of teaching staff, 66 percent, have Master's degrees or lesser qualifications.

The relevance of doctoral qualifications to university teaching has, however, been called into question (Green & Powell, 2005). It is argued that doctoral education does not give candidates the requisite pedagogical skills to transmit learning effectively. Consequently, many institutions of higher learning resort to short-term training workshops and seminars to upgrade pedagogical skills among their lecturers. In many instances, training in graduate student supervision skills has been organised at additional cost to universities.

Another purpose of doctoral education in Kenya is to enhance the creation of new knowledge. In this regard doctoral education should inculcate authority, autonomy, integrity and an enduring commitment to the continuous creation of new knowledge or the extension of existing frontiers of knowledge. A doctoral degree holder is expected to conduct independent research that meets national needs. According to Kenya's development blueprint, Vision 2030 (Kenya Vision2030, 2016), Kenya is to be transformed into a newly industrialising, middle income country where high quality life is provided to all citizens. The achievement of this vision requires high quality education that is fed through the continuous creation of new knowledge. Therefore, doctoral graduates are needed to: staff the increasing number of universities, replace an ageing faculty population, and supply the professional cadres required in government, the private sector, international agencies and the NGO community (Too, Kande, Kiptoo, Mukhwana & Some, 2016, p. 4).

Towards this end, the national research and training policy identifies Health and welfare, Agriculture, Engineering, Manufacturing and Construction as priority research areas (Too, Kande, Kiptoo, Mukhwana & Some, 2016). Doctoral programmes presented by cluster (based on the international Standard Classification of Education of 2011) and university type, as shown in Tables 4.4 to 4.6, suggest a mismatch between policy aspirations and the programmes offered in Kenyan Universities. Clusters identified as critical to the achievement of Vision 2030 are the least popular among universities in terms of programme availability as shown in Table 4.4, the least preferred by students as depicted in Table 4.5, and rather exclusive, as shown in Table 4.6.

Table 4.4: Doctoral Programmes by Cluster and University Type

Cluster	Public chart. Univ.	Public const. Univ.	Private chart. Univ.	Private univ, const. Colleges	Private univ, with LIA	Private univ. Registered	Total	Proportion %
Agriculture, forestry and fisheries	61	8	2	0	0	0	71	13.71
Architecture	4	0	0	0	0	0	4	0.77
Business and administration	34	2	7	0	1	0	44	8.49
Computing	12	0	1	0	0	0	13	2.51
Education (arts)	49	0	6	0	0	0	55	10.62
Education (science)	7	0	0	0	0	0	7	1.35
Engineering	13	0	0	0	0	0	13	2.51
Environment	24	1	0	0	0	0	25	4.83
Health and welfare	38	0	1	0	0	0	39	7.53
Humanities and arts	65	2	19	0	1	1	88	16.99
Journalism and information	9	1	1	0	0	0	11	2.12

Law	0	0	0	0	0	0	0	0
Life sciences and physical sciences	47	6	0	0	0	0	53	10.23
Manufacturing	1	0	0	0	0	0	1	0.19
Mathematics and statistics	24	0	2	0	0	0	26	5.02
Security and conflict resolution	7	0	0	0	0	0	7	1.35
Services	5	0	0	0	0	0	5	0.97
Social and behavioural sciences	16	1	5	2	0	0	24	4.63
Teacher training	7	8	1	0	0	0	16	3.09
Veterinary	9	0	0	0	0	0	9	1.74
Other	1	0	2	0	1	3	7	1.35
Total	**433**	**29**	**47**	**2**	**3**	**4**	**518**	**100**

Source: Adapted from Mukhwana et al., 2016

Table 4.4 shows that the most popular doctoral programmes across all types of universities were Humanities and arts (with a total of 88 programmes), Agriculture, forestry and fisheries (71 programmes), Education (arts) (55 programmes), Life sciences and physical sciences (53 programmes), Business and administration (44 programmes) and Health and welfare (39 programmes). The least popular programmes are Law (with 0 programmes), Manufacturing (1 programme), Architecture (4 programmes), Services (5 programmes), Education science, and Security and conflict resolution (with 7 programmes each).

Viewed across types of universities, Table 4.4 indicates that a total of 462 out of 518 programmes, or 89.19 percent, are hosted in public universities, leaving only 56 programmes (10.81 percent) in private institutions of higher learning. Popular programmes among private universities are Humanities and arts (with 19 programmes), Business and Administration (7 programmes), Education (arts) (6 programmes) and Social and behavioural sciences (5 programmes).

With this pattern of doctoral programmes, where public and private universities both concentrate on similar clusters, there is the risk of overproduction of expertise in popular areas and a serious shortage of qualified human resources such as university lecturers and supervisors in the less popular clusters. Where the goal of launching a programme is income generation, this also means cutthroat competition for students and the possibility that enrolment in these programmes could be thinly spread across universities, thereby reducing their economic viability.

Table 4.5 presents the distribution of doctoral students across all programmes in Kenyan universities.

Table 4.5: Doctorate Programme Student Ratio

Cluster	No. of Programmes	Enrolment	Programmes: Student Ratio
Agriculture, forestry and fisheries	71	248	1:3
Architecture	4	8	1:2
Business and administration	44	2,514	1:57
Computing	13	201	1:15
Education (arts)	55	626	1:11
Education (science)	7	24	1:3
Engineering	13	71	1:5
Environment	25	273	1:11
Health and welfare	39	332	1:9
Humanities and arts	88	776	1:9
Journalism and information	11	241	1:22
Law	0	0	0
Life sciences and physical sciences	53	339	1:6
Manufacturing	1	0	0
Mathematics and statistics	26	231	1:9
Security and conflict resolution	7	31	1:4
Services	5	60	1:12
Social and behavioural sciences	24	573	1:24
Teacher training	16	287	1:18
Veterinary	9	41	1:5
Other	7	271	1:39
Total	**518**	**7,147**	**1:14**

Source: Adapted from Mukhwana et al., 2016

Table 4.5 shows a picture that raises the question of the economic viability of doctoral programmes. The Agriculture, forestry and fisheries cluster has a programme-to-enrolment ratio of 1:3; Architecture has a ratio of 1:2, Education (science) 1:3, Security and conflict resolution 1:4; and Veterinary 1:5. In these areas it will be difficult to sustain programmes unless they are funded through public grants or otherwise. As it is, students are the main source of funding for most programmes, despite the huge capital outlay required to mount the courses.

It is interesting to analyse how inclusive doctoral education has been in Kenya (Table 4.6). The national goal of achieving gender parity among policy makers and top level management, both in the public services as well as in the private sector, seems a mirage. Enrolment is higher for men than for women. During the 2015/2016 academic year there were 4,915 men and only 2,232 women enrolled in doctoral programmes across all universities, translating to a ratio of 2:1 in favour of men (Mukhwana et al., 2016, p. 31).

Table 4.6: Enrolment (Doctorate) per Cluster in Kenya's Private and Public Universities 2015/2016 Academic Year

Cluster	Male	Female	Total	Proportion %
Agriculture, forestry and fisheries	188	60	248	3.47
Architecture	7	1	8	0.11
Business and administration	1,808	706	2,514	35.18
Computing	144	57	201	2.81
Education (arts)	368	258	626	8.76
Education (science)	16	8	24	0.34
Engineering	61	10	71	0.99
Environment	184	89	273	3.82
Health and welfare	178	154	332	4.65
Humanities and arts	572	204	776	10.86
Journalism and information	146	95	241	3.37
Law	0	0	0	0
Life sciences and physical sciences	259	80	339	4.74
Manufacturing	0	0	0	0
Mathematics and statistics	152	79	231	3.23
Security and conflict resolution	26	5	31	0.43
Services	29	31	60	0.84
Social and behavioural sciences	412	161	573	8.02
Teacher training	185	102	287	4.02
Veterinary	29	12	41	0.57
Other	151	120	271	3.79
Total	**4,915**	**2,232**	**7,147**	**100**

Source: Adapted from Mukhwana et al., 2016

From Table 4.6, it is clear that the most popular area of specialisation for doctoral students is Business and administration, accounting for 35.18 percent of total enrolment, followed at a distance by the Humanities and arts cluster (10.86 percent), Education (arts) (8.76 percent) and Social and behavioural sciences (8.02 percent). However, even in the most popular cluster, the proportion of women enrolled for doctoral degrees was only 28.08 percent. The only female-dominated cluster was Services, where women constituted 51.67 percent of total enrolment. The highest gender disparities were seen in Architecture, where women accounted for only 12.5 percent of the total enrolment, followed by Engineering with 14.29 percent. The overall picture is a clear reflection of male domination. As Table 4.6 shows, during the 2015/2016 academic year, only 31.23 percent of the doctoral students enrolled across all clusters were women, while 68.77 percent were men.

The question as to which kind or type of doctoral programme exists in Kenya is answered in subsection (c), which recognises two kinds of doctorates, namely Doctor of Philosophy degree programmes and professional doctoral degrees. These may be further distinguished as follows:

1. The Doctor of Philosophy degree programme shall focus on producing scientist practitioners who are mainly engaged in generating knowledge through research and teaching. (Kenya, 2014, p. 49)

2. Professional doctoral degree programmes are normally practice-oriented and focus on producing practitioner scholars who are engaged mainly in consuming knowledge, practice and active research. (Kenya, 2014, p. 49).

This distinction notwithstanding, Kenyan doctoral degree programmes are predominantly Doctor of Philosophy degrees. Out of 518 doctoral programmes across all universities (Mukhwana et al., 2016) only six can be categorised as professional doctoral programmes. This constitutes 1.37 percent of all doctoral programmes. Four out of the six professional doctoral degree programmes are offered at the University of Nairobi, while the remainder are offered by the Adventist University of Africa and the Catholic University of East Africa. So far, this is a positive trend. However, it only accomplishes the easy part of this challenge – that is, adopting what the world already knows. The hard part is in the definition of the need and context for when to adopt and offer professional doctorates. What if a theologian who is a church minister is awarded a Doctor of Philosophy, and an educationalist is awarded a Doctor of Education? What would happen to the many Kenyan professors who hold EdD degrees and already have careers in teaching and doing research in universities? Even more complicated is the content of these qualifications. The guidelines do not clarify which of the two kinds of doctorates might require coursework, examinations and research, or only research and publications.

In subsection (d) the determination of course weighting is left to the discretion of individual institutions to determine whether to incorporate coursework or not. It states: 'The structure of a doctoral degree programme shall demonstrate the weighting of courses in relation to coursework and thesis/dissertation' (Kenya, 2014, p. 49). This precept indicates that the Commission for University Education (CUE) requires the inclusion of coursework in the pursuit of all its doctoral degrees. The basis of coursework as a learner support strategy is commendable, but it is debatable whether it should constitute a determination of qualifications. Again, what should be taught? Research methodology, or specialised knowledge in terms of subject content? If the purpose of a PhD as stated by the CUE is to extend and redefine new knowledge, how can new knowledge be taught? Kenyan doctoral degree programmes are at a crossroads on this matter. The commission recommends coursework, but many doctoral programmes are still pursued by research only. An answer to the question of which is superior has yet to be determined.

ENVIRONMENT

The CUE, a body mandated to assure the quality of higher education in Kenya, set out standards for higher education (Kenya, 2014) and the national policy regulating the quality of postgraduate research and training (Too, Kande, Kiptoo, Mukhwana & Some, 2016). These standards give individual tertiary institutions room to develop internal quality systems that operationalise the wider national quality aspirations and specifications. This is a new development triggered by calls from the public following the rapid increase in the number of universities, both private and public alike.

In general, the CUE standards and guidelines are designed to assure quality for tertiary education in its entirety. They touch on institutional standards, physical resources, academic programmes and university libraries. The following paragraphs discuss the quality of doctoral education in Kenya with a focus on supervision, monitoring of progress, examination and plagiarism.

1. Supervision

a. Precept 1: INST/STD/01: *A university shall have vision and mission statements and philosophy which clearly and succinctly indicate its strategic direction.*

The import of this requirement is to lay the foundation for uniqueness among universities. Broadly, all universities have a vision, a mission and philosophical statements. However, the choice of vision remains an institutional affair. Visions have tended to vary, but missions seem to congregate around teaching, research and outreach. Universities in Kenya have tended to adopt their missions without due consideration of their resource bases. Nearly all universities in Kenya share the vision of being world-class universities. Specific universities like the University of Nairobi, Moi University, Kenyatta University, Egerton University and Maseno University proclaim themselves as world-class institutions of higher learning. This puts a heavy resource burden on them, given that the government is no longer generous with development funding for universities. Equally, all of them proclaim an ambition to achieve cutting-edge research with a commitment to churn out high-quality publications in high-impact journals in Western Europe and North America.

b. Precept 2: INST/STD/04: *A university shall have adequate and competent human resources to carry out its mandate in accordance to its human resource policy. 5) A student's thesis/dissertation shall be supervised by at least two academic staff members who shall have appropriate qualifications in the subject area in focus and its methodology.*

Under this precept, minimum criteria for appointment and promotion to various academic positions are set out for Kenyan Universities. However, with the existing dearth of statistics at the national level, it is difficult to ascertain when the required human resource levels will be achieved.

The goal of this guideline is to ensure that higher education is in the hands of qualified academic staff across all universities and clusters. This is good news for doctoral education because it guarantees access to quality supervision to all students across all universities.

Table 4.7 shows the distribution of academic staff in both public and private universities according their ranks.

Table 4.7: Academic Staff in Public and Private Universities by Rank

			Rank					Total
			Professors	Senior Lecturers	Lecturers	Assistant Lecturers	Graduate Assistants	
University category	Public university	Count	1,335	1,555	4,225	3,818	895	11,828
		% of total	9	10	26	24	6	75
	Private university	Count	333	455	1,985	1,262	138	4,173
		% of total	2	2	13	7	1	25
Total		**Count**	**1,668**	**2,010**	**6,210**	**5,080**	**1,033**	**16,001**
		% of total	**10**	**13**	**39**	**32**	**6**	**100**

Source: Adapted from Mukhwana et al., 2016

Table 4.7 indicates that 75 percent of academic staff were in public universities while 25 percent were in private universities. It also shows that 77 percent of academic staff in both types of universities were at the rank of lecturer and below. Graduate assistants and assistant lecturers, which are training positions, constituted 38 percent, which was almost the same proportion as the lecturers who made up 39 percent of all academic staff. There were 1,668 professors constituting only 10 percent of the total academic staff in Kenya, of whom 80.04 percent were in public universities. Information regarding the distribution of academic staff according to their gender and rank is summarised in Table 4.8.

Table 4.8: Distribution of Academic Staff by Gender and Rank

			Rank					Total
			Professors	Senior Lecturers	Lecturers	Assistant Lecturers	Graduate Assistants	
Gender	Male	Count	1,403	1,511	4,153	3,248	595	10,910
		% of total	9	9	26	20	4	68
	Female	Count	265	499	2,057	1,832	438	5,091
		% of total	2	3	13	11	3	32
Total		**Count**	**1,668**	**2,010**	**6,210**	**5,080**	**1,033**	**16,001**
		% of total	**10**	**13**	**39**	**32**	**6**	**100**

Source: Adapted from Mukhwana et al., 2016

Table 4.8 shows the levels of gender disparity in appointments to teaching jobs in universities in Kenya. Among all academic staff women constituted only 32 percent. Women accounted for 15.89 percent of professors, which translates to only 2 percent of all the academic staff in Kenya, while male professors constituted 9 percent of all staff. Table 4.8 also indicates that women made up 24.83 percent of senior lecturers, 33.12 percent of lecturers, 36.06 percent of assistant lecturers and 42.40 percent of graduate assistants in Kenyan universities. This bodes well for the battle against gender inequality, since it seems that gaps are being progressively addressed.

Table 4.9 presents information regarding the distribution of academic staff by rank across all academic clusters. Table 4.9 shows that the five leading clusters with the highest numbers of professors were: Health and welfare, with 250 professors; Life sciences and physical sciences with 248; Agriculture, forestry and fisheries, 211; Humanities and arts, 176; and Social and behavioural sciences with 125. The bottom five clusters with the lowest numbers of professors were: Education (science) with 15; Services, 11; Manufacturing, 10; Security and conflict resolution, 7; and the lowest was Teacher training, with only 5 professors.

Table 4.9: Proportion of Academic Staff per Cluster and Rank in Universities

S/No.	Clusters	Professors	Senior Lecturers	Lecturers	Assistant Lecturers	Graduate Assistants	Total
1	Agriculture, forestry and fisheries	211	133	288	193	78	**903**
2	Architecture	24	36	101	56	14	**231**
3	Business and administration	114	279	1,358	1,240	91	**3,082**
4	Computing	40	87	355	363	48	**893**
5	Education (arts)	123	188	581	534	39	**1,465**
6	Education (science)	15	23	53	40	21	**152**
7	Engineering	79	108	220	200	155	**762**
8	Environment	35	58	171	204	44	**512**
9	Health and welfare	250	318	726	346	113	**1,753**
10	Humanities and arts	176	204	726	471	58	**1,635**
11	Journalism and information	20	29	175	105	31	**360**
12	Law	21	47	197	90	21	**376**
13	Life sciences and physical Sciences	248	201	498	452	116	**1,515**
14	Manufacturing	10	7	13	7	13	**50**
15	Mathematics and statistics	57	48	136	235	39	**515**
16	Security and conflict resolution	7	15	30	63	13	**128**
17	Services	11	16	38	98	33	**196**
18	Social and behavioural sciences	125	133	432	241	71	**1,002**
19	Teacher training	5	14	36	68	4	**127**
20	Veterinary	55	36	52	32	27	**202**
Total		**1,626**	**1,980**	**6,186**	**5,038**	**1,029**	**15,859**
%		**10.25**	**12.49**	**39.00**	**31.77**	**6.49**	**100**

Source: Adapted from Mukhwana et al., 2016

However, a closer analysis of the data in Table 4.9 according to the proportion of staff holding professorial positions in each cluster reveals that 27.23 percent of veterinary academic staff were professors. This was followed by Agriculture, forestry and fisheries with 23.4 percent; Manufacturing with 20 percent; Life sciences and physical sciences, 16.37 percent; and Health and welfare with 14.3 percent at professorial rank. This suggests either that it is easier for academic staff in these clusters to develop professionally, or that staff here are more committed to research and academic productivity than is the case in other clusters. In clusters such as Business and administration, only 3.7 percent of academic staff were professors; in Teacher training the total was 3.94 percent; Computing, 4.5 percent; Security and conflict resolution, 5.47 percent; and Journalism and information with only 5.55 percent of academic staff at professorial rank. This suggests either that there is low academic productivity in these areas, or that it is more difficult in these disciplines to be promoted to become a professor.

When the potential supervision load was analysed, staff to student ratios emerged as presented in Table 4.10.

Table 4.10: Ratio of Staff at the Rank of Lecturers and Above to Postgraduate Students by Cluster

S/No.	Clusters	Professors	Senior Lecturers	Lecturers	Total	Master's students	Doctoral students	Total	Staff to Student Ratio
1	Agriculture, forestry and fisheries	211	133	288	632	1,675	247	1,922	1:3
2	Architecture	24	36	101	161	172	8	180	1:1.1
3	Business and administration	114	279	1,358	1,751	22,536	2,514	25,050	1:14.3
4	Computing	40	87	355	482	1,508	201	1,709	1:3.5
5	Education (arts)	123	188	581	892	3,933	626	4,559	1:5.1
6	Education (science)	15	23	53	91	241	24	265	1:2.9
7	Engineering	79	108	220	407	1,074	71	1,145	1:2.8
8	Environment	35	58	171	264	946	273	1,219	1:4.6
9	Health and welfare	250	318	726	1,294	4,221	332	4,553	1:3.5
10	Humanities and arts	176	204	726	1,106	7,946	776	8,722	1:8
11	Journalism and information	20	29	175	224	1,208	241	1,449	1:6.5
12	Law	21	47	197	265	394	0	394	1:1.5
13	Life sciences and physical sciences	248	201	498	947	1,884	339	2,223	1:2.3
14	Manufacturing	10	7	13	30	1	0	1	1:0.03
15	Mathematics and statistics	57	48	136	241	779	231	1,010	1:4.2

16	Security and conflict resolution	7	15	30	52	708	31	739	1:14.2
17	Services	11	16	38	65	554	60	614	1:9.4
18	Social and behavioural sciences	125	133	432	690	4,379	573	4,952	1:7.2
19	Teacher training	5	14	36	55	843	287	1,130	1:20.5
20	Veterinary	55	36	52	143	59	41	100	1:0.7
21	Other					344	271	615	00
Total	**1,626**	**1,980**	**6,186**	**9,792**	**55,405**	**7,146**	**62,551**	**9,792**	**1:6.4**
%	**10.25**	**12.49**	**39.00**						

Source: Adapted from Mukhwana et al., 2016

Table 4.10 points to the existing supervision load across clusters being borne by academic staff at the rank of lecturer, senior lecturer and professor. It indicates that Manufacturing had the lowest ratio of 1:0.03, followed by Veterinary with 1:0.7, Architecture with 1:1.1, Law 1:1.5, Life sciences and physical sciences 1:2.3, Engineering 1:2.8, Education (science) 1:2.9, and Agriculture, forestry and fisheries with a ratio of 1:3. In these clusters, academic staff had the chance to supervise up to three Master's and Doctoral degree students. Meanwhile, Teacher training had the highest ratio of 1:20.5, followed by Business and administration with a ratio of 1:14.3, Security and conflict resolution with 1:14.2, Services had 1:9.4, and Humanities and arts with a ratio of 1:8. The Commission for University Education recommends a supervisor-to-student ratio of 1:3 for doctoral degree candidates and 1:5 for Master's students across all clusters in any given academic year (Kenya, 2014). This reveals a dichotomy in which science-based programmes attract fewer postgraduate students than the other clusters. What is also emerging is that clusters with higher staff-to-student ratios had the lowest proportion of professors, thereby undermining the quality of experiences gained by the supervisees. It further suggests slow promotion rates and high levels of stagnation, factors that breed apathy and low productivity among staff. In these disciplines, staff could be spending most of their time on student projects and thesis supervision at the expense of their own research projects.

During the 2015/2016 academic year, public universities employed a total of 1,323 professors while private universities employed 368 (Mukhwana et al., 2016). As of February 2016, the University of Nairobi reported that out of 2,052 academic staff there were 428 professors hired to cater for 309 Master's and doctoral degree programmes. Total enrolment in the university was given as about 84,000 (University of Nairobi, 2016). In the same period, Kenyatta University (Kenyatta University, 2016) had 1,483 teaching staff among which 112 were professors, against 120 Master's and doctoral programmes. Senior lecturers and lecturers holding doctoral qualifications numbered 1,399 and 1,011 at the Universities of Nairobi and Kenyatta respectively. The rest were either assistant lecturers,

tutorial fellows or graduate assistants aspiring to attain doctoral qualifications. These statistics suggest variations in the distribution of high-ranking academic staff across institutions.

Consequently, universities operating without the requisite human resources resort to hiring part-time and adjunct staff from more established universities. The University of Nairobi and Kenyatta University, which have the highest pool of academic staff, have been the most attractive to upcoming institutions, with many of them competing to buy buildings located strategically close to the University of Nairobi. Such universities now located close to the University of Nairobi are Kenya Methodist, Mount Kenya, Masinde Muliro, Moi and even Kenyatta University's Parklands campus that houses the School of Law. Others like St. Paul's and the Catholic University of East Africa, which have their seats within the suburbs of the city of Nairobi, have moved into the central business district to tap into the hub of human resources.

Universities were given up to November 2018 to upgrade their academic staff qualifications to at least doctorate level. According to the cabinet secretary, only academic staff holding PhDs would be allowed to continue working as faculty members in Kenyan universities after the November 2018 deadline.

2. Progress Monitoring

The Commission for University Education sets out programme duration, stating that "a doctorate degree programme shall normally extend for at least three (3) academic years" (Kenya, 2014, p. 49). Whereas this minimum period is good, the weakness of this guideline is its lack of an upper limit. However, universities seem to concur that the upper limit varies according to whether the programme is full- or part-time. At Kenyatta University, for example, full-time students remain registered for a maximum duration of four years while part-time students are allowed a maximum of six years from the date of registration (Kenyatta University, 2016). What remains unclear is the date of registration. This is sometimes assumed to mean the date of the formal start of the course, which involves reporting for the first time and completing official documents upon meeting initial financial obligations. However, it may also apply to the date of formal acceptance of a student's proposal by the senate of the university. Since there may be a long period between the former and the latter dates, the exact meaning of the student's registration date ought to be explicitly defined. However, the regulations are clear about failure to complete doctoral work within the prescribed period. This leads to automatic deregistration (Kenyatta University, 2016). Nevertheless, there is no standard rule for how long a doctoral student may remain registered beyond the term limit, at least on paper, thereby creating significant variations in practice. At Kenyatta University, tutorial fellows are given strict deadlines beyond which they are removed from the payroll. At the

University of Nairobi's School of Business, any candidate who remains registered after a period of five years is fined approximately USD 1500 for each additional year.

To ensure students complete work on time, the Commission for University Education requires each university to set out internal regulations for collecting, reviewing and responding to postgraduate students' experiences with their supervisors (Kenya, 2014). In principle, responses to monitoring tools are supposed to be reviewed openly and constructive feedback communicated to all concerned with the programme (Green & Powell, 2005). In most higher education institutions in Kenya, internal mechanisms for monitoring the progress of postgraduate students' research work are the responsibility of the school responsible for graduate studies. The school designs appropriate data collection tools that seek feedback from students and supervisors on a regular basis.

Consequently, universities develop handbooks that outline clear processes and proposal tracking instruments, as well as supervision tracking forms (Kenyatta University, 2016). However, there were inherent weaknesses with these tools. Whereas monitoring should entail capturing resource availability data (Green & Powell, 2005), these instruments do not require candidates to show the levels and sources of material resources received for the purposes of their research. There is also a general lack of confidentiality in the information received, since each instrument requires the names of the students, supervisors and Deans of schools. This is consistent with the personalised nature of doctoral study, but it inhibits the provision of valid and honest responses as the identities of respondents are not concealed. The review process is not open, and feedback that ought to flow back to students and supervisors is not communicated. A combination of these factors renders progress monitoring in higher education in Kenya inadequate, unreliable and not fit for purpose.

3. Examination

A general outline of the doctoral examination process provided by the Commission for University Education (Kenya, 2014) concurs with international practice especially in Britain (Green & Powell, 2005). The first step is to present a research proposal before a panel of examiners from the department in which the candidate is enrolled, an external reader from a different department or faculty and a representative from the university senate. At this stage the candidate demonstrates conformity to the general business of research, adherence to disciplinary criteria and potential for making a significant contribution to knowledge.

The second step is to subject the candidate's thesis/dissertation to both internal and external examination (Kenya, 2014). External examiners appointed by the

graduate school board, on the recommendation of the concerned department, are drawn from within the academic fraternity outside of the institution but within Kenya, from academia within and outside the Commonwealth, or from outside academia, that is, from an area of industry related to the field of study. Each candidate is examined by three examiners, one of whom is from outside the institution in which the candidate is registered for the doctorate degree. All examiners are given eight weeks within which to return their reports.

The third step involves a mandatory face-to-face oral presentation of findings, also known as the *viva voce* (Green & Powell, 2005) or 'oral defence' before a panel of examiners appointed by the graduate school board with concurrence from the university senate. The panel is usually made up of a Chair, who is usually, a Professor of the university, two internal examiners, an external examiner, two board members drawn from outside the department, a senate representative from a different school and the supervisors of the candidate. There are variations across institutions in terms of how open the process of oral examination is to the public. At Maseno University, for example, the process is open to academic staff and doctoral students, while at Kenyatta University it is exclusively attended by the candidate and members of the board of examiners. This board makes a determination as to whether the candidate meets the requirements for the award of the degree or not. In so doing, graduate schools develop clear criteria to be followed in reaching a decision.

During the oral examination, a candidate is subjected to an individualised process in which he/she is allocated a maximum of twenty minutes to present the findings. The examiners are also allocated about twenty minutes, divided equally among the three of them. After the examiners, the rest of the board members are allocated a further ten to twenty minutes. The candidate is then allowed some five to ten minutes to respond to questions raised, particularly those raised by the examiners. This amounts to about one hour of oral examination dedicated to one candidate.

As observed by Green and Powell (2005), board members often disagree among themselves over what should constitute a satisfactory thesis. The identification of what makes a significant contribution to knowledge is sometimes so divisive that panels may resort to voting to determine a case.

The final submission of a written thesis is guided by individual universities' guidelines (Kenya, 2014). Each university defines the number of copies of bound documents to be submitted. The type of binding, texture and colour of the jacket have to meet individual university criteria. The extent of circulation of the final document also varies, although the standard is that a copy has to go to the university library.

In conformity with regulations set out by the Commission for University Education, plagiarism is not condoned across all types of universities. Using web-based anti-plagiarism software called *Turnitin*, universities are able to detect cases of attempted academic dishonesty. The standard acceptable similarity index is 20 percent or less. Candidates found to have breached anti-plagiarism regulations are asked to rework the document until the required standards are met. However, a new form of academic dishonesty is emerging. Some individuals operate as writing bureaus, undertaking to write proposals and theses for doctoral candidates. This is detected through the viva, where candidates whose work was done for them by someone else would be identified. Such candidates face disqualification and deregistration from the university.

POLICIES RELATED TO DOCTORAL EDUCATION

The quest for quality and access is at the heart of public policy on doctoral education in Kenya. However, it is critical to clarify what is meant by quality in this context. Numerous definitions of quality exist; see, for example Deming (1986), Crosby (1979), Juran (1988), Mitra (2000), Guaspari (1988) and Feigenbaum (1983).

All these definitions focus on customer satisfaction as the core of the meaning of quality, although some also incorporate external standards and specifications (Crosby, 1979; Guaspari, 1988). However, the definition of the quality of doctoral studies, whose purpose is "to train research scholars and future university faculty members" (Kenya, 2014), is fluid. Doctoral qualifications are consumed directly by the producing institution, as well as external customers, making the manufacturer a leading consumer of his/her own product. This may mean complacency among those likely to be satisfied with the poor quality product they produce. Again, doctoral education is both a service in terms of student support and a product because of its research output.

Among the many definitions of quality, the one closest to serving the purpose of this paper is that which considers quality as depending on external and internal specifications and expectations (Guaspari, 1988). This view sees a quality product or service as one that conforms to or exceeds specifications, satisfies industry standards and meets internal specifications and communications. Analysis of the quality of doctoral education in Kenya in this paper takes the view that doctoral education is subject to both external and internal specifications and expectations. The setting of standards from both within and without, and selling a doctoral programme and packaging its quality for external consumption, are crucial if the course is to attract students and gain acceptance among global peers. External controls are guided by an Act of Parliament, the Universities Act No. 42 of 2012 (Republic of Kenya, 2012), which created the Commission for University Education (CUE) as a quality assurance body; there are also the 'Universities Standards and Guidelines 2014' (Kenya, 2014) and a national policy on university postgraduate research and training (Too, Kande, Kiptoo, Mukhwana,& Some, 2016). Internally, each university has independent internal quality assurance mechanisms that begin at a departmental level and progress through the graduate school board and the university

senate. The participation of peers in quality assurance is achieved through the recruitment of external examiners from universities across the globe.

FUNDING ARRANGEMENTS FOR DOCTORAL EDUCATION

General funding responsibilities are placed on the shoulders of each institution. The government expects that "[a] university shall have adequate financial resources to meet its obligation" (Kenya, 2014). One obligation of each university is to develop the capacity of its teaching staff. The capacity of academic staff is developed through sponsored doctoral education. Universities therefore obtain funding for doctoral education from either their income-generating activities or government capitation. Table 4.11 displays the various sources of income for both public and private universities.

Table 4.11 indicates that during the 2010–2014 academic years, student fees were generally the leading source of income for all types of universities. However, the proportion varies across types of universities as it accounts for 81.16 percent of income for private universities and only 42.17 percent in public universities. Research grants, which may have direct significance for doctoral education, attracted the least income to universities.

Table 4.11: Public and Private Universities' Income and Income Streams

University category	Income and income streams (Ksh, millions) 2010–2014 academic years					
	Government capitation	Student fees	Research grants	Other incomes	Grand Total	%
Public universities	133,398.26	117,922.89	14,495.33	13,801.49	279,617.98	80.83
% of income to public universities*	47.71	42.17	5.18	4.94	100	
Private universities	0	53,804.88	1,480.64	11,009.70	66,295.22	19.17
% of income to private universities*	0	81.16	2.23	16.61	100	
Total	**133,398.26**	**171,727.78**	**15,975.97**	**24,811.19**	**345,913.20**	**100**
%*	**38.56**	**49.64**	**4.63**	**7.17**	**100**	

** own addition to the table*

Source: Adapted from Mukhwana et al., 2016

In determining the adequacy of financial resources, the standards and guidelines point out that differentiated costs will be considered. This allows university management to charge fees according to the costs of delivering a specific course of study. This arrangement shows the extent of dependence on funding from households, and an indication of the extent to which higher education remains a burden for private households. Doctoral education relies on fee payment and research grants funded by foreign organisations, although this remains scarce.

However, nothing is said about how doctoral education funding will be coordinated or resourced. Where do state-run universities get funds from? How? How are universities expected to train high quality researchers without equipped laboratories? Resources at tertiary institutions are often

concentrated at the first degree level, neglecting the postgraduate level. Table 4.12 summarises expenditure and expenditure items in public and private universities in Kenya.

Table 4.12: Expenditure and Expenditure Items in Public and Private Universities

University category	Expenditure and expenditure items (Kshs, millions) 2010–2014 academic years				Total expenditure
	Staff costs	Building costs	Maintenance costs	Other expenditure	
Public universities	165881.92	33486.86	21,375.62	60,743.34	**281,487.54**
% of total expenditure	58.93	11.90	7.59	21.58	**100**
Private universities	31643.10	9115.82	10354.62	22304.46	**73418.00**
% of total expenditure	43.10	12.42	14.10	30.38	**100**
Total	**197,525.02**	**42602.67**	**31,730.05**	**83,047.79**	**354,905.54**
% of total expenditure	**55.66**	**12.00**	**8.94**	**23.40**	**100**

Source: Adapted from Mukhwana et al., 2016

Table 4.12 shows that Kshs 271,857.74 million, or 76.6 percent of total expenditure, was consumed by staff costs, building costs and maintenance costs, leaving only Kshs 83,047.79 million or 23.4 percent for other expenditure, including teaching and learning materials, research, quality assurance and the purchase of equipment and essential infrastructure for research. This proportion is largely inadequate.

OUTPUT AND IMPACT OF DOCTORAL EDUCATION

c. Precept 4: INST/STD/10: *A university shows evidence of promoting quality research and innovation* (Kenya, 2014).
The first guideline is:

1) A university shall have thematic research areas in line with its institutional research policy and aligned to the national research policy

This guideline is quite clear about the need for each university to select thematic research areas in line with its institutional research policy, which must be well aligned with the national research policy. Doctoral education is about engaging

doctoral students in relevant research. This is as it should be. However, the national research policy, which should be the guiding principle, has been obscure and inaccessible to university students and staff. Consequently, there is a mismatch between the programmes offered and the national development agenda. This challenge is addressed by the third schedule, which focusses on standards for academic programmes and is designed "for use by universities in Kenya in the development, implementation, quality assurance and review of academic programmes" (Kenya, 2014, p. 46). In its scope of application it is stated: "These standards shall apply to all types of universities in Kenya" (p. 46). In the regulations that follow, the quality of doctoral education is well regulated. From the outset the CUE makes it clear that the design of all academic programmes shall ensure relevance, make contributions to the national human resource requirements, and be broad-based and practical in orientation. This answers public and journalistic criticisms that university education is about abstraction and utopia and is generally irrelevant to the needs of society. In particular, the second precept in the third schedule, especially guideline No.4 (a – g), sets out regulations that standardise the design of doctoral degree programmes. The official research policy is that "universities should collectively increase the number of postgraduate programmes in the ISCED2011 framework areas of Health and Welfare, Agriculture and Engineering, Manufacturing and Construction" (Too, Kande, Kiptoo, Mukhwana & Some, 2016, p. 6). What, then, is the output from doctoral education in Kenya? Output in these contexts is viewed in terms of graduation trends and patented innovations. Table 4.13 shows graduation trends between the years 2012 and 2015, while Table 4.14 shows the gender distribution of doctoral degree graduates by university category from 2012 to 2015.

Table 4.13: Graduation Trends in Public and Private Universities by Programme Level and Gender

Prog. Level	2012			2013			2014			2015			Total		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Bachelor	17,412	14,311	31,723	21,537	18,628	40,165	28,986	23,783	52,769	32,995	27,866	60,861	100,930	84,588	185,518
Pgd	336	244	580	507	304	811	1282	853	2135	858	568	1,426	2,983	1,969	4,952
Master's	2,415	1,932	4347	2949	2340	5289	4022	3248	7270	4865	3726	8591	14251	11246	25497
PhD	134	63	197	167	102	269	268	159	427	295	174	469	864	498	1362
Total	20,297	16,550	36847	25160	21374	46534	34558	28043	62601	39013	32334	71347	119028	98301	217329
PhD as % of total	***0.66***	***0.38***	***0.53***	***0.66***	***0.48***	***0.58***	***0.76***	***0.57***	***0.68***	***0.76***	***0.54***	***0.66***	***0.73***	***0.51***	***0.63***

Source: Adapted from Mukhwana et al., 2016

Table 4.13 shows that 197 candidates graduated with various doctorates in 2012. In the year 2013 a total of 269 men and women graduated with doctorate degrees, while 427 and 469 graduated with doctorate degrees in 2014 and 2015 respectively. It also shows that the production of doctoral graduates in universities in Kenya remained at less than 1 percent of the total number of graduates each year between 2012 and 2015. It is further indicated that more men than women graduated with doctorate degrees over the same period. An analysis of the data in Table 4.13 reveals that the output of doctoral graduates increased by 36.55 percent in 2013, and by 58.73 percent and 9.84 percent in 2014 and 2015 respectively.

Table 4.14: Doctoral Graduation Trends by Gender and University Category

Category	2012			2013			2014			2015			Total		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Public chartered	117	57	174	140	87	227	245	140	385	262	155	417	764	439	**1,203**
Public constituent	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Private chartered	17	6	23	25	15	40	23	19	42	33	19	52	98	59	**157**
Private constituent	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Private with LIA	0	0	0	2	0	2	0	0	0	0	0	0	2	0	**2**
Registered private	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**134**	**63**	**197**	**167**	**102**	**269**	**268**	**159**	**427**	**295**	**174**	**469**	**864**	**498**	**1,362**

Source: Adapted from Mukhwana et al., 2016

As shown in Table 4.14, a total of 1,203 or 88.33 percent of doctoral graduates were products of public chartered universities. Private chartered universities produced 157 doctorates or 11.53 percent of the total, while private institutions with letters of interim authority (LIA) graduated 2 doctoral degrees or 0.14 percent of the total over the four years.

The World Intellectual Property Organization reported that between May 1996 and the end of January 2011, a total of 373 patents were issued to applicants from Kenya (World Intellectual Property Organization, 2016). This equates to an annual average of 25 patents issued to Kenyan residents over this period. Further evidence from figures for the annual issues of patents by the United States government to residents of foreign countries between 2012 and 2016 (United States Patent and Trademark Office, 2016) shows that out of 48 patent applications filed by residents of Kenya, 18 were issued. This represented 1.49 percent of the patents issued to residents of African countries over this period.

The potential influence of doctoral education on economic growth in Kenya, though not yet determined, can be estimated from the present state of economic performance, specifically by looking at sources of economic growth. During the 2014/2015 financial year (FY), education as an industry

contributed 5.7 percent of Kenya's domestic economy. The primary education sector contributed 0.5 percent, general secondary education 3.9 percent, while the share of higher education was 1.2 percent (Kenya National Bureau of Statistics, 2016). The leading growth sources in 2015 were Agriculture, forestry and fisheries with a share of 22 percent. However, even within this industry the growth potential still remain under-exploited. Growing crops contributed 12.3 percent, a performance that was attributed to good weather conditions. Animal production contributed 10 percent, forestry and logging contributed 0.2 percent, while fishing and aquaculture had a share of -0.6 percent. Kenya's crop growing is small-holder dominated and rain-fed, making it vulnerable to changes in weather conditions. The contributions of fishing and logging were generally low, and this may be related to low levels of research, particularly at doctoral levels. This is just one example of an industry that represents untapped potential for Kenya's economic growth, which doctoral education could help to unleash.

Doctoral education attracts low levels of official attention. This is evidenced by a lack of an official financing strategy, low enrolments in various doctoral programmes, and low graduate output. The effects of this neglect are reflected in underperforming key economic sectors such agriculture, forestry and fisheries. A small change of focus in favour of doctoral education, especially in the clusters identified as critical by Kenya Vision 2030, will greatly open up the economic growth potential of this country.

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MALAWI

The Status of Doctoral Education in Malawi: Meeting Quality, Numbers, Infrastructure, Funding and Policy Challenges Head On

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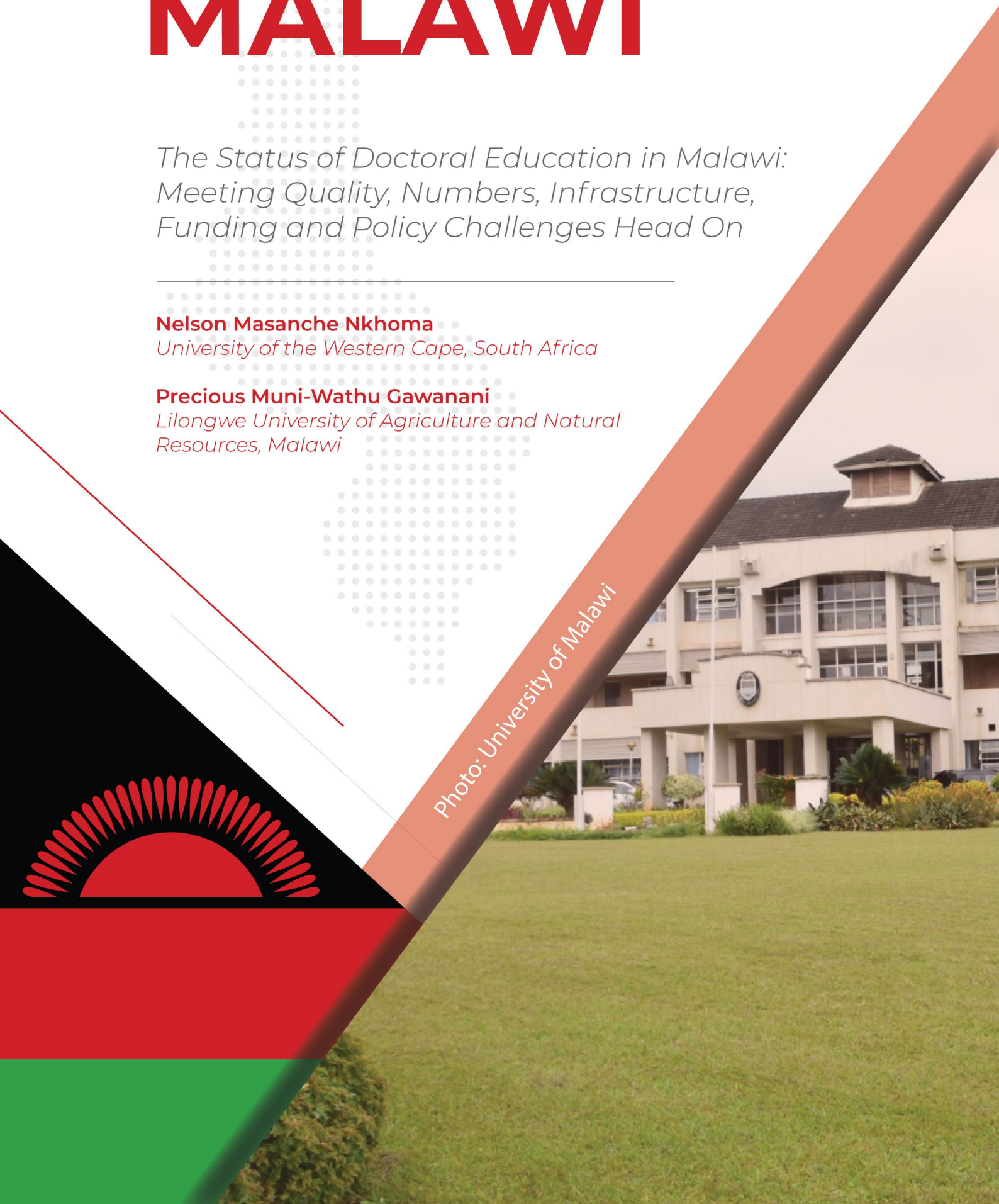


Photo: University of Malawi

INTRODUCTION

Malawi is one of the countries in the southern part of Africa that is on a social and economic pendulum. The World Bank and the United Nations treat Malawi as one of the least developed countries in the world. We might suggest that it is underdeveloped by looking at its poor social service structures, such as schools and hospitals. Over the past 50 years since independence from Britain, Malawi's progress in terms of development has been a mixture of promise and decline. With a population of close to 17 million, the Malawi economy is resting on a double-edged sword. With its dependence on agriculture, the increase in population may be a sign of economic growth if the population can be equipped to manage the country's various natural resources. However, if poorly managed it may usher in crises in education, health and the use of natural resources. Despite its many challenges, Malawi has striven to advance itself through strategic investment in higher education to propel growth in the business, health, manufacturing and education sectors. There has been a sharp increase in the demand for university education in Malawi because of the soaring numbers of learners completing primary and secondary education cycles.

An interesting and simultaneous conundrum and opportunity is the fact that data from international agencies suggests that Malawi has the lowest enrolment in higher education in the Southern Africa Development Community (SADC) region. Statistics show that only 86 out of 100,000 inhabitants access higher education, compared to 557 out of 100,000 in other countries in the region. Despite high numbers of candidates sitting entrance examinations, only 32.1 percent of the potential candidates are admitted into public universities. Variations in access to higher education depend on socio-economic status; for example, over 80 percent of higher education enrolments come from the 5th economic quintile and only 1.5 percent from the 1st quintile. The result of this is a low lecturer/student ratio, standing at 1:12 against the recommended 1:25, and a high unemployment rate among youths who cannot enter higher education. The tertiary institution participation rate stands at 0.4 percent of the eligible population, against an average of 5 percent for sub-Saharan Africa, 17 percent for developing countries and a world average of 24 percent (Kotecha, Steyn & Vermeulen, 2012).

Despite various forms of institutional transformation that public universities are undergoing in terms of recruiting more experienced lecturers, there are still challenges associated with technical capacity, the delivery of programmes, performance management and a lack of entrepreneurship in institutional cultures, which are insufficient to support financial self-sufficiency. The quality and relevance of higher education, as well as the performance of universities, are constrained by limited infrastructure including Information and Communication Technology (ICT), classrooms and laboratories, among other things (Kotecha, Steyn & Vermeulen, 2012). Thus, the National Education Sector Plan (NESP) calls for public universities to widen access and improve the quality, governance, management and relevance of higher education to address this challenge in and through education (Ministry of Education, Science and Technology, 2008).

Current and previous governments in Malawi have been strongly committed to growth in tertiary education, especially the science and technology sectors. The University of Malawi Act was revised with a view to creating five new public universities to complement the University of Malawi (UNIMA), the Mzuzu University (MZUNI) and the newly devolved Lilongwe University of Agriculture and Natural

Resources (LUANAR). Concomitantly, the Malawi University of Science and Technology (MUST) opened in 2013 (Lilongwe University of Agriculture and Natural Resources, 2014; Mzuzu University, 2015; Malawi University of Science and Technology, 2016).

In addition to these developments, there has been a growing number of private institutions since 2003. These developments necessitated the creation of a National Council for Higher Education (NCHE) in 2011, to oversee the increased number of tertiary institutions that constitute higher education in Malawi, and a National Commission on Science and Technology (NCST) to direct funding sources for research, development and innovation (Functions and Powers of the Commission, 2016).

Eleven private institutions of higher learning have since been registered by the NCHE. Considering these changes and developments, this paper critically analyses the status of doctoral education in Malawi. It examines the policies relating to PhD education, the numbers of students and programmes, the quality of the standards that have been put in place, and the funding and infrastructure that drive doctoral education in the country. The paper highlights some key strengths and weaknesses of doctoral education in Malawi, and argues that even though the Government of Malawi (GoM) has no national centralised plan concerning the role of doctoral education in national development, it is evident that doctoral education is slowly but steadily gaining traction in the country. Caution needs to be employed as the drive to increase doctoral education proceeds, seriously considering the role of private universities in maintaining growth with quality and efficiency. The paper proposes a careful consideration of a differentiated doctoral production system, which avoids the one-size-fits-all approach transplanted from developed countries such as China, the US or the United Kingdom.

JUSTIFICATION FOR EXAMINING THE STATUS OF DOCTORAL EDUCATION IN MALAWI

As highlighted earlier, countries like Malawi are at a crossroads in their higher education development. According to SARUA, the SADC region shows some worrying trends. There is a worsening shortage of university institutions and teachers. The current cohort of academic staff members is ageing, and few young people are choosing an academic career. This situation is all the graver if the need for expansion in the system to meet the growing demand is considered. There is a strong trend in the region towards undergraduate education, with doctoral enrolments comprising around 1 percent of total enrolments. To this trend we add the fact that in many countries like Malawi, the trend towards training doctoral graduates outside their countries of origin has proven unsustainable, as very few doctoral graduates return to their home countries (Catalan Association of Public Universities, 2012). All these factors compel a careful analysis of the status of doctoral education in the SADC region, particularly at a national level, to best consider plans for mitigating the current predicament of higher education development.

SOURCES OF DATA AND METHODOLOGY

Data for this paper came from a thorough literature search online. Both primary and secondary sources were consulted. A discourse analysis of the policies in national development and the education sector was conducted. Government websites, university websites, and the NCHE website were also consulted. Documents with statistics on the number of doctoral programmes and the number of universities accredited in Malawi were obtained from NCHE's website. Other documents were obtained from the Registrars of universities. Informal interviews were also conducted with faculty and staff at public universities to gain their perspective on the status of doctoral education in Malawi. International agencies' websites such as those of the World Bank, the United Nations (UN), and USAID also provided important information and data sources. Additional evidence was sourced from studies conducted previously by the Malawi Institute of Management and data from the Universities. The table below shows the number of interviews which were purposively selected.

Table 5.1: Number of Interviews

University	Department/Faculty	Number of participant
University of Malawi (UNIMA) Polytechnic	Engineering	2
Mzuzu University (MZUNI)	Theology	2
Lilongwe University of Agriculture and Natural Resources (LUANAR)	Aquaculture and Fisheries	2
Malawi University of Science and Technology (MUST)		1

Source: Authors

KEY ISSUES HIGHLIGHTED IN THE LITERATURE ON DOCTORAL EDUCATION IN AFRICA

Debates on the importance of doctoral education in Africa have been framed in terms of the importance of higher education in the knowledge economy. Doctoral education is a critical component of higher education because of its centrality in knowledge production. Africa is playing catch-up with other continents in terms of the numbers of graduates from higher education institutions that are available to complement the development plans of African countries. A recent study on doctoral education in South Africa by Cloete, Mouton and Sheppard (2015) raised various policy issues, debates, and challenges that frame the status of doctoral education in Africa in general, and which can apply to the Malawian case in particular. Cloete et al. (2015) demonstrate that the growing discussion on doctoral education in Africa can be connected to several international discussions, such as those by the International Association of Universities (IAU), the Catalan Association of Public Universities (ACUP), and the Southern Africa Regional Universities Association (SURUA). These initiatives have emphasised the significant importance of doctoral education and its relevance to development in

Africa by holding meetings with various leaders and putting together reports and strategies for improving doctoral education in Africa. There are two reports that have contributed to the impetus for doctoral education development in Africa. These reports are: *Doctoral Education: Renewing the Academy* (SURUA, 2012), and *Changing Nature of Doctoral Education in Sub-Saharan Africa* (IAU, 2012).

The above reports by SURUA and IAU, as well as other studies, have outlined the problems affecting doctoral education. Some of the problems that have been highlighted include:

1. Shortage of funding (for students and institutions);
2. Low institutional capacity;
3. Diversity and duplication of programmes;
4. Poor quality of supervision;
5. Inadequate responsiveness to national, social and economic needs;
6. Weak links to industry;
7. Lack of academic freedom; and
8. Lack of international information sharing.

From the IAU (2012) and Cloete et al. (2015), another major issue affecting the status of doctoral education in Africa is that there is no systematic capacity to assess and evaluate the contribution of PhD holders to society. An equally challenging problem is that there is no systematic storage of information from various institutions regarding their graduates with doctoral degrees. The numbers of doctoral students currently enrolled, graduating and expected to enrol have increased, but they are still exceptionally low (Centre for Higher Education Transformation, 2012). Very few are being enrolled due to high competition among the students to be enrolled in the few public institutions that exist. These challenges are similar to what is happening in Malawi (Malawi Institute of Management [MIM], 2013). The limitation of funding, poor supervision, faculty members concentrating on consultancies, heavy teaching loads due to faculty teaching in both private and public universities (increase in adjunct faculty) and other circumstances all combine to create fears that producing more PhDs will reduce faculty prestige, as elite scholars impact the status, quality and progress of doctoral education (Bunting et al., 2014; Szanton & Manyika, 2002; Langa, 2010; Cloete et al., 2015).

Cloete et al. (2015) suggest that there are three forms of discourse in the international discussion of on the doctorate which relate to the role of graduates in a knowledge economy. One aspect of these discourses is about strengthening universities as knowledge producers. In this perspective, increasing the number of doctoral graduates is important in research production and the creation of new knowledge systems which help to connect research and development. A second discourse on doctorate education in Africa involves what is known as “talentism” (Cloete et al., 2015, p. 18). This perspective looks at doctoral education as contributing to the development of high-end skills in research and analytics. This perspective is framed more from the fear of increasing number of doctoral graduates at least in places like the United States of America and China, which, it is argued, will reduce the quality and value of the PhD.

The third important discussion in the international literature on doctoral education relates to the uneven and unequal distribution of doctoral students. This discussion pays attention to biases in the

production of doctoral education and numbers of graduates, which have led to a reproduction of inequality in societies. This perspective is taken in relation to the increasing rates of doctoral production in what are considered newly emergent economies. There is a fear that this might continue to impact Africa in terms of the knowledge economy if Africa continues to remain behind in terms of knowledge production and skills development. The challenge is that many countries in Africa do not have the resources and strategic plans to invest in higher education. This situation is typical of developments in the Malawian higher education sector and the national development plan in general, as the following section will highlight. While Malawi is a member of regional and international organisations dealing with higher education, such as the AAU, it does not include many of the recommendations that are offered by such institutions in its national development plans, particularly concerning how doctoral education can take centre stage in knowledge production in the turbulent economic circumstances that the country and region are facing.

NATIONAL AND INSTITUTIONAL DOCUMENTS DRIVING DOCTORAL EDUCATION IN MALAWI

Our understanding of doctoral education policy in Malawi is informed by Ball's (1994) ideas on policy analysis. The meaning given to policy affects the way in which researchers and actors undertake their work. It is helpful to think of policy in doctoral education as a process (Kenway, 1990). This process is rife with political as well as economic and social values and conflicts that lead to the adoption of some actions and the discarding of others. Little wonder that higher education in Malawi lacks a clear policy direction that situates doctoral education at the centre of national development. The development of the higher education sector is ad hoc and haphazard. The Malawi Growth and Development Strategy (MGDS), the National Education Sector Plan (NESP) and the Acts of Parliament that instituted the four public universities and the recently formed NCHE recognise the crucial role of higher education as a key driver of competitiveness and growth, but they do not emphasise doctoral education as a key to knowledge production, the development of the economic sector and the national development programme in general.

A review of UNIMA and LUANAR strategic plans shows that the plans put in place are influenced by the MGDS and NESP plus other documents like the new Economic Recovery Plan (ERP). These major documents that drive national development were reviewed to see how they relate to doctoral education as discussed and framed in the public universities' strategic plans. University strategic plans were important documents to review because they systemically present the current strengths and weaknesses of institutions, their plans, goals and future directions. It was from the strategic plans that a clear picture of how doctoral education is conceptualised in Malawian public universities emerged. We offer a summary of the MGDS and the NESP, followed by the strategic plans.

MALAWI GROWTH DEVELOPMENT STRATEGY (MGDS II-2012-2016)

The Malawi Growth and Development Strategy (MGDS) is the overarching medium-term operational strategy for Malawi. Its main objective is to reduce poverty and achieve the Millennium Development Goals (MDGs). It is organised into six thematic areas: (i) sustainable economic growth; (ii) social development; (iii) social support and disaster risk management; (iv) infrastructure development; (v) improved governance; and (vi) cross-cutting issues of gender and capacity development. While higher education is highlighted in this policy plan, doctoral education is not specifically targeted as an important area that can contribute to achieving poverty reduction. However, in many ways doctoral training can contribute to objectives of the MGDS. The four major public universities in Malawi have strategic plans as key documents driving their development in education provision in general and doctoral education in particular. The strategic plans aim at contributing towards sustainable and equitable social, economic and technological development as envisaged in the MGDS, forming a national plan for the social and economic vision of the country. Universities have also developed their strategic plans in line with the NESP. It can be argued that the focus on achieving the MDGs in the education sector, which places great emphasis on achieving universal basic education, has tended to overshadow the important role of higher education, especially the doctorate.

NATIONAL EDUCATION SECTOR PLAN (NESP)

Over the past decades the higher education sector in Malawi has been faced with several challenges including limited access to university programmes, inadequate funding and infrastructure and weak private participation. To address these challenges, the Government of Malawi (GoM) is implementing the National Education Sector Plan (2008–2017). The NESP reflects efforts by educationalists and those with vested interests to improve the access, equity, quality, relevance, governance and management of education in Malawi. While the NESP does not put any special emphasis on doctoral education, increased access and quality of doctoral education in Malawi can contribute to all the NESP thematic and strategic priority areas in higher education where several challenges are highlighted, including weaknesses and deficiencies in university management systems, governance problems in the system, limited access due to shortage of space, and modalities for admission. Such modalities are largely to the detriment of female students (resulting in a low intake of female students). Due to limited numbers of doctoral programmes and the low numbers of students, teaching staff remain largely junior in terms of their academic rank. In addition, quality is further undermined by inadequacies and deficiencies in teaching and learning resources such as libraries, laboratories and computer access, among others. Overall, it is not an overstatement to argue that if doctoral education is prioritised, students and staff in these programmes can offer research, knowledge production, and the human capacity to contribute to the five concerns of NESP, namely improving access, equity, quality, relevance, governance and management of the education sector. This is because for such plans to be implemented systematically, there is a need for human resources that are not only skilled, but also well empowered to question the status of the development plan, speak truth to power and implement alternative ways for achieving national development. Education at a PhD level is suggested to prepare candidates for all these.

Cloete et al. (2015), citing the IAU–ACUP 2012 report, posit that there were several recommendations put in place to address issues in doctoral education in Africa. Some of the strategies proposed were as follows:

1. Strong national research strategies interlinked to innovative research in doctoral education;
2. Strengthening flagship universities and centres of excellence to achieve quality;
3. Increased government support for research and staff incentives to gain proper supervision;
4. Increased linkages and networks to share good practices; and
5. Creating alternative models of delivery of PhD education by tapping the diaspora.

For Malawi, some of these recommendations align very well with the goals and aims of the MGDS and NESP. The university strategic plans reviewed for this paper also show that some of these recommendations have been taken up, either directly from these recommendations or as ideas that were there before. For example, as will be seen in the following sections, the government has made attempts to increase funding to public universities, although this has not always been achieved, particularly for doctoral education. Some of the doctoral programmes currently offered are implemented in collaboration with regional and international universities. Universities have also been planning to increase access by introducing online and open and distance learning (ODL) programmes. However, these programmes are mostly targeting undergraduate students, not doctoral students. In a study on faculty community engagement and partnerships (Nkhoma, 2014), it was discovered that while faculty considered their work to be international, there was limited effort or initiative from both faculty and universities to collaborate with the African diaspora. This might suggest an ongoing challenge to how doctoral education can benefit from the diaspora. Suffice to mention that the majority of PhD holders in Malawi obtained their training outside the country, mostly in the USA, the UK, South Africa or China. While some return to their home country, others do not. This has created a shortage and a great demand for highly trained human resources to take up positions in the growing private and public universities in Malawi. This is an important area where data could help to understand how many Malawian scholars leave to study abroad for PhD, how many return, and the reasons driving those who stay behind.

UNIVERSITIES' STRATEGIC AND IMPROVEMENT PLANS: IS DOCTORAL EDUCATION CENTRAL?

As public institutions, government-supported universities operate in line with the government development agenda and policy directions. There is ample evidence that shows how the NESP and MGDS influence the formulation and direction of the strategic plans of public universities. The most recent strategic plans have demonstrated an increased need for growth in doctoral education, research and community engagement within Malawi. This is in response to government policy calling for improvements in the higher education sector. The University of Malawi strategic plan 2012 to 2017, for example, has the following goals:

1. To show a major increase in student numbers at undergraduate and postgraduate levels in the next five years;
2. To encourage an increased emphasis on research;
3. To develop enhanced infrastructure, ICT and human resource capacity to accommodate these changes;
4. To develop quality governance and management; and
5. To sustain finance and improved resource mobilisation.

In view of the need for expanded tertiary education capacities and training across Malawi as the country's tertiary education sector expands, it will be necessary for the government to place emphasis on developing and expanding the cost-effective training of PhD students within the University of Malawi system, rather than placing over-reliance on external training. This will have the added advantage of enabling Malawi, through its universities, to develop a strong research and innovation base (University of Malawi, 2016).

Additionally, the strategic plan has several goals in terms of teaching and learning targets, which are stated as follows:

1. Increase undergraduate student numbers from 8,403 to 15,000;
2. Increase Master's students from 306 to 2,000, and PhD students from 46 to 500 by 2017;
3. Finalise and implement revised policies and procedures for quality control, assurance and enhancement; and
4. Increase the number of postgraduate programmes from 46 to 100 (University of Malawi, 2016).

Another good example of how public universities frame their plans for growth and change is seen in how LUANAR, which is another newly established university, aligns its strategic plans to several documents and national plans for development. This is how the recent strategic plans see LUANAR contributing to the national development:

In pursuit of the milestones set out in this Strategic Plan, the University will become an active player in the Economic Recovery Plan (ERP) which is being championed by Government in an effort to improve the country's prospects for socio-economic growth and development through an economic recovery strategy. In addition, the Strategic Plan will aid in the implementation of the Export Diversification Strategy (EDS), the National Education Sector Plan (NESP), and the Malawi Growth and Development Strategy (MGDS II). Together, these national strategies aim at advancing the nation to attain Vision 2020 aspirations. On the global level, LUANAR's Strategic Plan would contribute to the Millennium Development Goals (MDGs) and towards attainment of the goals of the Comprehensive Africa Agriculture Development Programs (CAADP) of the African Union. (LUANAR Strategic Plan, 2014)

Of specific interest in these documents is the ERP, which came into operation during the Joyce Banda administration as way of dealing with the 2011 recession that impacted Malawi's economy. What is important to add here is that while these plans give direction to economic growth in various sectors, they do not address doctoral education. They frame the importance of higher education in general; a

critical question to examine is why the government and universities have not taken seriously the need to produce high numbers of PhDs within Malawi.

NUMBERS AND QUALITY ASSURANCE

Until 1998, only one public university operated in the university sector. Historically, public universities in Malawi assured the quality of their programmes by using external examiners and partnerships with institutions outside the country. This meant that the programme being introduced met international standards and rigour (Holland, 2010). Since 2011 the Government of Malawi has introduced a centralised system of higher education quality control by instituting the National Council for Higher Education (NCHE).

According to recent data there are four public universities and eleven private universities in Malawi. The public ones are UNIMA, MZUNI, LUANAR and finally there is MUST, which was established by the GoM in December 2012. It was officially opened on 24 October 2014. There has been a steady growth in numbers across university education, including doctoral education, as data from the NCHE shows. However, the percentage of doctoral students is still very low (MUST, 2016; Mzuni, 2016; Unima, 2016; LUANAR, 2014).

Since 2003 Malawi has developed a booming private higher education market. The Council on Higher Education has been mandated by an Act of Parliament to regulate and accredit institutions of higher learning, both private and public. Accredited institutions for undergraduate programmes only are as follows: the Catholic University, the University of Livingstonia, the African Bible College, the Seventh Day Adventist University, Share World Open University, Exploits University, the Daughters of Mary Immaculate (DMI), St John the Baptist University, Blantyre International University, Skyway University and Columbia Commonwealth University Malawi. While the number of universities has been increasing, data on the total number of students and programmes being offered is not clear. The challenge with most of the programmes being offered is duplication, which means that there is no mission differentiation.

The National Council of Higher Education accredited all four public Universities in Malawi to offer postgraduate education and doctoral degrees. According to the information on the accrediting council website, there is no private university in Malawi that is accredited to offer doctoral education as yet. However, the failure of the NCHE to police private universities and colleges has resulted in some institutions offering undergraduate and postgraduate courses they are not accredited to offer. Some private universities are offering Bachelor's degrees without accreditation, while others are offering Master's and doctoral programmes before getting approval from NCHE (Kasanda, 2014). If this provision of unrecognised doctoral degrees continues, it will greatly impact the quality of doctoral education in Malawi.

Most of the private universities have been placing adverts in newspapers calling for applications from prospective students to enrol with them, even though some or all of their programmes are not accredited. Some of the institutions that have been singled out for offering degree courses before

government accreditation include Western College in Blantyre, whose owners have since renamed it the Western University of Malawi (Wunima), and Skyway University and Exploits University, which were accredited to offer undergraduate degrees only but are currently also offering Master's and PhD degree programmes. The problem with this situation is that there are no systematic records regarding the programmes and numbers of students. It is not even clear whether these universities have already graduated students from their offered programmes. For instance, Exploits University's website shows that they are offering one programme called "PhD in Strategic Management". The aim of the programme as stated on their website is "to equip students with knowledge and skills that will assist in deriving strategic management policy prescriptions for public and private sectors, as well as for international and nongovernmental organizations". Skyway University only lists one Master's programme in Development Studies.

Postgraduate studies contribute to national development through research and the creation of new information and knowledge. Theme 3 of the MGDS articulates the need to "increase [the] postgraduate enrolment ratio to 10% of the undergraduate student population". At present enrolment in postgraduate programmes is low, accounting for only 4 percent of total enrolment at public institutions. None of Malawi's private universities currently offer programmes for postgraduate education, with programmatic offerings limited to the four public universities of UNIMA, LUANAR, MUST and MZUNI. Chancellor College, UNIMA's biggest campus, accounts for the largest cohort of postgraduate students within the system. Not all colleges within the public higher education system offer programmes for postgraduate study, and in some institutions the number of programmes for postgraduate study is very limited. Further interventions will be required to sustain the upward trend in postgraduate enrolment and to increase access to postgraduate studies. For more detailed summaries of the demographics, statistical data on the enrolled individuals and the number of graduate programmes and number of students in doctoral education, we encourage readers to review the recent World Bank Report by Mambo, Salih, Nobuyuki and Jamil (2016). It is important to highlight that while female enrolment in higher education in general is much lower that of males, in the postgraduate sub-sector the representation of female students in some contexts is significantly better than at the undergraduate level. Recent data shows that the percentage of females enrolled by institutions increased in postgraduate enrolment from 17.1 percent in 2008 to 31.3 percent in 2010 at Bunda College; a rise from 40 percent in 2008 to 61 percent in 2011 at COM; from 15.6 percent in 2008 to 25 percent in 2011 at the Polytechnic; and a significant increase at MZUNI, where the percentage female enrolment rose from 15.6 percent in 2010 to 38.2 percent in 2011. While this trend is encouraging, it is not universal; female enrolment as a percentage of total postgraduate enrolment declined from 27.3 percent in 2008 to 18.4 percent in 2010 at Chancellor College, the institution with the largest cohort of postgraduate students in the country. These numbers show a combination of both Master's and doctoral degrees. The numbers of doctoral degrees awarded to women are still low.

The table below shows data from NCHE showing accredited doctoral education programmes from the four public universities in Malawi. Where data for enrolled students is available, this is also included to show the population of students in those programmes. Since there are no officially recognised private universities offering doctoral degrees according to NCHE, this analysis does not include post-graduate programmes offered in private universities.

Table 5.2: Accredited Doctoral Education Programmes in the Four Public Universities in Malawi

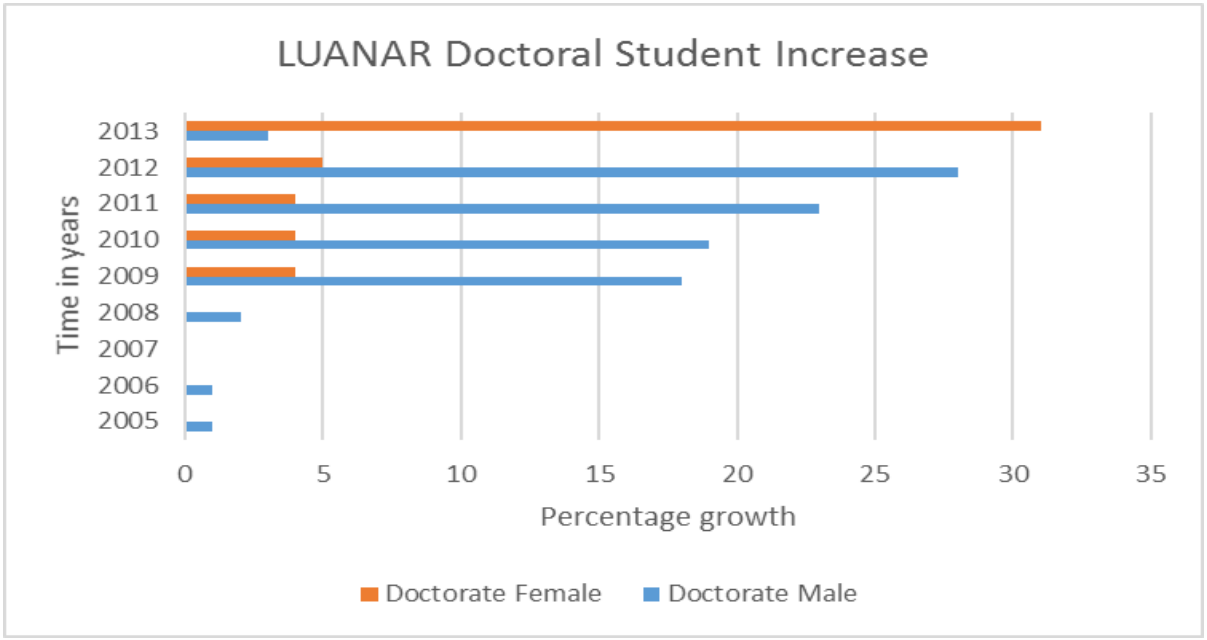
University	Constituent College	Accredited doctoral programmes	# of programmes	# of doctoral students	# of PHD Alumni
University of Malawi	College of Medicine	Doctor of Philosophy (various specialisations)	2	0	
	Polytechnic	1. PhD Applied Sciences (Environmental Sanitation) 2. PhD Applied Sciences (Information Technology) 3. PhD in Commerce (Entrepreneurship) 4. PhD in Commerce (Financial Management) 5. PhD in Commerce (Strategic Management)	5		
	Kamuzu College of Nursing	1. Doctor of Philosophy in Nursing 2. Doctor Philosophy in Midwifery	2	NA	
	Chancellor College	1. Doctor of Philosophy in Chemistry 2. Doctor of Philosophy in Biology 3. Doctor of Philosophy in Sociology 4. Doctor of Philosophy in Education Administration and Management 5. Doctor of Philosophy in Policy Planning and Leadership 6. Doctor of Philosophy in Biological Sciences 7. Doctor of Philosophy in Theology and Religious Studies 8. Doctor of Philosophy in Literature 9. PhD in Public Administration 10. Doctor of Philosophy in Mathematics Education	16	NA	

		11. Doctor of Philosophy in Biostatistics 12. PhD in Applied Linguistics 13. PhD in Development Studies 14. Doctor of Philosophy in Statistics 15. Doctor of Philosophy in Mathematics 16. Doctor of Philosophy in Economics			
Mzuzu University	Luwinga Campus	1. PhD in Coding Theory (Mathematics) 2. PhD in Environmental Sciences 3. PhD in Theology and Religious Studies	3	NA	
LUANAR	Bunda and Natural Resources College	1. PhD in Agricultural & Resource Economics 2. PhD in Agriculture & Applied Economics 3. PhD in Animal Science 4. PhD in Aquaculture & Fisheries Science 5. PhD in Biotechnology 6. PhD in Rural Development (Agricultural Economics or Agricultural Extension Option)	6	NA	
MUST	Ndata Campus	1. Masters in Innovation 2. Masters in Entrepreneurship	0	0	

Source: National Council for Higher Education (2019)

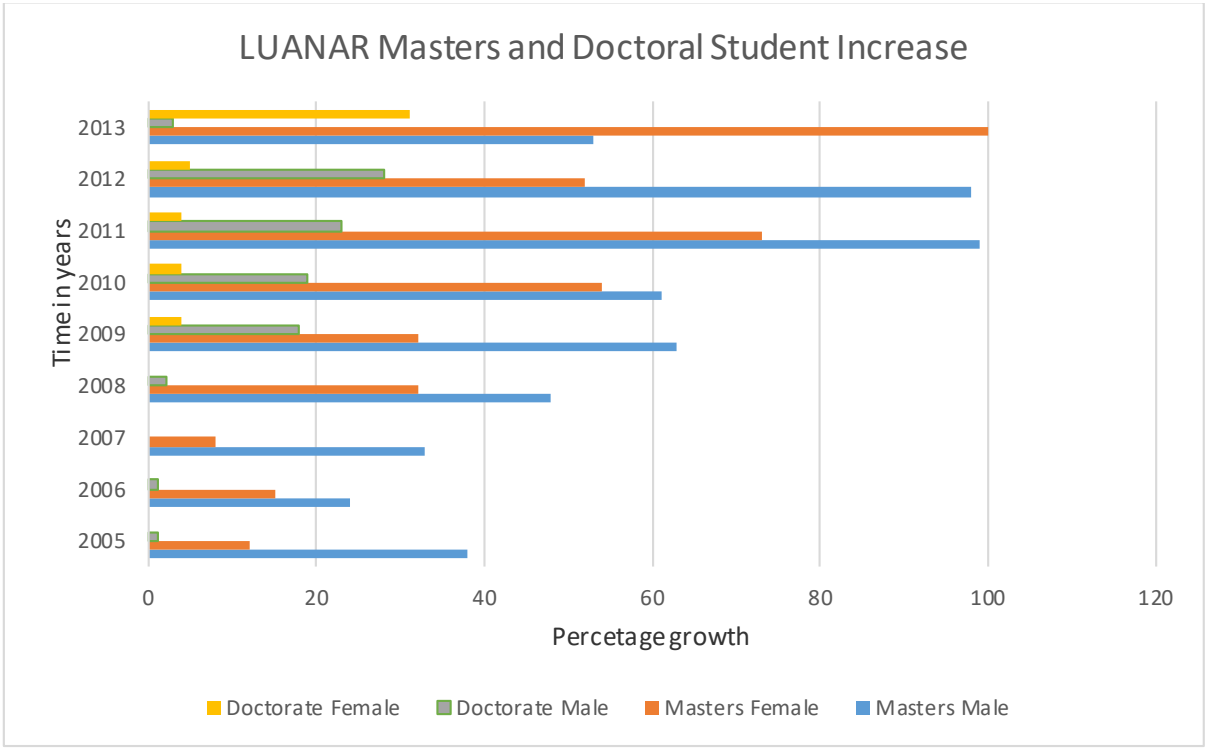
As the numbers of programmes show, there are very few doctoral programmes being offered at the public universities. This explains why the four public universities have indicated in their strategic plans that they will attempt to increase not only the numbers of undergraduate and Master's students, but also the numbers of doctoral students. It will be interesting to see how much growth has taken place five years from now in terms of the numbers of doctoral students. Equally interesting will be to see whether private universities will have improved their capacity and taken up the challenge to offer doctoral programmes. In the tables that follow, we present the current numbers of students in Bachelor's, Master's and doctoral programmes, and the projected increases as stipulated in the universities' strategic plans. This is important to illustrate the projected pipeline of students moving from first to second and third degrees.

Figure 5.1: Increase in Doctoral Student Enrolment at LUANAR



Source: LUANAR: Skills Development Project Proposal 2015

Figure 5.2: Increase in MSc and PhD Student Enrolment at LUANAR



Source: LUANAR Skills Development Project proposal 2015

Table 5.3: Projected Increase in BA/BSc, MSc/MA and PhD Student Numbers for UNIMA (2012–2017)

UNIMA	Objective	Strategy	Baseline indicator	Target	% increase
BA	Increase enrolment		8,403	15,000	43.98%
MA	Increase enrolment	Increased selection	306	2000	118%
PhD	Increase enrolment	Increased selection	46	500	110%

Source: UNIMA strategic plan 2012–2017

Table 5.4: Projected increase in MSc and PhD Student Numbers for LUANAR (2012 – 2017)

LUANAR	Objective	Strategy	Baseline indicator	Target	% increase
MSc	Increase Master's enrolment	Increased selection	127	300	173%
PhD	Increase doctoral enrolment	Increased selection	34	50	217%

Source: LUANAR strategic plans 2012-2017

Table 5.5: Projected MA and Doctoral Student Increase for MZUNI

MZUNI	Objective	Strategy	Baseline indicator	Target	% increase
MA/MSc	Increase Master's student enrolment	Increased selection	NA	NA	NA
PhD	Increase doctoral students	Increased selection	NA	NA	NA

Source: MZUNI strategic plans

Table 5.6: Projected BSc, MA and Doctoral Student Increase for MUST

MUST	Objective	Strategy	Baseline indicator	Target	% increase
BSc/BA	Increase enrolment	Increased Selection	NA	NA	NA
MSc/MA	Increase enrolment	Increased selection	NA	NA	NA
PhD	Increase enrolment	Increased selection	NA	NA	NA
Total			**431**	**NA**	**NA**

Source: MUST strategic plans

Enrolment in university postgraduate education, as a proportion of total enrolment, is low, except for the College of Medicine and Chancellor College. Low postgraduate enrolment is partly because many private universities do not yet offer postgraduate programmes, as well as poor supply, throughout the system, of academic staff with senior degrees capable of teaching postgraduate courses. The College of Medicine and Chancellor College have the largest numbers of staff with postgraduate qualifications with the required capacity to teach and supervise research in postgraduate programmes. The Polytechnic, despite its size, only offers five postgraduate degree programmes, neither of which is in Engineering, the core discipline at this constituent college of UNIMA.

QUALITY ASSURANCE

At national level, there is the National Council for Higher Education (NCHE) which was established by an Act of Parliament in 2011. The NCHE is tasked with: promoting and coordinating higher education; harmonising admissions standards across all public universities; the determination, maintenance and regulation of standards for teaching, examinations, academic qualifications, and academic facilities; the development of a national qualifications framework compatible with regional and international standards; and the design and implementation of institutional quality assurance systems for higher education (Mambo et al., 2016). Institutions of higher learning have developed their own ways of checking quality, such as student course evaluations, faculty continuous professional development sessions which focus on improving teaching skills, and general performance appraisals.

The system of utilising external examiners in Malawi public higher education institutions is not as prevalent as it used to be, due to the cost of bringing external examiners to the country (Mambo et al., 2016). However, universities are using examiners from other institutions within the country to check on quality. In some cases, external examiners in the private sub-sector are used to moderate examinations and review course outlines prior to their finalisation and implementation (Mambo et al., 2016).

Apart from data and the drive for growth in the numbers of doctoral programmes, quality is a real challenge to assess. Although the NCHE provides a list of accredited doctoral programmes, it is not clear how they examine and assure the quality of doctoral candidates at entry as well as at exit. In addition to accreditation and registration, the council's mandate includes the harmonisation of selection of students at all public universities. Considering that quality assurance in doctoral programmes is a complex process, Cloete et al. (2015) proposed a framework of seven key aspects that may be considered in the quality assurance of doctoral education programmes. These are outlined as follows:

1. The quality of the doctoral candidate at entry;
2. The quality of the doctoral programme;
3. The quality of the supervisory process;
4. The quality of the doctoral graduate at exit;
5. The quality of the doctoral thesis; and

6. The quality of any journal papers or presentations based on the doctoral thesis. (Cleote et al., 2015, p. 106)

These are very important dimensions of quality, but as Cloete et al. (2015) have shown, they are not easy to measure. It is assumed that universities have put in place mechanisms to ensure that quality at all these levels is achieved. For Malawian public universities, however, there is no systematically collated data from the NCHE that we could find in the process of writing this paper. Nevertheless, we made efforts to assess different mechanisms of quality by looking at the requirements for application and interviews with doctoral students to ascertain how some of the above-mentioned aspects of quality are maintained in doctoral programmes.

The quality of doctoral candidates at entry can be based on the level of candidate preparedness based on screening and selection criteria. Most programmes advertised on the public universities' websites in Malawi require a Master's degree in a relevant field, gaining either credit or distinction level from recognised universities. The common trend for doctoral programmes is that they are offered on either a full- or part-time basis. It is common for doctoral students to work while they study. This might compromise the quality and preparedness of candidates and the effort they put in their studies. It is a common theme in studies on doctoral education elsewhere that students require a lot of help to complete their programme, whether this is academic, financial or social. Even if the selection process is stringent, the quality of the process might be affected by studying part-time. According to information on the LUANAR and UNIMA websites regarding requirements for entry, most calls for application in postgraduate programmes list some of the following requirement for applicants to be considered for a doctoral programme:

1. Copies of all relevant degrees, certificates and academic transcripts duly certified by a commissioner of oaths.
2. Original proof of availability of funds to finance training, e.g. an official sponsorship letter.
3. Copy of a bank deposit slip bearing name and proof of payment for an appropriate application fee.
4. Curriculum vitae (CV) with names and contact details of three traceable referees.
5. English proficiency test (a must for all international applicants) or proof that undergraduate courses were taught in English.
6. Two academic reference letters. Professional references should also be provided by candidates who are currently working.
7. Intended research concept note.
8. Write-up on candidate's research experience and suitability for postgraduate study. (LUANAR Postgraduate application forms, 2016)

As an illustration of further requirements, the programmes in agriculture require candidates to have the following credentials:

1. PhD in Agricultural and Resource Economics (Regional Programme), full time by research and course. The programme requires candidates to have at least two years' work experience in the public and private sectors, voluntary or community-based

organisations, and international and non-governmental organisations; and a recognised Master's degree in Economics, Agricultural Economics, Environmental Economics, and related fields with a credit or GPA of 3.0 and above.

2. PhD in Agricultural and Applied Economics by modules and research or by research and course work. Required: at least two years' work experience in the public and private sectors, voluntary or community-based organisations, and international and non-governmental organisations; and a recognised Master's degree in Economics, Social Sciences and related fields with credit or GPA of 3.0 and above (LUANAR Postgraduate application forms, 2016).

These requirements demonstrate strict quality gateway measures for incoming doctoral students. It is expected that the quality of students at entry contributes to the success and quality of the programmes.

The quality of doctoral programmes in the case of Malawi is very hard to measure and assess critically, because there are no rankings. When international rankings are considered, they paint a gloomy picture of the status of Malawian higher education in general. This is because according to most international rankings, both public and private universities in Malawi seldom feature in the top 100 institutions in Africa. While rankings have their own problems in terms of what aspects of quality they measure, they are heavily relied upon in decision making and conceptualisation of quality, and in accessing much needed international funding for research. A general indicator of how the quality of doctoral programmes in Malawi is maintained is that universities offer their programmes in collaboration with other regional universities. These are both regional and international universities in Europe and North America. This peer-to-peer collaboration, it may be argued, ensures that programmes and students benefit from human resources in the form of supervisors, funds, infrastructure and knowledge not just within Malawi but from other countries. This scenario contributes to the strength and prestige of doctoral programmes.

The quality of doctoral supervision is usually based on the qualification of the supervisor. According to interviews with faculty, administrators and students, the requirement is that only a PhD holder can supervise a doctoral student. However, the supervisory process needs systematic investigation to find out about student experiences and what they think about the process. In Malawi, anecdotal reports about the process of postgraduate supervision, according to informal interviews with students, demonstrate that this process has been characterised by disagreements, long periods without feedback and long periods of time before graduation. The length of time to graduation might suggest high attrition rates, but so far this data has not been available in Malawi (Mambo et al., 2016).

In terms of the quality of the doctoral graduate at exit, which is measured in terms of employability, it can be deduced that that doctoral graduates have huge opportunities for employment not just in Malawi but elsewhere. Most doctoral students produced in Malawi are usually employed by their own universities or other institutions. Again, in this category neither the NCHE nor the universities themselves keep systematic records of their graduates and where they are working. Anecdotal reports from institutions, however, suggest that graduates from PhD programmes find it very easy to obtain employment. For students who study part-time while working, for example in MZUNI's doctoral

programme in theology, graduates who have been studying while working at private universities have gone back to continue working at their universities to which they were affiliated. According to the report by the Malawi Institute of Management (MIM, 2013), the UNIMA has produced more than 15,000 graduates. Of these, 90 percent are undergraduates while 10 percent are postgraduates. According to the report, it is suggested that the number of graduates does not match the needs in the country, a situation that leads the report to conclude that there are more opportunities for employment particularly for those with PhDs, who are significantly small in number in Malawi. There is a need to institute tracer studies that can show how doctoral graduates from universities in Malawi are finding placements, and how they perceive the fitness of their studies for the work they are doing. This may strengthen conclusions regarding the quality of doctoral graduates at exit. There is also a need to systemically examine the scholarly contribution of doctoral graduates to research output and publication. However, this is hard to assess, considering that in Malawi most universities, especially private ones, are teaching based, and as such little focus is placed on research and publication. While UNIMA has had a long history of research and holds examples of academic journals where publications can be assessed in terms of how doctoral graduates may contribute, LUANAR, MZUNI and MUST are relatively new. This has meant that scholarly outlets in the form of journals and university printing presses are not available, making it a challenge to assess the quality of academic output for doctoral graduates within Malawi.

In general, the introduction of the NCHE as an accreditation body for higher education in Malawi has resulted in stringent policies and rules to ensure that proper accreditation of doctoral programmes is in place. The council so far shows that there are no private universities accredited to offer doctoral degrees. This might suggest that there is a strict control on quality. However, considering the NCHE's limited capacity, powers and mandate to monitor and enforce the accreditation regulations, it is worrisome how long this status will continue. There is a growing market for doctoral degrees in Malawi. Private universities are looking to cash in on these high demands, and it is only a matter of time before private universities will start to offer a proliferation of doctoral programmes, whether accredited or not.

INTERNAL QUALITY CONTROL

Institutions of higher learning take different approaches to helping doctoral students in terms of their resources and opportunities to succeed. What is common, however, is that these institutions ensure that doctoral students have supervisors and have all the necessary support needed to succeed. What are the expectations of PhD candidates from their institutions, and are these expectations clear to students when they start?

In some institutions expectations are clear; it is expected that students must be in good academic standing to proceed with their studies. There is always an orientation for each cohort of doctoral students telling them what is required and expected of them and letting them know about the support systems available. In some institutions, however, the expectations are not very clear and students are left in limbo and have to work things out for themselves.

In institutions like LUANAR, the department identifies a supervisor for students, based on the expertise of the lecturers in question and the research interests of the students. There is an honorarium that is given to lecturers for supervising doctoral students and graduate students in general. However, the pressure of work that the lecturers have sometimes discourages them from taking up supervisory roles for doctoral students. Examinations are part of quality control, and students are expected to sit comprehensive examinations which are developed by the lecturers in the department. External examiners are engaged when it comes to assessing students' theses, with the departments are responsible for identifying external examiners. These examiners are usually academics from accredited universities who are experts in the respective fields that they are hired for.

A critical assessment of the quality of doctoral education in Malawi is rather hard to conclusively judge, because of the limited nature of the data. However, overall it can be deduced that doctoral education in Malawi has a good foundation. Nonetheless, there is a need to take seriously the role of private institutions, and to be wary of unwarranted privilege in public universities that may lead to complacency and prove detrimental to quality. The National Council on Higher Education has, to a great extent, ensured that universities conform to acceptable practices in the quality assurance of doctoral education, including the registration, supervision and examination processes. However, what the council has not done is to produce any indicators of quality that would apply across the higher education system. While universities and departments themselves ought to put in place mechanisms for maintaining the quality of theses and academic papers produced by students, the council could also help by keeping a national database of such records and ranking institutions to give a better idea of how they are performing.

INTERNATIONALISATION AND RESEARCH ENVIRONMENT

The internationalisation of higher education means different things to different people (Altbach & Knight, 2007). We understand the internationalisation of doctoral education in Malawi in terms of regional, continental and global connections that universities in Malawi have established to enhance the production of PhDs. In this light, Malawian institutions benefit from many international research initiatives (Mambo et al., 2016). For example, Norway supports multi-disciplinary research at COM, KCN, Bunda and Chancellor, and supports training at Master's level and capacity building at Bunda. Chancellor College benefits from established research partnerships with Michigan University (USA), and the Universities of St. Andrews and Leeds (UK). Leeds University engages with Chancellor College in the delivery of a leadership programme on climate change and development in the region, with further linkages to institutions in South Africa, Mozambique and Tanzania. The Forestry Department has developed local partnerships to support a climate change project. KCN is engaged in a research partnership with the University of Chicago focused on HIV/AIDS and circumcision.

Research output in both public and private institutions is constrained by heavy teaching loads on the part of academic staff, and the low numbers of professors and staff with PhDs who are capable of supervising research. Research capacity has been further undermined by years of under-funding, a resulting legacy of inadequate infrastructure and facilities, and a relative scarcity of research grants. To develop postgraduate studies, the Government of Malawi could consider the option of

participating in regional initiatives aimed at establishing centres of excellence to combine advanced studies at the Master's and doctoral levels with high-quality research output. The Nelson Mandela Institutes of Technology and the Ouagadougou-based International Institute for Water and Environmental Management are two examples of successful regional institutions that offer advanced training and opportunities to advance research in alignment with internationally recognised standards. A complementary measure would be to facilitate strong partnerships with carefully selected universities in industrialised countries, to help build capacity for postgraduate teaching and research in the universities of Malawi. The government could also explore opportunities for using capacity in existing centres of specialisation and other institutions in the Southern African Development Community (SADC) region, as provided for in the SADC Protocol of Education and Training (Mambo et al., 2016).

MANAGEMENT: COMMON MODEL OF THE PHD IN MALAWI

There are several models across the globe for producing PhDs. Several studies have described and distinguished five major models. While the Malawi university system is uniquely Malawian as envisioned by the first president Dr. H.K. Banda, it incorporates aspects of the British and US systems. The five models are:

1. Traditional research-based PhDs, also commonly called the British model;
2. The PhD by publication, via a series of peer-reviewed academic papers;
3. The taught PhD, a quintessentially American model;
4. Professional or work-based PhDs, common in professional fields rather than academic disciplines; and
5. Practice-based PhDs, common in the creative and performing arts.

According to categorisation of the various pathways to the doctorate (Huisman & Naidoo, 2009; Park, 2007; Louw & Muller, 2014; Cloete, Mouton & Sheppard, 2015), the traditional PhD is the most common path towards a doctorate. The aim of the traditional approach is to bring about an original and worthwhile addition to knowledge in the literature. The second approach, the PhD by publication, is like the first. The major distinction is that the candidate in the publication approach creates a set of academically accepted and rigorous papers that are combined into a dissertation. Cloete et al. (2015) suggest that the funding strategies and the academic focus on publication make this approach appealing. The third approach, the taught doctorate, is based on a set curriculum and courses in a study area, as well as research methods. These are examined separately. The doctorate is conferred on the successful completion of research and a thesis that contributes to knowledge in the field. The professional and work-based doctorate is more applied. The research problem investigated often emerges from professional practice. Common examples include the Doctorate in Education (EdD). The professional doctorate is different from the practice-based doctorate because the latter is based on a supervised performing arts programme that includes a work of art, such as a novel, or performance artefacts. While all these are examined, the exact form of this approach to a doctorate is still contentious.

In examining the models of doctorates in Malawi based on information from university websites and strategic plans, data from NCHE and interviews, it was clear that only two of these models are common. The majority of PhDs are offered on the basis of the traditional approach, where the candidate is expected to study full- or part-time and work under one or more supervisors to come up with original research, contributing findings that improve on knowledge in a given discipline and topic of study. The second common approach in Malawi, as data related to the accredited programmes from NCHE shows, is the professional or work-based doctorate mostly seen in science and engineering programmes. Recently LUANAR and UNIMA have introduced taught doctoral programmes which comprise modules, coursework, research and a thesis. The timing of the programmes is not clearly stated, but may range from three to four years. Some of the programmes are offered in collaboration with other universities in sub-Saharan Africa and are supported by donor funding. The status of the model of delivery of the PhD reflected in the four public universities is that there is a diversification in the approaches. It appears that the popularity of coursework is gaining traction, with universities and departments strictly indicating a level of coursework that applicants are expected to have accumulated before proceeding into the doctoral programme. It remains to be seen whether the other two approaches by publication and practice will be introduced. It would equally be interesting to see if a new approach to doctoral education could be developed to meet the set objectives in strategic plans for increasing the number of PhDs.

In addition to the diversification of the model of the PhD, there are interrelated changes in the administration and management of doctoral programmes. Park (2007) states that universities have created interesting mechanisms for managing, monitoring and supporting students. The graduate school and research schools are major developments internationally in the provision of postgraduate studies. The graduate school as a model of management includes doctoral and Master's students. They provide administration and developmental support, keep records on quality assurance, and organise courses and seminars. Graduate schools take different formats ranging from online to physical, and institutional to faculty-based. Graduate schools are different from doctoral/research schools because the latter only admit doctoral students and may be organised around a particular discipline, theme or interdisciplinary research area. They can also involve one or more institutions. In Malawi, PhD management and monitoring plus admission have seen the introduction of Postgraduate Offices, or departments which oversee Master's and doctoral students. The Postgraduate Office is an indication of a move towards more centralised management. This leads to standardised admission procedures, and systematic and coordinated record-keeping and monitoring of doctoral students' progress.

INFRASTRUCTURE AND FUNDING

Public universities receive a huge percentage of their funds for operation from the Malawi government every fiscal year. The African Ministerial Committee on Science and Technology has stated that 1 percent of Gross Domestic Product (GDP) should be directed to publicly funded research and technological innovation. This compares with a figure of 3.5 percent for Korea, 2.2 percent for the USA, 1.8 percent in the UK and 1.5 percent in China. According to the Government of Malawi 2014–15 Budget Highlights, the budget in that year was designed to require donor support to cover only

14.7 percent of the costs (Republic of Malawi, 2020). The education sector has been allocated K127.9 billion for the Ministry of Education, Science and Technology, education organisations, District Councils and the Local Development Fund for the construction of primary schools and teachers' houses. Of the total allocation, K14.3 billion has been allocated to development projects, while K2.4 billion has been allocated to infrastructure projects in the public universities, namely UNIMA, MUST, MZUNI and LUANAR. Construction of primary school blocks and teachers' houses under the Local Development Fund initiative has been allocated K2.9 billion. Allocations for the rehabilitation of various primary and secondary schools as well as the construction of teacher training colleges amount to K1.6 billion. This education expenditure represents 19 percent of the total national public expenditure.

While this gives a picture of government expenditure on education, it is still not clear how much is allocated to doctoral education, either at the national or institutional level. What is clear, however, based on the strategic plans and calls for postgraduate programme application, is that universities are depending on external agencies to fund doctoral education programmes. This is mostly in terms of scholarship and research funds to supplement government budget allocations.

Due to limited infrastructure, doctoral programmes being offered are mostly in the areas of agricultural sciences and technical engineering. Although the facilities and infrastructure for science and engineering programmes exist, they are still limited. As the numbers of accredited doctoral programmes outlined earlier show, there are very few doctoral programmes in the humanities and social sciences. This is not surprising considering that MDGS, NESP and EP place more emphasis on science and technology. However, this should raise serious questions about the role of other forms of knowledge in the national development agenda.

There is significantly limited infrastructure in terms of ICT, housing, classrooms and libraries at public universities, a situation that has resulted in an underutilisation of faculty services. The enrolment of students in most programmes used to be based on the bed space available on campus. However, recently the Government has revised this policy and encourages students to enrol and make their own housing arrangements outside campus. Student challenges in this situation could be finding houses that are too far away from the campus, or not finding one at all. New initiatives have also been undertaken to introduce Open and Distance Learning (ODL) and online programmes as a way of increasing access to higher education. While this has been applied to undergraduate programmes, no plans have been put in place to do the same for postgraduate programmes. Three public universities, namely LUANAR, MZUNI, and UNIMA in its constituent colleges of Polytechnic and Chancellor College, will implement a $46 million Skills Development Project to increase access to universities. In the same way, however, doctoral education is not a major focus of this initiative. This shows how much public universities depend on external sources such as the World Bank and USAID for most of their programmes, and indicates a mismatch in priorities. While the Skills Development Project aligns with the need to increase enrolments for undergraduates, it does not meet expectations as outlined in the strategic plans to improve access to doctoral programmes.

Other examples of donor support for postgraduate degree programmes offered by the UMIMA are offered in partnership with international institutions as a means of cutting costs. The College of Medicine under UNIMA advertised postgraduate programmes, and these adverts exemplify the model of doctoral programmes and funding sources. PhD degrees are offered jointly with the College of

Medicine and the University of Liverpool. Scholarship opportunities for the programmes are based on funding from the Wellcome Trust through the Development of Excellence in Leadership Training and Science (DELTAS) programmes and the African Mental Health Research Initiative (AMARI). These types of funding usually last three to five years and provide a monthly stipend, tuition fees, research-related expenses, travel expenses for annual scientific meetings and training courses, and relevant support for local and international research supervisors. What is not clear is how many doctoral students are supported by these funds and how many pay for their own doctoral education. At the College of Medicine, according to recent adverts other funding comes from the National Institutes of Health – Fogarty International Centre in the USA, and the Malawi HIV Implementation Research Science Training Programme (M-HIRST). The Gates Foundation also funds fellowships for studies in Biochemistry and Nutrition. Support for students is based on the merit of their proposal, the research aptitude of the applicant, and the potential of the applicant to be a leader in their area of study and expertise. These criteria for offering scholarships also examine some aspects of the quality of doctoral students on entry in the programmes.

Lilongwe University of Agriculture and Natural Resources indicates that the aquaculture sector needs technologically skilled human resources to guide it. They also observe that the SADC region lacks vibrant, regional, "fit-for-purpose" training programmes that will contribute to a lasting solution to the enduring food security challenge. Strengthening the links between higher education institutions in the region and sharing teaching and research capacity, modern technologies and research into the demands of the fisheries and aquaculture sector will be integral to the sustainable management of resources. It was under these circumstances that a regional PhD programme in aquaculture and fisheries science was implemented by LUANAR, with financial support from the European Union through the Edu Link II project. While this demonstrates how universities fund doctoral programmes, it is crucial to mention that this leads to an improvement of doctoral education standards in the region as well as in Malawi. The programme is being implemented in partnership with the University of Eldoret in Kenya, Makerere University in Uganda and Rhodes University in South Africa.

A critical assessment of the status of funding in university education, and doctoral education in particular, demonstrates several concerns that might impact the quality and sustainability of doctoral education in Malawi. It is common knowledge that faculty, who mostly possess doctoral degrees and can act as supervisors for doctoral students, are engaged in other more lucrative activities than supervision. In a study conducted in 2008 in the SADC region, findings showed that academics in fourteen African countries were to a greater or lesser extent involved in consultancy. The findings showed that 72 percent of Malawian academics were engaged in consultancies. Some of the reasons that were given for this were that academics enjoyed the topics of study, there was demand for consultancy work, and it was an opportunity to raise funds and gain professional development (Mouton et al., 2008; Nkhoma, 2014). This concentration on consultancy work, which is usually emphasised in the mission of the university, can take faculty members away from contributing to training doctoral students. However, if consultancy projects are carefully structured, as faculty pointed out, doctoral students may have the opportunity to receive hands-on training to learn about research, evaluation and general management of projects. Some faculty members with doctoral degrees in fact obtained their training through such projects (Nkhoma, 2014).

A difficult factor that is strongly linked to funding and infrastructure as well as quality is efficiency. There are several indicators that could be used to assess efficiency in doctoral education. Cloete, Mouton and Sheppard (2015) suggest four components, as follows:

1. The ratio of graduation to enrolment;
2. Cohort analyses of graduating students;
3. Progression from undergraduate degrees and completion rates of doctoral students; and
4. The ratio of PhD students to academic staff with doctorates.

These components are by no means the only acceptable approaches to measure efficiency, but they provide a reliable basis for analysing the efficiency of doctoral programmes in Malawi. The weakness of these approaches is that they work well in systems of higher education with a long history and track record of producing students. In Malawi, however, it is hard to conduct a thorough and informative analysis of the efficiency of the doctoral education system, in part because of the scanty data and because of the short history of doctoral education. As mentioned earlier, only public universities offer doctoral degrees, and of these public universities three have a very recent history. Considering that it can take five or more years to complete a doctorate, it is likely that the numbers of graduates from these universities are very few, and hence there are no real grounds for passing judgement on the efficiency of these universities' doctoral programmes.

This speaks volumes about the doctoral pipeline, measured in the progress of students from undergraduate degrees to Master's to PhD. With the current picture in mind based on the Malawi Institute of Management report, only 10 percent of graduates are in postgraduate programmes. This suggests that the doctoral pipeline for in Malawi is a leaky one. There are very few Master's programmes and doctoral programmes, most of which are very new. This helps to explain why there are very few students who move up the system to complete their PhDs. Most doctoral degree holders in Malawi obtain their qualifications outside the country. The progression to a doctoral degree may suggest that the average age of doctoral students in Malawian universities is high compared to other countries. There are several issues that impact on this, such as working part-time, lack of funding, and the part-time learning approach of doctoral programmes. All these affect the completion rates of doctoral programmes and when candidates can enrol.

INDUSTRY RELATIONS WITH DOCTORAL EDUCATION

Apart from university colleges expressing the need for more PhDs to meet capacity, it is not clear how concerned employers are about the relevance of doctoral programmes offered. The overall distribution of enrolment in doctoral programmes by field of study has generally not been aligned with areas critical for the economic development of Malawi. For example, enrolment is relatively low in engineering, business, ICT, and tourism – areas which are considered vital for Malawi's growth prospects. As may be seen from the types of doctoral and Master's programmes offered, there are more doctoral programmes offered by LUANAR than by other universities. This might be justified

considering that Malawi is an agricultural-based economy. However, there is a critical need to work with industries to determine the areas that need more technical expertise in research and knowledge development (Nkhoma, 2014). An important point to highlight is that university institutions need highly qualified personnel to supervise and conduct research. This ought to be a key driver to focus on doctoral education. Departments and colleges should strategically emphasise professional development plans to produce more doctoral staff to fill these positions.

Higher education institutions are yet to identify which programmes contribute to institutional competitive advantage. The Malawian higher education sub-sector is characterised by duplication across institutions with regard to the introduction of new course offerings, and a general failure to diversify in response to the needs of growth sectors identified in the MGDS. In order for Malawi to realise its development objectives, it will be important to raise the status and quality of post-secondary vocational education, and to provide incentives for greater numbers of students to participate therein. A good measure of the fitness of purpose of programme offerings is the rate at which graduates of a system are absorbed into the labour market (Mambo et al., 2016; Cloete, Mouton & Sheppard, 2015).

POLICY RECOMMENDATIONS AND HOW TO ADDRESS THE CHALLENGES

In reflecting on the analysis above and evidence concerning the status of doctoral education in Malawi regarding numbers, funding, quality and infrastructure, the question that has to be addressed now is – what possible policies and strategies ought to be pursued to reach the targets set up by the strategic plans, without compromising the status but improving quality and efficiency? Considine (2005) suggests that in thinking about policy directions, context is critical. He also highlights the important stakeholders and the levels at which policy operates. With regard to doctoral education in Malawi, there are four important levels to consider regarding strategies for improving doctoral education. These are the national, institutional, departmental and individual (student and teacher relationships) levels. Based on the evidence in the paper, we have shown how national policies drive higher education. We have demonstrated how universities have created strategic plans based on national policies such as the MDGS, NESP or ERP. We will now highlight some policy strategies that might respond to the demand for an increase in doctoral education at the national level. At the institutional level, it is clear that all the universities have put in place plans and systems for developing doctoral education, as was seen in the examples presented earlier. There are already some strategies in place that institutions are using to improve the status of doctoral education. We will consider those, as well as departmental and supervisory strategies.

NATIONAL STRATEGIES

Policies at the national level do not directly mention the need to increase numbers in doctoral education. Despite this, there is a strong focus on improving access, quality, relevance, and the

management of education by the government. The government allocates a substantial amount of its resources to the education sector. While the focus is on basic education, there is a need to think critically about special mechanisms for government to fund doctoral education as in other countries – for example in South Africa, where a national fund is specially allocated to support university research and doctoral education. The Government's plans to establish more public universities are a welcome development for increasing the capacity of doctoral education. The establishment of the NCHE and NCST are also steps in the right direction. It is hoped that the Government will strengthen these institutions by depoliticising them and providing more financial support. While NCTS currently offers some funding to selected scholars and organisations, it would be beneficial to increase support for research and doctoral education not just in the sciences and technology but also in the social sciences and humanities, especially for students pursuing doctoral education within Malawian universities. This could operate like a National Fund for Research. NCHE and NCST, working hand in hand with the Ministry of Education and the Association of Private Universities in Malawi (APUMA), should chart a clear path for private universities in the production of doctoral education. Organisations like APUMA could be empowered to undertake peer monitoring and accreditation of private universities' programmes. A two-tier approach could be utilised, allowing universities to register and approve their programmes with APUMA and then with NCHE. This would not only contribute to the quality assurance of doctoral programmes, but also lighten the workload for the NCHE.

INSTITUTIONAL STRATEGIES

It is common sense that if the enrolment of doctoral students is to increase, the number of supervisors with PhDs must also increase. This is the same with infrastructure, funds and other resources. According to the data, the student-teacher ratio (1:12) shows that an increase in doctoral student numbers could be absorbed without shock. However, this might be true at the undergraduate level, but it is not clear whether the stated percentage increase in the universities' strategic plans will be able to be supported by the current capacity of qualified faculty.

At the institutional level, it can be helpful for universities to invest in training their staff in good supervisory practices, management and monitoring of doctoral students. It will be critical for universities to run training workshops on the supervision of doctoral students, especially for new staff. If numbers of doctoral students are to be increased and more full-time programmes based on coursework introduced, there will be a need to increase support infrastructures in the form of writing centres, postgraduate offices or formalised graduate schools that will provide support for the development of doctoral students in preparing their research plans, methodology and writing. In places like the US where the taught PhD is common, support in the form of scholarships and assistance with research or teaching is made available. While not ideal, this support helps with the funding of doctoral education for most students.

DEPARTMENT AND SUPERVISORY STRATEGIES FOR IMPROVING DOCTORAL EDUCATION

The growth in numbers of both public and private universities, it is believed, will lead to the diversification of the PhD model and formats, as well as different types of doctoral education in Malawi. It is beyond doubt that the increase in production of PhD holders will not require a one-size-fits-all approach. There is a significant need to maintain the current strategies that departments have put in place for enrolment, monitoring and management of doctoral education at the departmental and supervisory level. However, departments need to solidify their selection, orientation, administration and funding of research and doctoral education. If departments are serious about tackling the challenge of increasing enrolment, this may have an impact on the consultancy, teaching, outreach and supervisory roles of faculty. This will necessitate rethinking the incentives for supervisors. There will be a growing need to offer rewards to faculty for working with doctoral students. This will have to be done in moderation, knowing that faculty members will only be able to manage a certain number of doctoral supervisees.

CONCLUSION

In conclusion, there are several recommendations that can be suggested to help doctoral education in Malawi continue to improve in terms of its quality, growth, relevance, efficiency and optimal funding regimes. When we pay careful attention to context and differentiation, we acknowledge the various strategies that are currently in place which are already contributing to the development of doctoral education. This awareness prompts us to be wary of proposals that advance a one-size-fits-all or cookie cutter model of policy recommendations. We therefore share one recommendation that fits with the philosophy of differentiation as a policy option which the higher education sector, both public and private, guided by the NCHE, the Ministry Education Science and Technology and NCST, should undertake. This concerns the role of public and private universities in the differentiation of doctoral production.

Differentiation is important to prudently manage limited resources and ensure quality and efficiency. For a country like Malawi, it is important that institutions streamline their mission and purpose. This can assist in avoiding mission creep, especially at the doctoral level. The Government needs to come up with a funding plan that can spearhead specific universities to focus on the training of human resources demanded by the country. This first set of differentiated university colleges could concentrate on offering undergraduate diplomas and degrees. Another set of institutions could be equipped to focus on training and research to lead knowledge production in the nation. This group of institutions could focus on professional undergraduate, Master's and doctoral degrees. A third set of institutions should focus on disciplines other than the professional field, with provision of all levels of degrees. However, NCHE must carefully consider the role of private universities, considering that the establishment of private universities in Malawi has been spontaneous, with very limited planning, and a lack of stringent infrastructure, funding, library facilities, ICT, and teaching staff with the qualifications that are a prerequisite for doctoral education. It is important for NCHE to accredit institutions that demonstrate a real link between needs in the industry and capacity. Unless this is done, the increasing numbers of PhDs offered through universities that spring up every day may result

in diploma mills, producing graduates whose qualifications and skills are irrelevant to the needs of Malawi. The final set of differentiated universities will be modelled on what are known as R1 universities in other places like the US and Europe. These institutions should concentrate on the production of research and doctoral degrees.

In seeking identification of the special functions of doctoral production in Malawi, which should be developed by Malawi herself, both private and public universities should seek those qualities, structures and concerns which will distinguish them from other universities not just in the same country but also globally, and which will better prepare and drive their services to benefit their own communities and country. However, in strategic partnerships with other universities, Malawian universities should link themselves to concerns that are universal across contexts. This is the mandate of well-planned and articulated doctoral education which is both specialised and differentiated.

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NIGERIA

The Policies and Practice of Doctoral Education in Nigeria: Issues and Challenges

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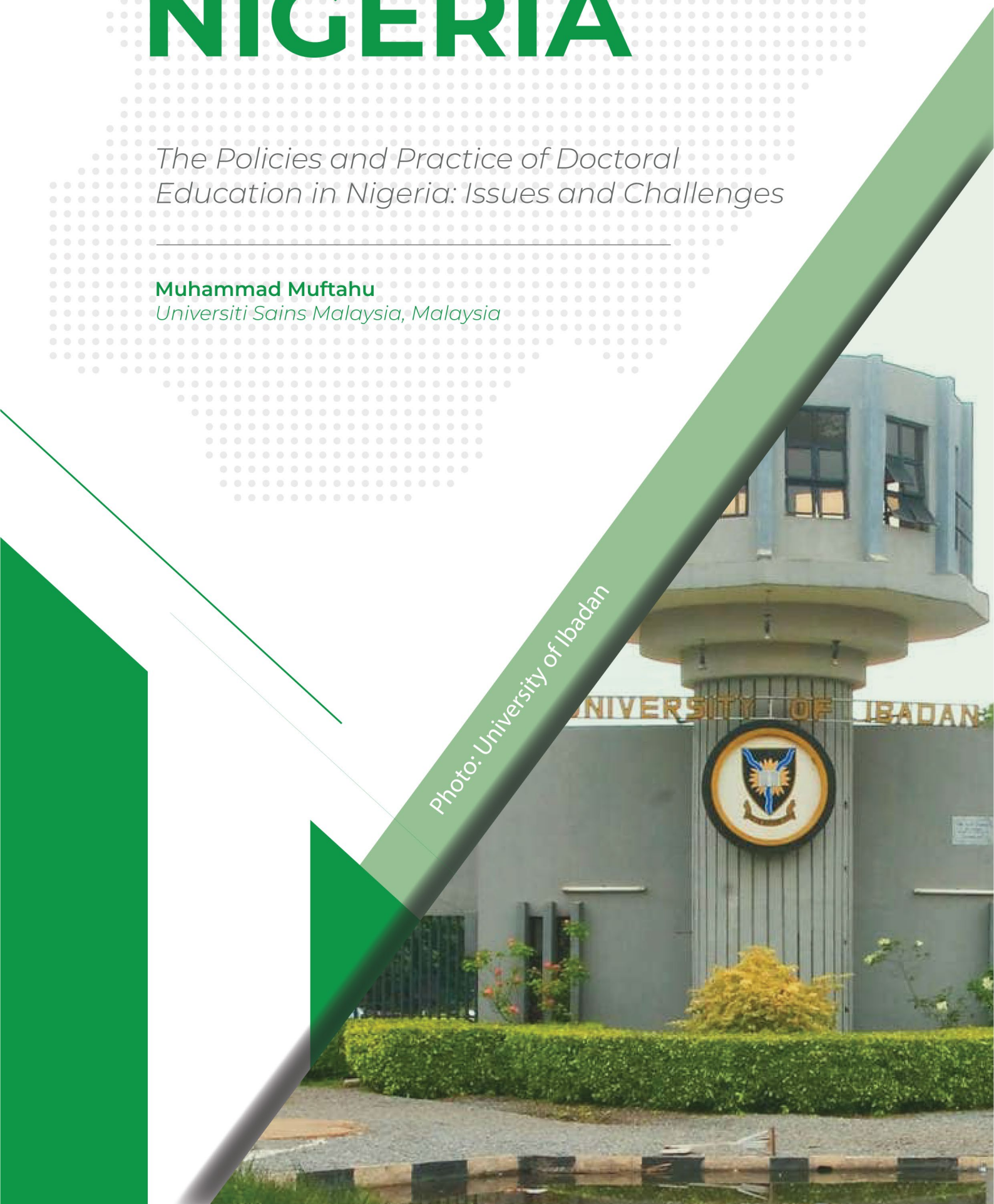


Photo: University of Ibadan

INTRODUCTION

In promoting and implementing national education systems, educational policies contribute to the achievement of educational goals if they are developed and practiced effectively. In the general perspective, education is considered as a fundamental tool in bringing about economic progress and advancement. According to the UNDP (2016) cited in Odukoya et al. (2018, p. 1), "The relationship between education and development has been established, such that education is now internationally accepted as a key development index". This means that education, at all levels, is an internationally acclaimed development tool of significant importance in local, regional and international communities (Salihu & Nayel, 2015).

Nigeria is currently a developing economy in the African region. Throughout its journey towards economic advancement, the Nigerian government has continuously expressed its commitment to improving the education system in the country (Odukoya et al., 2018). The same authors explain that it is the belief of the Nigerian government that rising above illiteracy and ignorance can provide a foundation for the nation's accelerated development. However, despite efforts to improve the education system in the country, a number of challenges still exist, such as inequalities in access to education, ineffective education policy implementation, and lower rates of tertiary and doctoral degree completion that hinder potential advancement opportunities for the population, which in turn impact on economic growth and development.

This chapter will explore the current issues and challenges faced by the Nigerian government with regard to the policies and practices of doctoral education in the country. Doctoral education has economic and social implications for Nigeria's education system, its economy and its citizens, particularly in terms of the development of higher education. As such, this chapter attempts to understand the influence of policies and practices on the doctoral education system, and how challenges such as manpower, facilities, funding and delivery impact on the implementation of doctoral education policies and practices in Nigeria.

HIGHER EDUCATION POLICY

From the general perspective, education refers to the process of acquiring knowledge, skills and other capabilities (Jaja, 2013). In particular, higher education is education that is organised and undertaken after college (Jaja, 2013). Currently, the higher education system in Nigeria reflects the national characteristics of being ethnically, religiously and politically diverse, and these characteristics have a significant influence on education outcomes, e.g. in terms of enrolment and addressing capacity issues (Salihu et al., 2016; Akudolu & Adeyemo, 2018). For example, in 2015 the total tertiary enrolment in Nigerian universities was reported to be 1.9 million (shown in Table 6.1), indicating a need for expansion (Akudolu & Adeyemo, 2018).

Table 6.1: Higher Education Enrolment in Nigeria by Institution Type (2015)

Type of Institution	Federal	State	Private	Total	Enrolment	%
Universities	40	44	69	153	1,131,312	58.4
Polytechnics	21	38	25	84	360,535	18.6
Monotechnics	23	2	2	27		
Colleges of agriculture	17	19	0	36	91,259	4.7
Colleges of health technology	9	40	1	50		
Vocational institutes	0	0	69	69		
Colleges of education	21	46	17	84	354,387	18.3
Total	**131**	**189**	**183**	**503**	**1,937,493**	**100**

Source: Akudolu & Adeyemo (2018, citing NUC, 2018a, National Board for Technical Education, 2015, & National Commission for Colleges of Education, 2015)

Different regulations and policies are administered in different countries worldwide, most commonly by the relevant Ministry of Education. According to Jaja (2013), higher education policies are drawn up in order to guide and direct higher education institutions. A higher education policy, as described by the same author, includes curricula, the required facilities and equipment in institutions, the entry qualifications of students, the qualifications of educators, and the rules that guide students' movements, among other things. Thus, higher education policy is an important element in ensuring the effectiveness of the higher education system in every country (Okoro & Aguguam, 2017).

Nigeria is one of the nations that is actively promoting the improvement of its higher education system in the pursuit of providing opportunities to its population and thereby contributing to economic and personal growth and development. However, in a study by Okoro and Aguguam (2017) the authors concluded that the current state of higher education in Nigeria is poor, and there is a need for new strategies to be developed and implemented to enhance the quality of education in the country. As explained by the same authors, higher education in Nigeria is embodied by the National Policy on Education with the main goal of promoting quality education and practice, but improvements are needed in order to raise academic achievement and the quality of teaching.

In relation to this, the national higher education policies in Nigeria are governed by the Federal Ministry of Education and its Tertiary Education Department and other relevant agencies. In general, the main official documents that define the national higher education policies in the country include the Nigeria Economy Recovery and Growth Plan – 2017–2030, the Ministerial Strategic Plan – 2016–2019, the National Policy on Education (2013), the National Policy on Special Needs Education in Nigeria, and the Blueprint on the Rapid Revitalisation of University Education in Nigeria (2018) (worldaccesshe.com, 2018). However, despite the active promotion of higher education policy initiatives, there are still policy issues in the administration of higher education in Nigeria, such as gender equality, governance, teaching practices, and research and funding, among others (Salihu & Jamil, 2015; Ogbogu, 2013).

DOCTORAL EDUCATION IN NIGERIA: POLICY AND PRACTICE

In Nigerian universities, doctoral training entails coursework, thesis writing and thesis oral defence. In relation to quality assurance, undergraduate programmes are guided by the Benchmark Minimum Academic Standards, but there is no equivalent of this for doctoral programmes. Other challenges in doctoral education in Nigeria include a shortage of PhD qualified staff and gender disparities, among others (Akudolu & Adeyemo, 2018).

According to Olibie et al. (2015), to promote successful postgraduate education there should be quality Master's level degrees and doctoral programmes that include high quality coursework and research. The same authors explain that the successful mentoring of doctoral students should be built on effective characteristics and values through the implementation of various curriculum enhancement strategies. In addition, it is also important to note the significant role that the demographic characteristics of doctoral students play in relation to the challenges involved with completing their doctoral studies in the required time frame. According to Yusuf and Aina (2018), demographic factors such as age, gender and marital status can have significant impacts on students' doctoral degree completion. The same authors also asserted that other factors such as job designation and type of financial support can also affect the completion of doctoral studies.

In Nigeria there are certain national bodies that are considered influential in the provision of policy directives at different levels of the education system, including doctoral training and education. Some of these national bodies include the National Universities Commission, which is an advisory agency to the Ministry of Education that is responsible for higher education in Nigeria, the Joint Admissions and Matriculation Board that administers student admissions in higher education institutions and Nigerian universities, and the National Board for Technical Education that is responsible for the accreditation of academic programmes in technical and vocational education institutions (Akudolu & Adeyemo, 2018). However, the Ministry of Education is still responsible for issuing policy directives and guidelines to these national bodies.

There are some studies in the literature with regard to the policy of higher education in Nigeria, but there is limited data focussing on PhD or Doctoral programmes or education. However, Akudolu and Adeyemo (2018) note that the National Policy on Education guides Doctoral education and practices in Nigeria. In addition, doctoral education also follows the national research policy, particularly in relation to PhD students' research (dissertational) practices (Akudolu & Adeyemo, 2018). This suggests that there are significant issues and challenges that should be addressed with regard to doctoral education policies.

1. Issues and Challenges

In response to quality and capacity challenges in the higher education system in Nigeria, policy initiatives have been implemented, including policies governing the provision of doctoral education. However, there are a number of challenges in relation to the effective implementation of doctoral education in the country, such as a lack of doctoral enrollees, and the fact that it takes a long time to complete a doctoral degree, among others (Duze, 2010). Similarly, a study by Yusuf and Aina (2018) revealed that the

majority of the doctoral students in Nigeria fail to complete their education within the recommended time frame. This suggests that doctoral students in Nigeria face significant challenges, thereby creating a need for policy re-evaluation and improvement.

a. Manpower

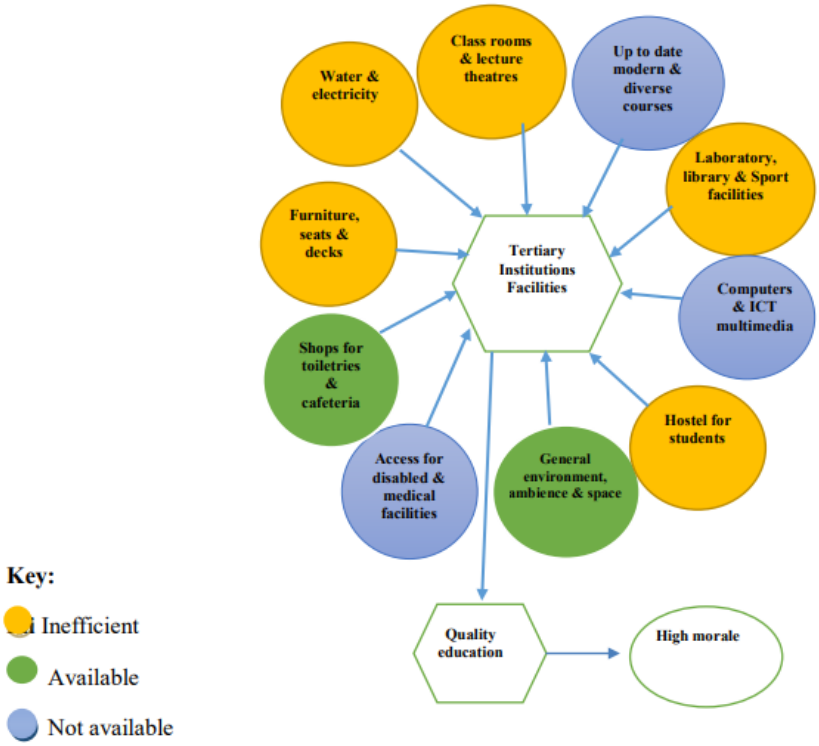
One of the most pressing challenges in doctoral education in Nigeria is the lack of PhD-qualified staff. It is important to address this issue because it can have a direct impact on the quality of education of doctoral students. According to Akudolu and Adeyemo (2018), adequate staffing for the supervision of doctoral students is crucial to the provision of quality education, because doctoral or PhD training must be administered by teachers who are qualified to teach PhD degree courses. In a study by Tunde (2011) cited by Akudolu and Adeyemo (2018), it was found that 61 percent of lecturers in Nigerian universities have no doctoral degrees. This suggests a scarcity of PhD-qualified lecturers in Nigerian universities, which clearly impacts the quality of doctoral education in the country. According to the World Education News and Reviews (WENR), a study in 2012 reported that only 43 percent of the teaching staff in Nigeria hold PhD degrees, which constitutes one of the worst lecturer-to-student ratios in doctoral programmes as compared to doctoral education in other countries worldwide.

b. Facilities

Inadequate learning facilities is one of the challenges in the provision of quality doctoral education in Nigeria. According to Ebehikhalu and Dawam (2016), Nigerian universities have inadequate learning infrastructure and facilities, which means that there is a need to invest in expanding and modernising facilities in existing universities. In relation to this, Desmennu and Owoaje (2018) noted that inadequate research infrastructure and facilities, as well as a lack of funding, constitute some of the many challenges faced by students and faculty in higher education in Nigeria. The same authors explained that addressing inadequacy in facilities is important because improvements in the quality of postgraduate education can be achieved through the provision of adequate and high quality learning environments.

Currently, the state of the physical facilities in higher education institutions in Nigeria can be described as poor, leading to problems such as overcrowding in state universities (Salihu et al., 2016) and an inability to support diverse teaching programmes such as doctoral programmes (Isa & Yusoff, 2015). The current problems related to inadequate physical facilities in Nigerian higher education institutions are described in Figure 6.1.

Figure 6.1: Inefficiencies of Facilities in Higher Education Institutions in Nigeria



Source: Isa & Yusoff (2015)

2. Funding

The demand for doctoral education in Nigeria is increasing, despite a lack of evidence of improvement in higher education policies and doctoral education initiatives (Agu et al., 2015). As already identified in the earlier part of this chapter, among the challenges related to improving the higher education system in Nigeria are a scarcity of qualified teachers/lecturers and inefficiencies in terms of the facilities in higher education institutions. However, it is also important to note that funding or financial constraints form another significant challenge in the successful implementation of doctoral education programmes.

According to Isa and Yusoff (2015), poor funding is one of the problems contributing to setbacks in the improvement of higher education in Nigeria. Higher education institutions rely on government funding for maintenance purposes and they do not use their facilities to generate funds, which leads to inadequate funding for good maintenance (Oyenuga et al., 2012). In addition, Afolayan (2015) noted that underfunding is one of the major problems facing higher education in Nigeria. This author explained that higher education in Nigeria is dependent on government or public funding alone, which suggests that there are problems with the funding policies in the Nigerian higher education sector that need to be addressed. To illustrate this, Table 6.2 shows government funding to Nigerian universities through NUC.

Table 6.2: Capital Allocation to Universities Through NUC (2009–2013)

Year	CAPITAL (N)	DTLC (N)	T&RE (N)	TOTAL (N)
2009	9,995,998,748	1,682,342,021	1,114,832,232	12,793,173,001
2010	20,429,524,442	1,755,380,165	1,448,568,035	23,633,472,624
2011	15,670,146,988	1,813,954,489	784,317,293	18,269,418,770
2012	17,450,657,390	1,656,405,306	1,026,920,375	20,133,983,073
2013	15,960,779,622	2,147,779,881	1,191,920,377	19,300,479,881
Total	**79,507,107,171**	**9,055,861,862**	**5,566,558,313**	**94,129,527,348**

Source: Afolayan (2015, citing Fed. Min. Edu., 2014)

3. Delivery

Aside from funding, there are also challenges related to the educational delivery system in Nigeria. Interestingly, delivery of services is one of the most important aspects of quality education. While Nigeria has been committed to promoting initiatives aimed at pursuing delivery excellence, there are gaps in terms of accountability and transparency in relation to the delivery process (Asiyai, 2015). In addition, issues surrounding instructional delivery are also evident in Nigerian higher education institutions as a consequence of major problems already discussed, such as inadequate facilities and a lack of PhD qualified instructors (Odia & Omofonmwan, 2007).

RECOMMENDATION AND CONCLUSION

In the light of this discussion, it is recommended that policy makers should initiate further policies to address funding and delivery challenges, such as encouraging engagement from the private sector to contribute to funding (e.g. scholarship programmes for doctoral candidates etc.). It is also recommended that the government should invest more in enhancing higher education facilities by introducing more PhD programmes for students and teachers alike.

The main purpose of this chapter has been to explore the current issues and challenges faced by the Nigerian government with regard to the policies and practices of doctoral education in the country. Based on the foregoing discussion, it is clear that improvements are needed in higher education policies and initiatives in order to address the specific challenges in the field of doctoral education. The major problems in doctoral education in Nigeria include a lack of PhD qualified instructors, poor facilities, a lack of funding and poor delivery in the higher education system. As such, this chapter concludes that the Nigerian government must seek to re-evaluate and develop better higher education policies and initiatives to address the identified challenges, in order to enhance the quality of education and teaching for doctoral students.

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RWANDA

Doctoral Education in Rwanda: A Descriptive Analysis of Facts

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Photo: University of Rwanda

INTRODUCTION

There is one key human need that is not specific to any particular category of people but applies to all human beings – namely, education. According to Adamu and Addamu (2012) education is one of the fundamental factors that is necessary for development. This is because education is a form of investment in human capital, which yields economic benefits and contributes to a country's future wealth by increasing the productive capacity of its people (Woodhall, 2004). Likewise, UNESCO (2014) insists that education plays a key role in the reduction of poverty, increasing opportunities for new jobs and accelerating economic growth as well as facilitating sustainable development. It must be noted that education is a multi-level system, with primary, secondary and tertiary levels; the latter is considered the highest, and is therefore called the "Higher Education" level. Doctoral education, which is the concern of this paper, is part of the tertiary level of education.

Among these three levels of education, the biggest contributor to the socio-economic development of any country is higher education (Adamu & Addamu, 2012). Similarly, developing the higher education sector is a significant step for countries that want to achieve higher levels of development (Goksu & Goksu, 2015). For such countries, higher education's contribution to economic and social development is multifold: it exercises a direct influence on national productivity, which largely determines living standards and a country's ability to compete in the global economy. In addition to this, higher education institutions support knowledge-driven economic growth strategies and poverty reduction in a number of ways: first, by training a qualified and adaptable labour force, including high-level scientists, professionals, technicians, teachers in basic and secondary education, and future government, civil service, and business leaders; second, by generating new knowledge; and finally, by building the capacity to access existing stores of global knowledge and adapt that knowledge to local use. Higher education institutions are unique in their ability to integrate and create synergy among these three dimensions. Sustainable transformation and growth throughout the economy are not possible without the capacity-building contribution of an innovative higher education system. This is especially true in low-income countries with weak institutional capacity and limited human capital (Salmi & Bassett, 2010).

Being aware of the role of education in general, and higher education in particular, we would be mistaken if we failed to cast particular light on the highest level of the higher education pyramid, namely doctoral education. To this end, "doctoral students are the potential backbone of all research programs and, as such, are instrumental in the discovery and implementation of new knowledge" (Jones, 2013, p. 99). This implies that doctoral education should be given special consideration in Rwanda and elsewhere in the world to boost research and the advancement of new knowledge.

This paper intends to present a well-researched picture of doctoral education in Rwanda. To do this the paper set out to address the problem of low public awareness of doctoral education programmes in Rwanda, as well as those available to Rwandans abroad. The specific objectives that of this study were: (1) to show the current situation of doctoral education in Rwanda; (2) to highlight existing strengths and challenges; and (3) to discuss how policy can address some of these challenges.

BRIEF HISTORY OF EDUCATION IN RWANDA

Historically, education in Rwanda was informal and delivered largely through the family and through 'Itorero'. It is since the arrival of Europeans that formal education has become popular. Although the Rwandan education system has gone through a remarkable period of growth, higher education was not given priority and was almost left behind. This is because there was no institution of higher education in Rwanda during the colonial period; the first university in Rwanda, the National University of Rwanda (NUR), opened in 1963 just after independence, initially enrolling 49 students. Until 1994 the NUR was the only public university in Rwanda. Other universities were created after the 1994 genocide against the Tutsi people, and since then higher education has been seen as a critical area of investment for the future economic growth and development of the country. As a consequence, the government increased the share of the national budget allocated to higher education. This increased the student population enrolled at the NUR, which rose from 49 students in 1963 to 4550 students in 1999. To expand higher education opportunities further, the government also established new public universities and encouraged the private sector to invest in higher education by opening private universities.

It was in this context that higher education opportunities dramatically increased in the late 1990s. New institutions of higher education opened, including the former Kigali Institute of Science and Technology (KIST), the former Kigali Institute of Education (KIE), and the former Kigali Health Institute (KHI) among many others. Likewise, private universities also opened, including the Kigali Independent University (ULK), the Independent Institute of Lay Adventists of Kigali (INILAK), and the Catholic Institute of Kabgayi (ICK). In 2013 the Government of Rwanda decided to merge a number of public institutions into one public university, the University of Rwanda (UR) with its six colleges, for the purpose of improving the quality and efficiency of public institutions of higher education. "In 2015, there were 44 Tertiary Education Institutions of which 12 were public and 32 private" (MINEDUC, 2016, p. 76).

Although tertiary or higher education and the demand for it have improved significantly, only undergraduate programmes have benefited from this progress. Postgraduate programmes still lag behind. This is because up to 2005 no postgraduate programme was offered in any higher learning institutions in Rwanda. Those who wished to undertake a postgraduate course were obliged to go abroad. Due to government commitment and political will, postgraduate programmes, including PhD courses, are now offered in local universities as well as in foreign universities that have opened campuses in Rwanda. However, as far as doctoral education is concerned, a lot of effort is still needed to boost this area. This raises the need to review the current status of doctoral education, with a view to highlighting the progress made and the challenges encountered.

METHODOLOGY

This paper used a historical research method in the study design. "Historical method is an approach in the research study to the past history or to recount some aspect of past life" (Singh, 2006, p. 114).

Rajivlochan has also defined this method, saying that "the practice of historians, in examining changes in society over time, is what constitutes the historical method" (Rajivlochan, 2006, p. 8). As stipulated in this research design, documentation was used as the method of data collection.

The key documents used in this paper are: policies, laws, reports, announcements, and news articles that relate to Rwandan higher education in general, but specifically to doctoral education in Rwanda. The focus of this paper follows a number of research questions: (1) what is the current state of doctoral education in Rwanda? (2) what are the strengths and challenges of the doctoral education programme in Rwanda? and (3) how can policy address some of the existing challenges? The list of documents analysed to answer the above research questions is in the annex to this paper.

STUDY FINDINGS AND DISCUSSION

After analysing the documents selected for this study, a number of variables for which data are available were identified, related to the number of PhD programmes running in Rwanda, the enrolled students, the type of infrastructure, and funding. However, it was also very important to provide information about Rwandan students in foreign higher learning institutions.

The presentation of findings follows the sequence of research questions listed above. In this section, the documents analysed are referenced using the IEEE citation system, with the number in square brackets corresponding to the position of the document in the annexed list.

1. Current Situation of Doctoral Education in Rwanda (Numbers, Quality, Infrastructure, Funding)

Although there has been significant progress in terms of doctoral education in Rwanda, more efforts are needed to boost this level of education. This is because due to the growing number of students in higher learning institutions, doctorate degree holders are in high demand, since the Ministry of Education requires candidates to hold a PhD qualification if they wish to become a university lecturer. The purpose of this requirement is to promote academic research and improve the quality of the education provided in higher learning institutions in Rwanda. The following table provides statistics on PhD holders among academic staff in higher learning institutions in Rwanda.

a. PhD Holders among Academic Staff in Rwanda

Table 7.1: Number of PhD Holders Among Academic Staff in Rwanda

Year	Male	Female	Total	%
2011	363	42	405	15.7
2014	607	76	683	16.9
2015	569	80	649	16

Source: Education Statistical Yearbook (2011, 2014 & 2015)

Table 7.1 presents the proportion of academic staff with doctorate degrees in Rwandan higher learning institutions for the years 2011, 2014 and 2015. Specifically the table shows that in 2011 only 15.7 percent of all academic staff in Rwanda were holders of a PhD. The same table indicates that there was an improvement in 2014, with the percentage of lecturers with a doctorate degree rising to 16.9 percent. This may have been caused by efforts by the government and its partners in terms of sending students abroad to pursue PhD courses in different areas. However, the table also indicates that the percentage of staff with doctorate degrees declined to 16 percent in 2015. This may have been because a number of expatriate lecturers with doctorate degrees may have returned to their home countries, or the fact that some staff members with doctorate degrees may have left teaching to seek jobs with better pay.

The findings presented in Table 7.1 clearly indicate that doctoral education in Rwanda still needs special attention. These findings are confirmed by the New Times (2014), a local newspaper which revealed in an article published online on June 23, 2014 that of the 1,484 University of Rwanda academic staff, only 281 (19 percent) were PhD holders. The same source reported that the University of Rwanda was expecting to increase this proportion to 22 percent by 2018, thanks to the University of Rwanda and Swedish International Development Cooperation Agency (SIDA)-funded programme whereby 80 university staff were expected to complete their PhD studies in 2018 under this programme (J. Tabaro, 2014). This is still below the target set by the Ministry of Education, which aims to increase the proportion of PhD holders among academic staff to 50 percent by 2020 (J. Mugabo, 2015).

b. Government-sponsored Students Following PhD Programmes Abroad

One of the strategies adopted by the Government of Rwanda to increase the number of academic staff with doctorate degrees in higher learning institutions has been to send some of its academic staff members abroad to pursue doctorate programmes. To this end the government has worked with bilateral and multilateral partners. The following table summarises the number of students who were sent abroad to do PhD courses from 2011 to 2013.

Table 7.2: Numbers of Government-Sponsored Students Following PhD Programmes Abroad

Year	Male	Female	Total	%
2011–2012	42	8	50	6.6
2012–2013	85	5	90	8.2

Source: Education Statistical Yearbook (2012 & 2013); UR- College of Science and Technology (CRPGS) (2014)

In 2011–2012 the total number of sponsored students studying abroad was 758, so that students who were doing PhD programmes abroad accounted for 6.6

percent of all Rwandan students under Government sponsorship abroad. The same statistic in 2012–2013 was 8.2 percent, where the total number of Rwandan students studying abroad was 1091.

Sponsoring Rwandan students to follow their doctoral studies abroad is in line with the Government Education Sector Policy that was passed in 2003. According to this policy, higher education should not continue to rely on expatriate lecturers. It should rely on local staff for cost effectiveness and efficiency purposes. In this context, the Government of Rwanda decided to enhance its staff development programme by sending a number of young graduates overseas to obtain their PhDs and eventually replace foreign lecturers. At this time the Government was also planning to initiate postgraduate programmes at Master's and PhD level, so as to produce its own university professors and highly qualified executive personnel (UR-CRPGS, 2015).

c. PhD Students Enrolled in Local Universities from 2013

Another strategy that the Government of Rwanda adopted to increase the number of academic staff with doctorate degrees was to initiate doctorate programmes. This was intended to allow staff members to receive an education without leaving their workplaces. The following table summarises the statistics on PhD enrolment in local universities.

Table 7.3: Numbers of PhD Enrolment in Local Universities (2013–2015)

Year	Male	Female	Total	%
2013	10	2	12	0.01
2014	60	18	78	0.1
2015	138	31	169	0.2

Source: Education Statistical Yearbook (2013, 2014, 2015)

In 2013 the total number of students in local HLIs was 84,448, and the proportion of students who were doing PhD programmes was 0.01 percent. In 2014 this percentage had increased to 0.1 percent of the total number of students, which was 87,013. As the government continued to support this initiative, this number increased again to 0.2 percent in 2015. In this year the total number of students in Rwandan HLIs was 86,315, with those doing PhDs accounting for 169 of these.

d. Quality of Doctoral Education Programmes in Rwanda

As far as the quality of doctoral education programmes in Rwanda is concerned, it is worth mentioning that the doctoral education programme is not independent of the umbrella of the higher education subsector. That is, the newly introduced doctoral education programmes in Rwanda follow the existing Rwanda National Qualification Framework for Higher Education. The Higher Education Council

(HEC), formerly called the National Council for Higher Education (NCHE), is responsible for monitoring and evaluating quality and standards, and ensuring the quality and enhancement of teaching and research (JKUAT, 2016).

Similarly, the Higher Education Council (HEC) has responsibility to set norms and standards for accrediting private higher learning institutions and monitor adherence to norms and standards in higher learning institutions. Therefore, the HEC is responsible for ensuring that higher learning institutions meet infrastructure requirements before authorising them to start offering programmes. This applies not only to Bachelor's and Master's degrees, but also to institutions offering PhD programmes.

e. The Funding of Doctoral Education in Rwanda

Doctoral education at the University of Rwanda, which is the only public institution running this programme, is mainly sponsored by the government and international cooperation agencies such the Swedish International Development Agency (SIDA) (UR-CRPGS, 2014 & 2015). In private universities the majority of PhD students are self-sponsored. It should be noted that only two foreign private universities with branches in Rwanda are licensed to run PhD programmes in the country; these are Mount Kenya University (MKU) and the Jomo Kenyatta University of Agriculture and Technology (JKUAT). Tuition fees to complete a PhD course at these universities vary between RWF 6,600,000 and RWF 4,500,000, depending on the area of specialisation (JKUAT, 2016).

Since doctorate education is expensive and its cost puts it above the purchasing power of many Rwandese, the Government of Rwanda and its partners provide different kinds of funding and support for PhD students undertaking their studies in local universities or abroad. Table 7.4 summarises these different forms of support, as well as the amounts provided to PhD students.

Table 7.4: Estimated Amount and Forms of Support Provided to PhD Students

Type of support	Amount		
	Local	Overseas	Observation
Tuition fees	6,000,000 RWF (7,500 USD)	20,000 USD and below	The amount varies depending on area of specialisation or country
Living allowance	Data not available	475 USD and above	The amounts differ depending on countries, because of different rates in accordance with the cost of living
Research fees	1,400 USD	1,400 USD and above	The amounts vary depending on the nature of research
Air ticket	Not applicable	Amount varies depending on country of destination	A two-way ticket is provided to come to Rwanda and return home upon completion, or in the case of attending the burial of the student's biological parent, son, daughter, wife or husband

Source: Authors

2. Challenges Facing Doctoral Education in Rwanda

The government of Rwanda has shown a strong commitment to boosting doctoral education, an area that was not given priority in the past. Over the last decade a strong government commitment to higher education has brought significant changes in all spheres of education. Therefore, it is impossible to say something about PhD programmes without viewing this area in the context of the whole higher education subsector. The major achievements of education in general and of higher education in particular have been influenced by a number of factors, as identified in the Higher Education Policy. These factors are as follows: (1) a strong government commitment to higher education, (2) the establishment of public private partnerships, and (3) the establishment of strong Government agencies (MINEDUC, 2008) and a strong and sustainable system for higher education student finance. It is also important to mention that the constraints of the labour market are another factor that has pushed universities to invest in doctoral education.

Despite these achievements, doctoral education in Rwanda continues to experience a number of challenges. Key among these are: low access to higher education, gender imbalance, insufficient funding, donors' prioritisation, low professional and academic development, low research development among academic staff, low academic quality of the higher education system, and inadequate infrastructure and equipment (MINEDUC, 2008). Beyond these, it is also impossible to ignore the fact that doctoral education programmes in Rwanda, as in many other sub-Saharan countries, are facing a low commitment to research and a lack of funds that make it impossible for young Master's degree holders to join programmes unless they have a job or are fully funded.

3. Implications of Policies in Facing Challenges

The implications of the policy level in addressing the challenges listed above are not limited to formulating well-written policies and law. They also involve establishing active mechanisms for making policy documents into influential tools that are dynamically used, monitored and evaluated, with clear measurements leading to the enhancement and promotion of a strong doctoral education system.

Policies and laws have already been put in place to make sure the higher education subsector, including doctoral education, is well managed. Existing legislation and policies include the higher education policy and higher education law, the Ministerial Order determining the conditions for granting accreditation to a private institution of higher learning, upgrading the level of teaching, opening colleges, schools, faculties and affiliated research institutes, the law establishing the University of Rwanda (UR) and determining its mission, powers, organisation and functioning, the law establishing the Higher Education Council and determining its responsibilities, organisation and functioning, and the ministerial instructions governing research in Rwanda. These policy instruments all show that there is strong political will to bridge the historical gaps that

existed for a long time in the higher education sector in general and in doctoral education in particular.

However, more efforts need to be made by those engaged in the knowledge sector to make sure that existing policies, laws and institutions are really addressing the identified challenges. The major responsibility of all stakeholders in the education sector is to contribute to mechanisms intended to transform the knowledge of Rwandans into long-term investment capital, promoting the research domain through strong doctoral education programmes.

CONCLUSION

Rwanda is certainly committed to develop a knowledge-based economy as a way to become a middle-income country. Strengthening the education sector at all levels and putting particular emphasis on increasing public awareness of doctoral education will be an important strategy for bridging the gaps caused by historical neglect that characterise the sector in general and doctoral education in particular.

As stated by researchers, if they can be more effectively put to work to enhance the knowledge-based economy, doctoral students are the potential backbone of all research programmes. As such, they are instrumental in the discovery and implementation of new knowledge (Boud & Tennant, 2006; Jones, 2013). Therefore, this is an ideal time for the Government of Rwanda and its partners to improve the outcomes from research activity and transform them into a cornerstone of the knowledge economy, which will contribute to all areas of Rwandan society. This will attract more people to join the doctoral education programmes already in place, as well as encourage public and private investors to increase the number of such programmes in Rwanda.

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TANZANIA

A Critical Analysis of the State of Doctoral Education in Tanzania

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Photo: University of Dar es Salaam

INTRODUCTION

Thomson and Walker (2010) asserted that in the contemporary world, a wide range of practitioners in diverse professional settings have shown the desire to study beyond Master's level. The decision to undertake doctoral education is no longer driven solely by dreams of becoming a career academic. Individuals are making investments to boost their workplace careers and their lives. In addition, education, knowledge production and the knowledge society are regarded as an essential engine of development by new theories of economic growth (Thomson & Walker, 2010). Doctoral scholars have the potential to contribute to economic growth and social development by creatively generating new knowledge, critically conserving valuable and useful ideas, and responsibly transforming those understandings through writing, teaching and application (Golde, 2006).

It is important to note that in developing countries such as Tanzania, doctoral education is mainly undertaken by university academics. Given that the higher education sector has witnessed exponential growth since the start of the new millennium, the demand for academic staff, particularly those with PhDs, has fallen short of the supply in the sector. This situation and other related factors have resulted in a unique style of doctoral education which is different from that in other developed countries. This has also been noted by Harle (2013), who argued that being a doctoral student in Africa is likely to mean something quite different to being a doctoral student in Europe. In Africa, doctoral researchers are often already employed as members of academic university staff, they undertake doctoral work part-time or in their own time, and their age profile is typically older than among European doctoral students. Therefore, this chapter represents an attempt to critically analyse the doctoral education provision in Tanzania. The analysis revolves around the current situation, strengths and weaknesses, and how policy can address doctoral education challenges.

THE CURRENT STATE OF DOCTORAL EDUCATION IN TANZANIA

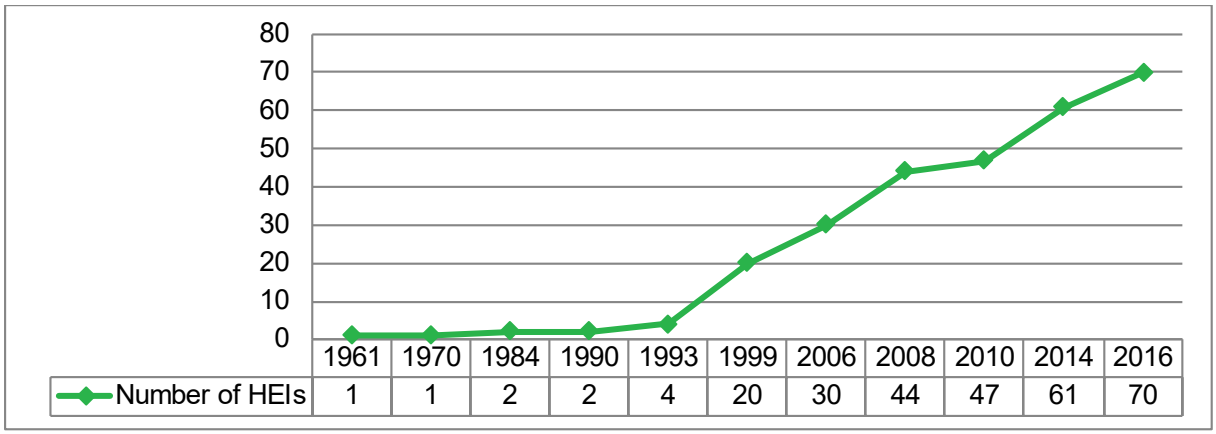
Although it has been present for some decades, the provision of doctoral education in Tanzania is mainly focused on preparing university academics. Therefore, the demand for doctoral education is influenced by the demand for university academics in various fields. As a result, the current provision of doctoral education aims at meeting the high demands of the sector due to the exponential growth of higher education in Tanzania. In the next section, we analyse the state of higher education in the country.

1. An Overview of Higher Education in Tanzania and the Need for Doctoral Education

At the advent of the new millennium, the higher education (hereafter HE) sector began to expand exponentially in Tanzania. Figure 8.1 below shows the developmental trend in terms of the increase in the number of higher education institutions (hereafter HEIs) in the country. From the figure we see the increase in HEIs from four institutions in 1993 to twenty institutions in 1999. The number has increased again by a factor of three by the year 2014, with sixty-one institutions. The liberalisation of HE in the mid-1990s had

an important impact on the increase in numbers of HEIs and student enrolments. In addition, the promulgation of the National Higher Education Policy (hereafter NHEP) in 1999 (United Republic of Tanzania [hereafter URT], 1999) also fuelled the expansion of HE in the country. To encourage the establishment of new universities, the policy states: "The establishment of private and public higher education institutions shall be encouraged and assisted by the government" (p. 11). To achieve that, the policy strategically envisioned an Act to guide the establishment of public[2] and private[3] HEIs, and invite private providers. The role of the state in policy is to provide supervision, regulation, guidance and incentives for HEIs. In addition, since the State officially withdrew from being the major financier of higher education, and private financing was legalised and encouraged through this policy, HE started to become a viable investment area for private firms. With this policy framework in place, new universities, both public and private, started to emerge.

Figure 8.1: Growth of HEIs (1961–2016)



	1961	1970	1984	1990	1993	1999	2006	2008	2010	2014	2016
Number of HEIs	1	1	2	2	4	20	30	44	47	61	70

Sources: Msolla (n.d.); URT (1999); Tanzania Commission for Universities (TCU) (2005, 2010, 2016)

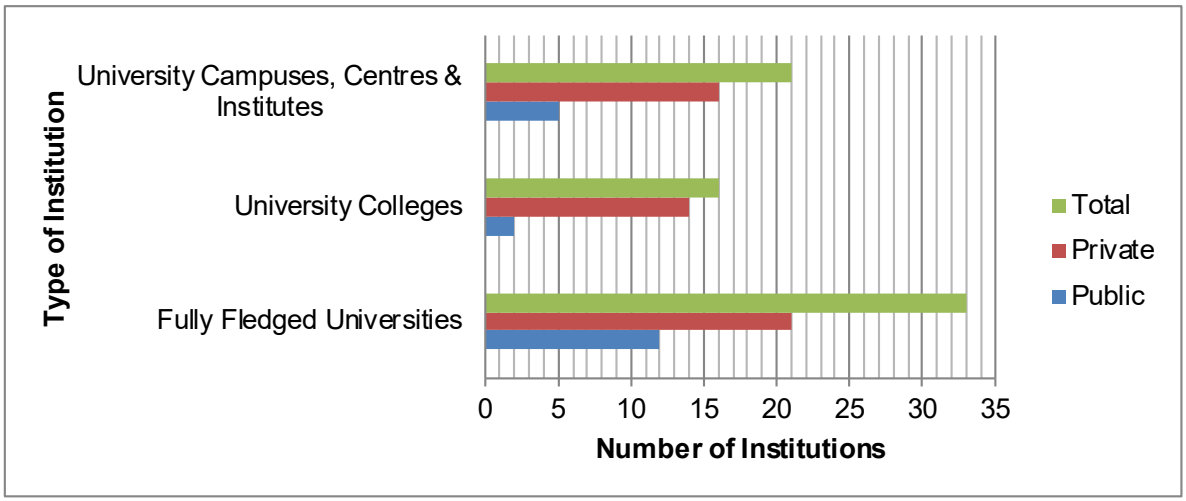
The expansion received more impetus with the new government under H.E. President J.M. Kikwete, who came to power in 2005. He emphasised the HE expansion, and under his leadership existing universities were expanded and new ones were built. Enrolment in both public and private HEIs increased from 19,644 in the 2001/2002 academic year to 204,175 in 2012/2013 (see Figure 8.3). Public universities and colleges have been accommodating the largest number of students in the country. In 2001/2002 there were 18,775 students in public universities (95.6 percent of the total). Enrolment at public universities increased exponentially between 2001/2 and 2006/7, and between 2006/7 and 2009/2010 (Tanzania Commission for Universities [hereafter TCU], 2010; Southern African Regional Universities Association, 2009; Abeli, 2010; URT, 2013).

[2] The term public university/HEI is used synonymously with government university/HEI to mean a HEI owned by the government/state and funded publically through taxes.

[3] The term private university/HEI is used synonymously with non-government university/HEI to mean a university privately owned and funded by individuals and private organisations.

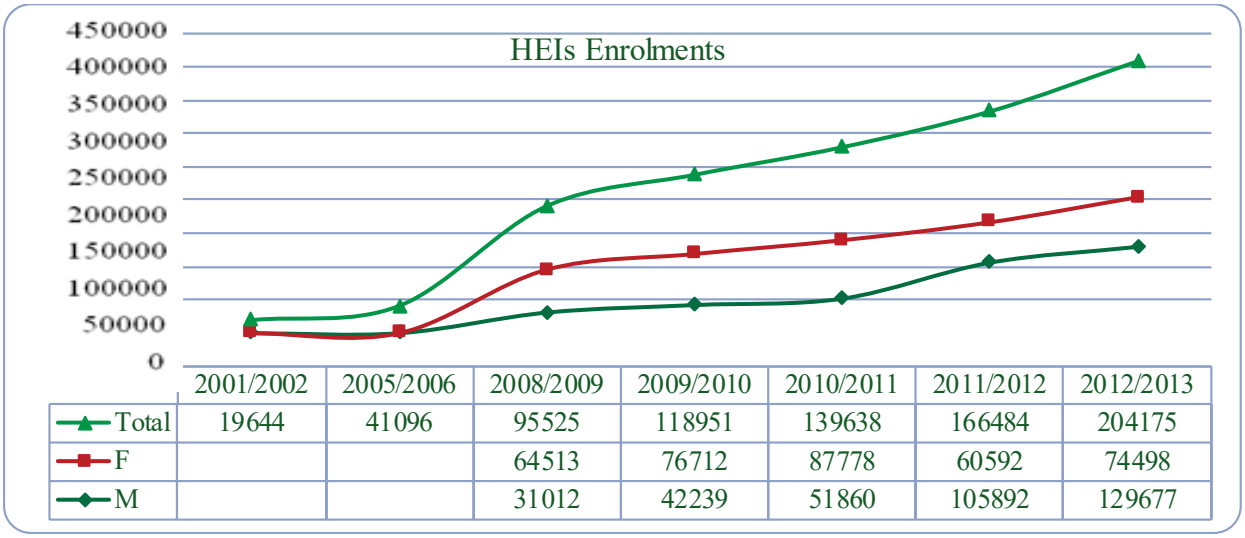
Despite the fact that private universities outnumber public universities, their enrolment is still low compared to public universities (see Figure 8.2). Enrolment at private universities has grown nine-fold from 2001/2002 to 2006, noting that in 1996 when the first private institution, Tumaini University, was launched, there were only five private university students in the country. For instance, in 2006/2007 they enrolled 10,749 (21.5 percent) of the total student population. In 2009/2010 the overall student enrolment in private universities and colleges mounted to 32,340 (27.6 percent) of the total student population.

Figure 8.2: Number of Public and Private HEIs in Tanzania



Source: TCU (2016)

Figure 8.3: HEI Enrolment Trend Between 2001/2002 and 2012/2013



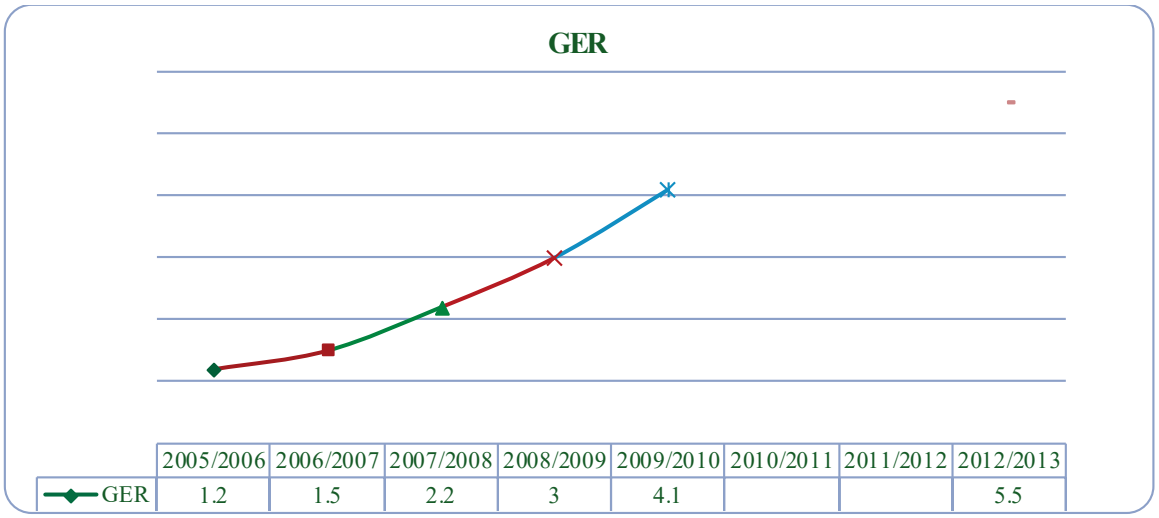
	2001/2002	2005/2006	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
Total	19644	41096	95525	118951	139638	166484	204175
F			64513	76712	87778	60592	74498
M			31012	42239	51860	105892	129677

Source: TCU (2010), Southern African Regional Universities Association (2009) and URT (2013).

Note: Disaggregated data (Males & Females) for 2001/2002 and 2005/2006 are not available

The Gross Enrolments Ratio (hereafter GER) has increased significantly over the past few years, rising from 1.22 percent in 2005/06 to 5.5 percent in 2012/2013. Figure 8.4 illustrates this trend. However, in 2012/13 the majority of students enrolled in HEIs were males (65.1 percent) (URT, 2013). This may be observed from the GERs of 7.9 percent and 3.5 percent for males and females respectively. The total enrolment in higher learning institutions is still low compared to theoretical student age population of 20–23 years old (URT, 2013).

Figure 8.4: GER Between the 2005/2006 and 2012/2013 Academic Years in Tanzanian HEIs

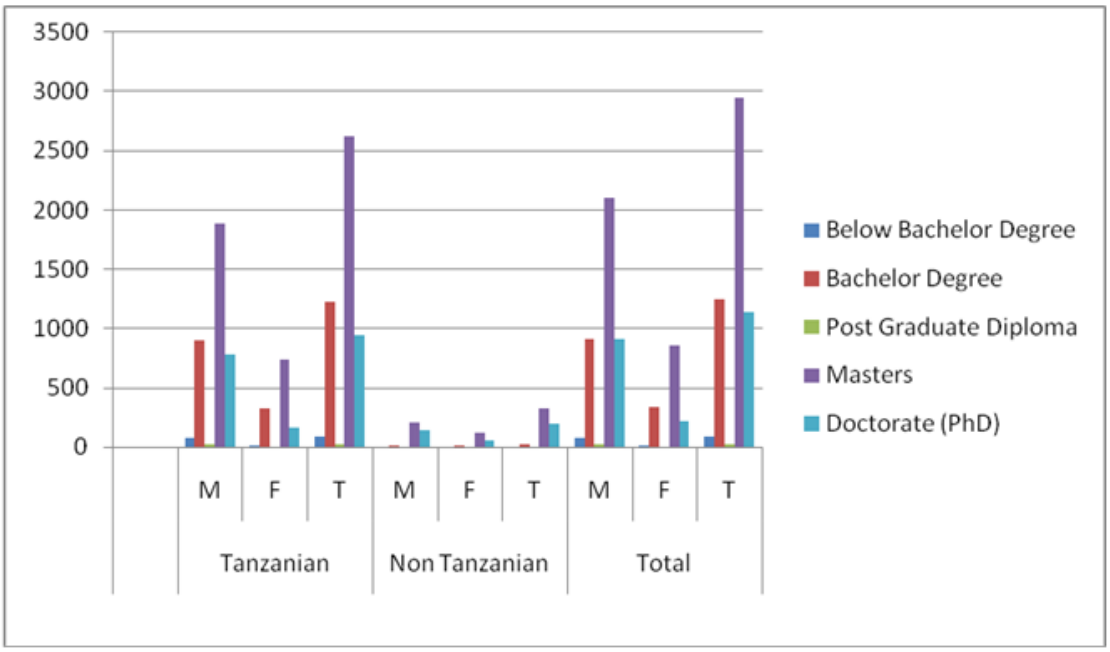


Source: URT (2013)

Note: Missing data for 2010/2011 and 2011/2012 academic years

However, this massive expansion in the last two decades outpaced academic staff preparation in both public and private universities. With the resulting academic staff crisis, institutions have been relying mainly on retired professors and inexperienced and underqualified lecturers (Magosho, 2015). Figure 8.5 indicates the statistics for academic staff in both public and non-public universities and their qualifications. From the figure, it is evident that university academic staff posts are mainly filled with Master's and Bachelor degree holders, while academics with doctorates are relatively few. In addition, the reported enrolment of 204,175 students compared to the 5441 available academic staff in the country result in an average student-teacher ratio of 37.5:1 (URT, 2013).

Figure 8.5: Academic Staff in Government and Non-government Universities and University Colleges by Qualification, Nationality and Gender (2012/2013)



Source: URT (2013)

The demand for academics with doctoral education in the country has been huge, resulting in calls for universities to train their staff either domestically or abroad. Universities all around the globe, and in Tanzania in particular, have grown rapidly in recent years. A number of new programmes and courses have started, based on the demands of the job market. In addition, there has been a speedy development of higher learning institutions and subsequent enrolments in Tanzania. These reasons, together with other causes, have led to an increasing demand for university lecturers who are PhD holders (Magosho, 2015). Harle (2013) also argues that there has been a great demand for new cohorts of research and teaching staff in African universities, including Tanzanian universities.

In Africa, and in Tanzania in particular, ongoing brain drain has been a huge problem since the 1980s, and it has affected the country to a large extent because part of the "cream", students who go abroad for their PhD studies, do not return back home (Magosho, 2015). Many of Tanzania's most talented and educated people leave the continent in search of better jobs and, proverbially, greener pastures. For example, people with PhDs, particularly lecturers in universities, leave the country in great numbers every calendar year. They depart because of the very low salaries they receive, poor working conditions, a lack of career development opportunities and other reasons. For instance, the University of Dar es Salaam lost twenty-seven of its PhD holders between 2000 and 2007.

2. Policy frameworks for doctoral education in Tanzania

Independent policy frameworks for doctoral education are not available in Tanzania because doctoral education is a small segment within the higher education sector, and it has not been given high priority in national development agendas since independence in 1961. Instead, doctoral education has been incorporated in other educational and cross-sector policies. Although a number of government documents (general and sector policies) include some statements about doctoral education, whether implicitly or explicitly, there are two major higher education policy documents that have significantly contributed to the current state of doctoral education in the country. These are the National Higher Education Policy (NHEP) (1999) and the Higher Education Development Programme (HEDP) (2010). The HEDP was a five-year sectorial programme (2010–2015) aimed at achieving the national higher education goals stipulated in the NHEP and other national development plans. [4]

The quality and relevance of HE was given priority in both policy statements. In particular, the HEDP admitted that the increased number of students and higher learning institutions, staff turnover and a high number of skilled staff retiring has lately resulted in increased demands for more teaching staff (URT, 2010). The demand for more teaching staff calls for enhancement of the quality and quantity of doctoral education, due to the fact that "University teaching requires doctoral level training and research experience" (ibid., p. 26). The policy emphasises that the enrolment of postgraduate students is crucial as they are the ones expected to do research and take up teaching assignments in both public and private universities after graduating. The target of the HEDP was to increase the proportion of postgraduate students in selected universities to between 30 percent and 40 percent by 2015 (p. 28). To achieve this plan to consolidate postgraduate studies, the HEDP envisioned the establishment of a staff development fund. However, there is no evidence of the operationalisation of such a goal, or the achievement of the target of between 30 percent and 40 percent of postgraduate students in selected universities.

In addition, the most recent Education and Training Policy (URT, 2014) recognised the deficit in the numbers of academics in the country, which in turn affects the quality of higher education. Citing statistics from Basic Education Statistics in Tanzania (BEST) (URT, 2012) which indicate a deficit of 2,115 university academics countrywide by 2013, the policy emphasises the need to improve working conditions in higher education to encourage young talented individuals to join and remain in academic careers. However, the policy doesn't specify how these young talents will be developed to doctoral level.

[4] *It is recognised that the higher education sector cuts across all socio-economic groups. Therefore, all policies in any socio-economic sector will have implications for higher education and doctoral education in particular. A few national policies and strategies which have clear, direct and immediate implications for higher education include: the Public Service Reform Programme [PSRP] (1998); the Tanzania Development Vision 2025 (1998); the National Science and Technology Policy (1986); the National Research and Innovation Policy (2007); the National Information and Communication Technology Policy [NICTP] (2006); Poverty Eradication Policies (2004); the Education Sector Development Programme (2008); and the Education and Training Policy (2014).*

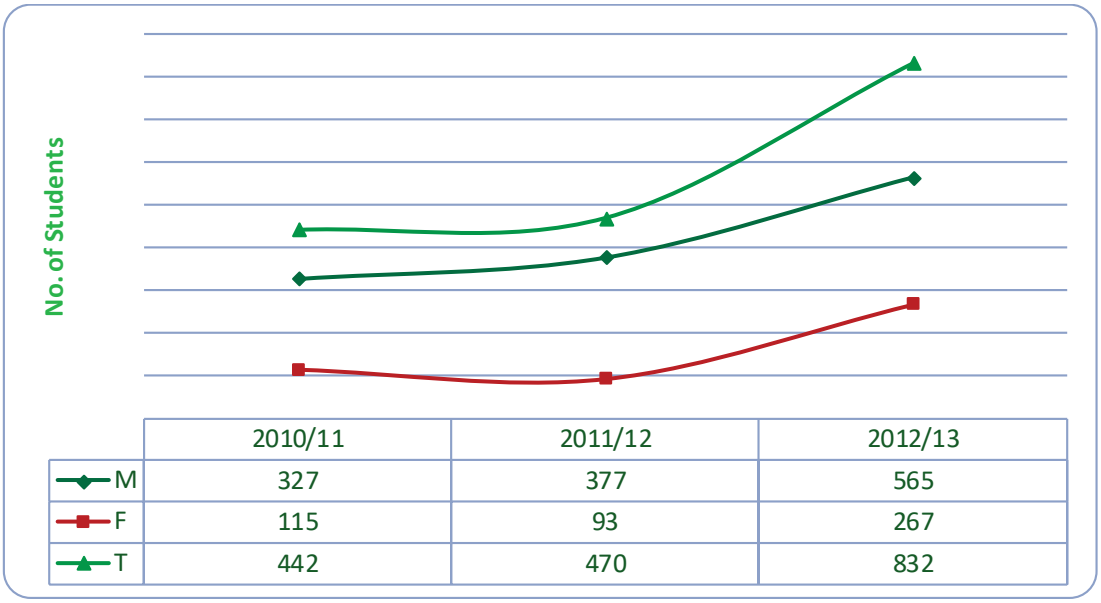
Generally, although the policy envisions improving human resources in the country through HE and training, doctoral education has not been given explicit priority.

From the policy perspective, as we have discussed in this section, it is plausible to argue that doctoral education has been neglected in Tanzanian policy discourses despite being critical for improving HE in the country. Almost all the policies surrounding education, and HE in particular, talk about improving higher education, but less attention is given to doctoral education.

3. Doctoral candidate enrolment in government and non-government universities and university colleges

The enrolment of doctoral candidates in Tanzania has been low compared to the demand for doctorally qualified academics. By 2013 the total enrolment of doctoral students was 832 in only 12 higher education institutions (URT, 2012). This was almost a doubling in enrolment compared with the figure reported in the previous year (470; URT, 2012). From Figure 8.6, it may be seen that enrolments almost doubled between the 2010/11 and 2012/13 academic years. This sharp increase indicates stakeholders' commitment to increasing the numbers of doctoral graduates in the country. As we have noted before, the high demand for doctoral graduates in both public and private universities has catalysed the increase.

Figure 8.6: Doctoral Student Enrolment Trend (2010–2013)

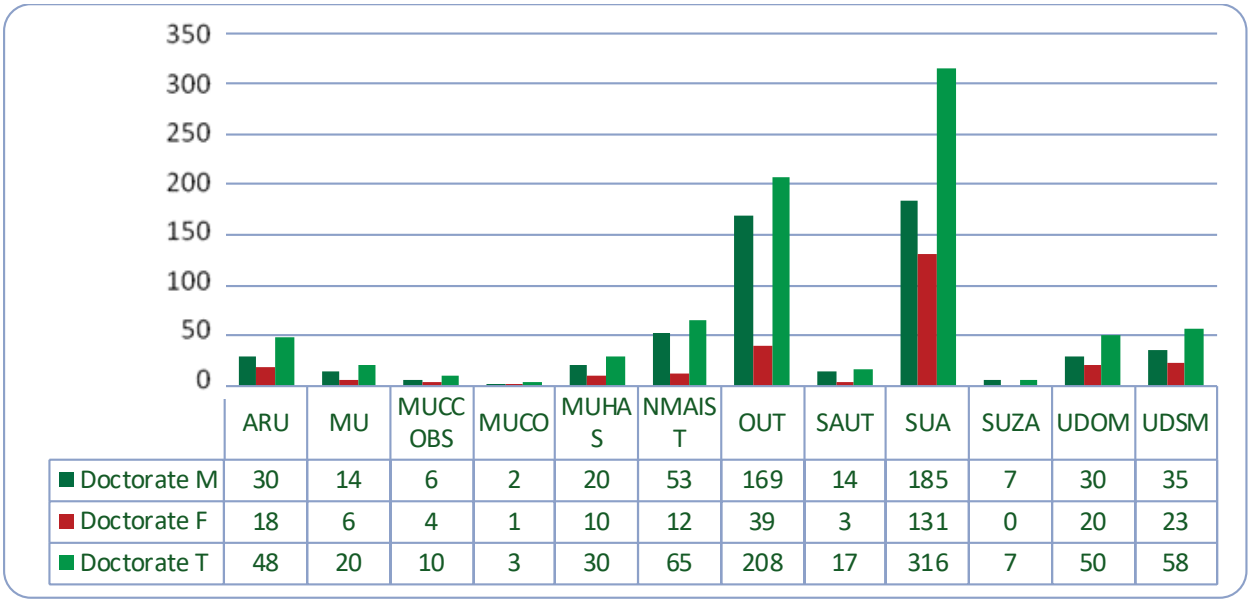


	2010/11	2011/12	2012/13
M	327	377	565
F	115	93	267
T	442	470	832

Source: URT (2012, 2013)

Figure 8.7 indicates doctoral candidate enrolment by university. The majority of candidates (97.6 percent) were enrolled in public universities. The majority of HEIs, particularly private ones, don't offer postgraduate programmes, and this makes their contribution to the provision of higher education, particularly at PhD level, minimal.

Figure 8.7: Doctoral Candidate Enrolment by University (2012/2013)

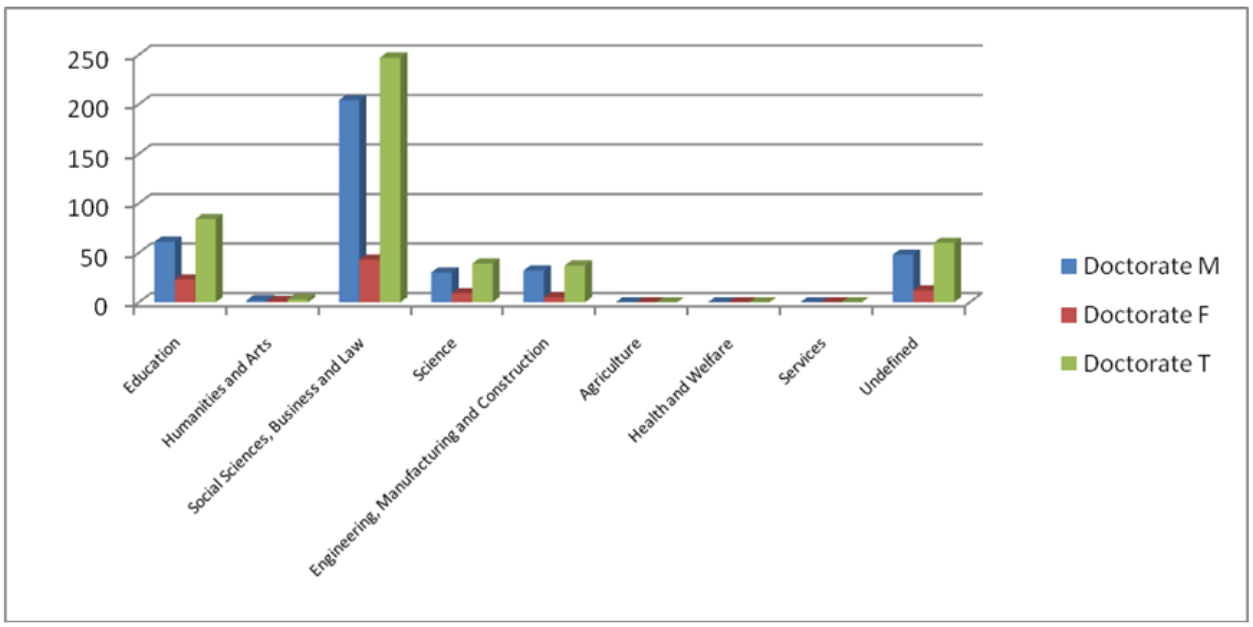


	ARU	MU	MUCCOBS	MUCO	MUHAS	NMAIST	OUT	SAUT	SUA	SUZA	UDOM	UDSM
Doctorate M	30	14	6	2	20	53	169	14	185	7	30	35
Doctorate F	18	6	4	1	10	12	39	3	131	0	20	23
Doctorate T	48	20	10	3	30	65	208	17	316	7	50	58

Source: URT (2012, 2013)

Moreover, enrolment has been uneven across disciplines and genders. More doctoral students come from the social sciences, while the health sciences, natural sciences, agriculture, service industry and engineering sectors enrol lower numbers of doctoral students. In addition, doctoral education is male-dominated, with a large proportion of students in all disciplines being males. For instance, in the 2011/12 academic year the majority of doctoral students in the country were pursuing Social Science, Business and Law programmes, and almost 80 percent of all the students were male. Figure 8.8 clearly portrays the distribution of doctoral students by discipline and gender for the 2011/12 academic year.

Figure 8.8: Distribution of Doctoral Students by Discipline and Gender



Source: URT (2012, 2013)

4. Financing doctoral education

Hörig (2012) argued that especially from the support perspective, doctoral education in Africa is facing the challenge of increasing student numbers while also ensuring quality and sustainability. There are different models for financing doctoral education in Tanzania. Common financing models for doctoral students are university/campus grants, state grants/loans, and grants from international governmental and non-governmental organisations, as well as contributions from borrowing, work/employers, family and personal savings.

It is worth noting that university/campus grants are seldom available as many universities struggle with financial matters. This has been witnessed in many universities in Tanzania. For example, the Nelson Mandela African Institute of Science and Technology (hereafter NMAIST), a research-intensive public institution for postgraduate and post-doctoral study and research in science, engineering and technology, does not offer scholarships for its graduate students (NMAIST, 2016). As a result, doctoral students are obliged to find scholarships from elsewhere.

The government supports doctoral students through the Higher Education Student Loans Board (hereafter HESLB), specifically targeting employees/academics from public universities pursuing doctoral studies in Tanzania. The provided loans are guaranteed, and are to be repaid by the institutions where the candidate is tenured. The scheme was designed to help public universities finance their staff development activities, especially for Master's and doctoral degrees. From the 2013/2014 academic year the

HESLB started to sponsor a limited number of doctoral students from private universities with the same goal of helping private universities to develop their academic staff.

International organisations, both governmental and nongovernmental, have been instrumental in supporting doctoral education in Tanzania. Through various scholarship schemes, doctoral students have been able to pursue their degrees. Tanzanian universities have been developing partnership projects with universities and development agencies in developed countries, through which they acquire grants for doctoral students in either sandwich or traditional study schemes. For instance, a number of universities in the country have developed collaborative programmes with the German Academic Exchange Service, or DAAD,[5] to provide "In-Country/In-Region Scholarships for Postgraduates" (German Academic Exchange Service, 2016). DAAD provides scholarships for doctoral students in a diverse field ranging from science, engineering, and technology to the social sciences and law.[6] Other typical examples of collaborative projects are those of the Department for International Development (UK) (DFID),[7] the Danish International Development Agency (DANIDA),[8] SIDA[9] and the Tanzanian universities mainly targeting academic and research staff development at Master's and PhD levels. For instance, in collaboration with the Royal Society the DfID is currently funding the Royal Society – DFID Africa Capacity Building initiative for the period 2016–2021. The project is led by a consortium of partner institutions in the United Kingdom and sub-Saharan Africa, including: the Universities of Bristol and Leeds, UK; the University of Kinshasa, Democratic Republic of the Congo (DRC); the University of Dar es Salaam, Tanzania; and Rhodes University, South Africa. In addition, DANIDA is currently funding a project entitled New Partnerships for Sustainability (NEPSUS).[10] In this project the lead institution, Copenhagen Business School, leads research projects and provides doctoral education support with partner institutions in Tanzania and other

[5] DAAD is the German national agency for the support of international academic cooperation, and offers programmes and funding for students, faculty, researchers and others in higher education. They also represent the German higher education system abroad, promoting Germany as an academic and research destination and helping to build links between institutions around the world.

[6] More information about DAAD scholarships and the programme's involvement in Tanzania and Africa in general can be found at http://nairobi.daad.de/en/

[7] The UK Department for International Development (DfID) is the official development agency of the UK Government managing aid for poor and developing countries.

[8] The Danish International Development Agency (DANIDA) is the official development cooperation agency of the Government of Denmark under the Danish Ministry of Foreign Affairs. Examples of PhD fellowships funded by DANIDA which are jointly organised by the UDSM in collaboration with Copenhagen Business School can be retrieved from https://www.udsm.ac.tz/node/652

[9] The Swedish International Development Cooperation Agency is a government agency of the Swedish Ministry for Foreign Affairs. Example of SIDA-funded PhD positions which are jointly organised by the UDSM and the Swedish University of Agricultural Sciences (SLU) and Uppsala University can be retrieved from https://www.udsm.ac.tz/sites/default/files/PhD%20Scholarships%20Announcement%20-%20Engendering%20Agribusiness%20Entrepreneurship.pdf, https://www.udsm.ac.tz/sites/default/files/Advertisement%20December.%202015-1.pdf and https://www.udsm.ac.tz/sites/default/files/PhD%20position%20in%20Mycological%20Sciences.pdf

[10] Project details are found at http://drp.dfcentre.com/project/new-partnerships-sustainability-nepsus and https://www.udsm.ac.tz/node/653

countries. Partner institutions in Tanzania where academic and research staff benefit from this project are the University of Dar es Salaam, the Nelson Mandela Institute for Science and Technology, and the University of Dodoma.

Apart from the doctoral financing schemes discussed above, which mainly target public universities and their academic and research staff, a sizable number of doctoral students finance their doctoral education through partial employer support (including borrowing) and contributions from family and personal savings. The majority of these students are either from private universities or are working in non-academic and research organisations. It is difficult for them to get scholarships because most of those grants target public universities and research institutes.

STRENGTHS AND CHALLENGES

Although the provision of doctoral education in Tanzania boasts some strengths, it also suffers from a number of challenges. Strengths include a well-established academic culture in some universities, and a high demand for doctoral education in the country. On the other hand, the challenges that face the provision of doctoral education in Tanzania include inadequate policy support for doctoral education, aging senior academics, limited internal doctoral education funding and the question of north-driven support, inadequate preparation of doctoral candidates to undertake research activities, poor infrastructural support, ineffective progress-follow up mechanisms, and social science- and male-dominated doctoral education.

1. Strengths

a. Well established academic culture in some universities

The provision of doctoral education requires a university to have experience in academic career management, and to have competent senior academics, even if only a few. Some of the universities in Tanzania, such as the University of Dar es Salaam (UDSM), Sokoine University of Agriculture (SUA), Muhimbili University of Health and Allied Sciences (MUHAS), Ardhi University (ARU), and the Open University of Tanzania (OUT), have at least two decades of experience in the provision of doctoral education. These universities employ experienced senior academics, albeit few in number, who can professionally mentor doctoral students. These senior academics need maximum support from universities, students and other stakeholders, especially doctoral education funders, for them to engage fully in doctoral mentoring practices. Low remuneration paid to supervisors and the exclusion of "supervision" in the list of promotion criteria has contributed significantly to the side-lining of doctoral supervision. It has been a tendency in almost all universities not to include doctoral supervision duties in promotion criteria, and at the same time the payments offered for doctoral supervision are not motivating. For instance, at the UDSM, which is the most

highly regarded university in Tanzania, a supervisor is paid 160 US dollars a year for supervising a student. This is too low compared to the hard work involved.

b. High demand for doctoral education

The success of doctoral education depends critically on the quality of the candidates. In recent years higher education in Tanzania has grown steadily, creating a pool of potential candidates for doctoral education. There have been many and diverse undergraduate and Master's programmes created in the past decade, and many of their graduates may wish to continue in doctoral education. At the same time, the proliferation of universities, both public and private, has raised the demand for doctoral level academics. As a result, the demand for doctoral education will persist as universities try to strengthen their academic departments.

2. Challenges

a. Inadequate policy support for doctoral education

Doctoral education in Tanzania has been provided mainly with the support of the country's Education and Training policies of 1995 and 2014 (URT, 1995; 2014), the NHEP (URT, 1999), and the HEDP (URT, 2010). All these are general educational policies, and none of them pay much attention to doctoral education. When it comes to HE, there has been a good deal of focus on undergraduate university education. Even the specific policies for higher education, the NHEP and HEDP, say little about doctoral education. Although these policies envision the improvement of HE and undergraduate education in particular, less emphasis is placed on the improvement of doctoral education, which should be a core strategy for improving higher education. In policy and planning discourses about higher education doctoral education is not given a central focus, although policy makers and planners recognise the poor quality of HE, which is partly due to the many universities in the country without enough lecturers with PhDs. For instance, although the recent Education and Training Policy of 2014 (URT, 2014) acknowledged the deficit of more than 2000 academics in the country's HE system in 2013, nothing was stated about strengthening the doctoral education system to help fill this gap. In such a context, it is clear that there are no deliberate policy efforts at state level to support doctoral education. As a result, doctoral education is mainly supported and regulated by independent universities without policy backing.

b. Ageing senior academics

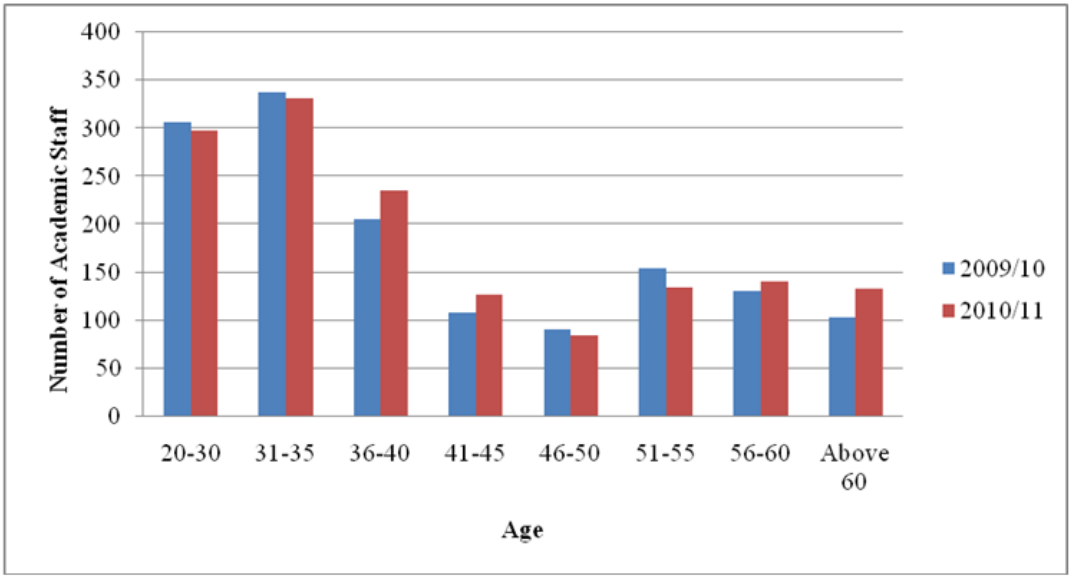
The Tanzanian higher education, and academe in particular, has recently found itself in a situation where large numbers of academics are either in the early stages of their careers, or are approaching retirement. Those who are in the early

stages of their academic careers are mostly below forty years of age and have Bachelor's and Master's degrees, and the majority will be in their late forties when they finish their PhD. On the other hand, the retirement age for public servants is sixty years of age. Most senior academics in the country are around this age. Between these early and late career stages, the number of academics is minimal due to a number of factors including the frozen employment policy of the 1980s and 1990s (Abeli, 2010; Msolla, n.d.). Professor Abeli, the former Director of HE in the Ministry of Education and Vocational Training (MoEVT)-Tanzania, argued:

> Due to the freezing of employment in all public sectors between the late 1980s and the early 2000s, most of the universities are now experiencing a big gap between newly recruited young staff and aging senior staff. Most of the senior staff (over 80%) are over 50 years, and in some institutions like the UDSM, over 70% of their full Professors are on contracts after retirement. (p.18)

For instance, the UDSM, the oldest and most eminent state university, has experienced this ageing staff phenomenon. Figure 8.9 clearly demonstrates the age profile of academic staff at the UDSM between 2009 and 2011. The data includes academic staff from the UDSM's three major campuses: Mwl. J.K. Nyerere Mlimani Campus, Dar es Salaam University College of Education (DUCE), and Mkwawa University College of Education (MUCE). The age group above sixty years constitutes retired contracted professors who are potential doctoral students' mentors.

Figure 8.9: UDSM Academic Staff by Age (2009/2010–2010/2011)



Source: UDSM (2015)

c. Limited internal doctoral education funding and the question of north-driven support

Doctoral education requires substantial financial and other resource investment. Poor investment by universities, which are budget constrained, and the government, which has competing national priorities, has hindered the development of doctoral education in Tanzania. Limited funding for graduate education and doctoral training in particular has resulted in doctoral education being undertaken at an advanced age. After obtaining their Bachelor degrees, due to limited scholarship availability people have to look for jobs to fund themselves through graduate programmes. It may be several years before they are financially able to follow Master's and doctoral education. Related to this, Gaillard, Zink and Tullberg (2002) commented:

> Due to the lack of scholarships for postgraduate degrees and the prevailing terms of employment, academic degrees are awarded at a relatively advanced age. On average, a BSc degree is obtained at 28, an MSc degree at 33 and a PhD at 42. It is in fact rather common to meet Tanzanian scientists finishing their PhD training in their late 40s or early 50s. (p. 13)

This trend has had important consequences for doctoral student careers and universities. The students have limited time to progress in their career up to professorial levels, while universities are not able to employ academics of this level for very long before they retire. For instance, if an academic obtains a PhD in their late 40s, by the time he or she becomes a competent academic ready to effectively supervise doctoral students, he or she will be approaching retirement.

In addition, the loan schemes provided to employees of public universities undertaking doctoral education are not sufficient to cater for the needs of doctoral students, and they discriminate against others who wish to pursue doctoral education but are not employees of universities. As a result, there has been an over-dependency on support from international organisations and donor countries. Although this model has played a fundamental role in helping universities develop their staff, their support has always been north-driven, in the sense that those donors have priority areas and/or disciplines which may or may not reflect the priorities of the country and/or university involved in the project. Doctoral candidates, universities and the country have had little autonomy in deciding on priority areas of specialisation and doctoral research depending on personal interests, university requirements and national needs.

d. Inadequate preparation of doctoral candidates to undertake research activities

It is expected that doctoral students come to their programmes with a repertoire of knowledge and skills for doing research. These are often obtained through their

prior learning and working experiences. This is particularly important for doctoral programmes by dissertation, which are dominant in Tanzania. However, this is not always the case. Some students may come to programmes with inadequate research knowledge and skills, therefore requiring both structured and unstructured support. In terms of structured support, doctoral students need formal training in research methodology during their doctoral programmes. Such training may come from two sources: (i) coursework, and (ii) apprenticeships with and/or mentoring from faculty members (Cotner, Intrator, Kelemen & Sato, 2000). On the other hand, unstructured support refers to the strategies created by students to fill the gaps they feel their programmes have left in their methodological preparation. These creative moves may take different forms, such as finding allies among faculty members and knowledgeable others, creating support groups, supplementing coursework with readings, seeking research experience prior to undertaking doctoral research, and taking advantage of alternative training programmes in research methods. Doctoral education in Tanzania has limited support, either structured or unstructured, leading to some students either failing to complete or delaying their dissertations. Although we recognise the presence of multiple reasons for students not being able to complete their dissertations on time, methodological incompetence is clearly relevant. Recognising this challenge, the University of Dar es Salaam School of Education recently introduced a doctoral programme in education by coursework and dissertation. The same programme was previously offered by thesis alone. Besides, the provision of apprenticeships and mentoring by the faculty is limited. This has been evidenced by failure or delayed completion of doctoral programmes by many candidates. Limited numbers of senior academics has led to the few available being given many graduate students to supervise. It is common to find single supervisors with a minimum of seven or more postgraduate candidates at either Master's and/or PhD level. This tendency affects mentoring and close supervision since supervisors become overwhelmed.

e. Poor infrastructural support

To succeed in doctoral education, both students and faculty members need to work in a supportive environment in terms of infrastructure for academic activities such as reading, practical study and research. Most of the infrastructure that was built forty to fifty years ago now requires rehabilitation, and new buildings need to be constructed in order to accommodate the increased number of students and programmes (URT, 2010). Many universities in Tanzania have poor infrastructure, in particular lacking libraries and laboratories. Libraries have limited space, their catalogues may be restricted, and subscription to online resources may be limited or non-existent. Laboratories lack important and up-to-date practical equipment, chemicals and related facilities. Due to the unfriendly infrastructure students are left to either sink or swim on their own, and as a result the majority fail to complete their studies on time.

f. Ineffective progress follow-up mechanisms

Ineffective progress follow-up mechanisms constitute one of the critical challenges affecting doctoral studies in Tanzania. There is laxity in many universities in Tanzania in terms of monitoring student progress thoroughly. Once a student is assigned a supervisor, university administrations rarely if ever follow up on their progress unless a student or a supervisor reports his/her counterpart. This has had a significant effect on the fact that the majority of students fail to complete on time, since supervisors often ignore their students or deal with other business, knowing that no measures will be taken against them.

g. Social science and male-dominated doctoral education

Data presented previously in this chapter (Figures 8.7 and 8.8) have indicated that doctoral education is dominated by male students, and the majority of students undertake their doctoral education in the social sciences. This has implications for social and economic development. From the sociological perspective, the under-representation of women in doctoral education suggests the presence of either socio-cultural or economic reasons. This has been a trend not only in doctoral education, but also across the whole higher education system. Regarding the issue of social science domination in doctoral education, this has implications for the diversification of manpower to prepare for the country's growing economy. Under-representation in Science, Engineering and Technology means the country is preparing fewer experts in those areas, although the demand in the labour market is huge. The distribution is uneven across disciplines partly because the government supports doctoral education poorly, allowing non-governmental organisations to decide which areas to support depending on their interests.

HOW POLICY CAN ADDRESS DOCTORAL EDUCATION CHALLENGES

Barber and Mourshed (2007) argued that the quality of an educational system cannot exceed the quality of its teachers. Therefore, the quality of higher education cannot exceed the quality of its teaching staff. In Tanzania, a PhD is a mandatory requirement for someone to be a member of academic university staff. However, due to the shortage of people with PhDs in the country, universities are forced to recruit academics with Master's and Bachelor degrees, imposing the condition that they will further pursue their studies to PhD level. However, due to limited opportunities to undertake doctoral studies, academic staff members often work for a quite a long time without embarking on further studies. In addition, as we have argued elsewhere in this chapter, some of them pursue doctorates while they are in their forties. This has significant implications for universities, the country and the careers of those academics.

Policies aimed at improving HE cannot succeed if doctoral education is neglected; indeed, policy discourses on HE should put doctoral education centre-stage. Since HE in Tanzania has grown exponentially since the start of the new millennium, there is a need for a new policy framework that will address postgraduate education provision in general and doctoral education in particular. Significant changes have taken place in the country's HE, thus rendering the 1999 NHEP less relevant. In addition, in the next phases of the HEDP doctoral education should be considered as central in improving the quality of HE in the country. The programme should consider allocating substantial resources to both public and private universities to strengthen doctoral education. Since the government is currently emphasising Public-Private Partnerships (PPPs) in all facets of its development endeavours, there is a need to develop partnership arrangements for doctoral education as well. Policies and programmes should provide a clear and comprehensive guide to the provision of doctoral education, stipulating the role of each partner with the government taking a central role. Policies should be reformed so that the government provides private universities with subsides to help them meet educational costs, so that they can lower the fees paid directly by students for doctoral studies.

Policies should give priority to the funding of doctoral students regardless of whether they are in public or private universities. Since the country is in serious need of academic and non-academic personnel with a doctoral education, it is imperative for the government to set a preferential budget for funding doctoral education. Universities should receive more funds for research and the employment of foreign senior academics, so as to expand their capacity to offer doctoral education in diverse fields. In the modern society, doctoral education is no longer only for university academics. All sectors need a well-trained workforce, especially for top management and operational workers. A purposeful government decision to support doctoral education will help to balance doctoral education across disciplines, depending on the current and future needs as laid out in the country's vision and various policies. This balance has not so far and will certainly never be reached by relying on donor dependency. As we pointed out earlier, most of the donor support for doctoral education is north-driven, and therefore the types of candidates and the areas of doctoral research are pre-determined in the north.

Universities should be given adequate funds so that they can improve their infrastructure – libraries, classes, laboratories and offices – in order to improve their teaching and learning environments. If providing high-quality HE is a goal, the government should set a target to allocate a significant percentage of the country's GDP to Research and Development (R&D). The reported allocations of 0.34 percent (2007) and 0.38 percent (2010)[11] are not sufficient to strengthen R&D. In addition, the allocation should target young scholars and research in which doctoral students can be developed. However, in Tanzania there has been a tendency for the initial budget to differ significantly from the actual disbursement of funds. Public universities have prepared budgets which are barely funded by the state. As a result, many development projects designed by universities are not executed. Moreover, as well as having a resource allocation policy, commitment to such a policy is a prerequisite for the country to improve the declining quality of its HE.

[11] *These data were retrieved from the World Bank database on the 20th June, 2016: URL http://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?page=1*

Policies should emphasise recruitment and mentorship as mandatory aspects for HEIs. This will help in avoiding over-reliance on retired senior lecturers, and concomitant reluctance to preparing young academics for such roles. Besides, as we pointed out earlier, there has been insufficient mentoring support for doctoral candidates to take part in research activities, so that there is a need for universities to develop doctoral education policies and guidelines. There should be comprehensive research apprenticeship programmes for doctoral students. Equipping doctoral students with adequate research knowledge and skills will help them to carry out their doctoral research competently and finish on time. This may also attract additional candidates to pursue their doctoral education in local universities.

To ensure gender equity and its promotion, there is a need for preferential and enabling policies for women to undertake doctoral studies. This will encourage more women to pursue doctoral education. Regarding the uneven distribution of doctoral students across disciplines, the government and universities should set special funds aside to support doctoral students in disciplines with fewer students but where experts are desperately needed. Examples of such specialisations are Science, Engineering and Technology. Recently the oil and gas industry has emerged as an important area where the demand for experts is particularly high, as the country prepares to exploit its oil and natural gas reserves.

CONCLUSION

This chapter has discussed the state of doctoral education in Tanzania. The data indicates that higher education in the country has grown exponentially in the past two decades. This growth has in turn accelerated the demand for university academic staff, particularly staff with Doctor of Philosophy degrees (PhDs), which is a requirement to teach at university level. Unfortunately the existing policy to expand higher education has ignored doctoral education. Although doctoral enrolment has risen, this increase is not keeping pace with demand. In addition, enrolment is uneven across disciplines and sexes, a situation which demands intervention.

Apart from being ignored in policy discourses, doctoral education is also highly dependent on funding from foreign organisations. There is a need for policy reforms that will take control of the provision of doctoral education, in order to restore the quality of higher education which has been in danger for the past few decades. It is our argument that doctoral education in Tanzania should be strongly supported by the government. The current system of forcing non-governmental organisations and universities to fund and support these students has not helped in producing the number of doctoral graduates needed by the country.

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