Chapter 5

Internationalisation of Postgraduate Research within the Context of Africa

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Abstract

Global participation in research statistics indicate that the engagement in the conception or the creation of the creation of new knowledge, products, processes, methods, and systems in regions such as Africa, South-East Asia and South America is fairly limited. This limitation includes the participation of researchers at a post-graduate level. Enhancing the quality of research for the advancement of new and innovative knowledge, and to address developmental challenges through internationalization has been widely argued.

This chapter has provided insight into the advancement of post-graduate intra-African research from a South African perspective. Statistics of current and completed post-graduate research in Africa has been presented. These statistics have been contextualized in the internationalization of higher education. Concomitantly, post-graduate research as a strategy to advance internationalization and in particular,

internationalization of research has been discussed. Furthermore, the role of internationalization in developing a collaborative research culture in African higher education has been explored. In addition, the chapter has highlighted key strategies for developing an inclusive research culture through post-graduate capacity building.

The arguments for advancing internationalization at a higher degree level has also focused on international virtual exchange as a facilitator of research collaboration and highlighted the benefits of supervisory capacity through virtual spaces. Furthermore, additional facilitators for intra-Africa research collaboration have been presented together with institutional missions for advancing research on the African continent.

Finally, a reflective perspective of a post-graduate researcher in Africa has highlighted key challenges together with methods of addressing unique challenges within the South African context. Through the reflective perspective, the understanding of engaging Africa centric methodologies for research has been explored for the advancement of more contextual research methodology in the developing world.

1. Introduction

Africa contributes no more than 1.1% to global scientific knowledge. This amounts to just 79 scientists per million of the inhabitants on the continent (Karluki, 2015). As new knowledge is a critical driver of human health and wellbeing, economic development and environmental sustainability, there is a need to enhance participation from Africa in the contribution to scientific knowledge. Kyobutungi et al. (2021) argue that Africa's overreliance on international funding has contributed to the under-representation of Africans in both local and international research and development scenes. This begs the question: Can enhanced intra-Africa collaboration advance institutional internationalisation goals and in turn advance the contribution by Africa to global knowledge innovation?

Global statistics on the contribution by developing countries highlights the need for insight into advancing international collaboration which includes regional collaboration, along with the importance of skills development for early career researchers in the under-represented regions. Figure 1 below depicts the global statistics for researchers in Research and Development (R&D).

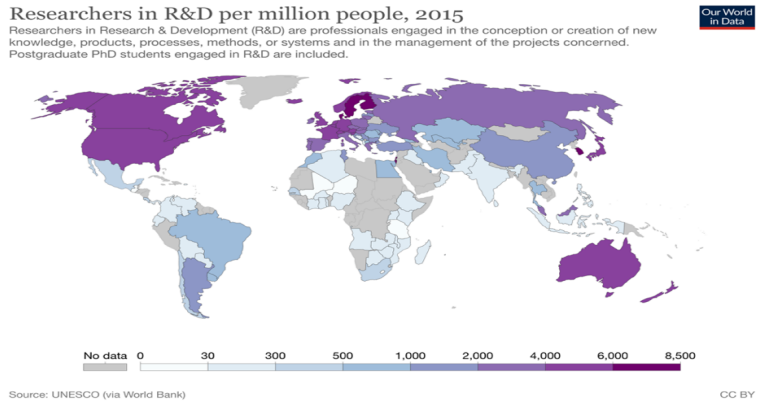


Figure 1: Researchers in R&D per million people, 2015
Source: Our World in Data (2021)

Figure 1 outlines global participation in Research and Development (R&D), indicating representation per region as of 2015. These statistics indicate that engagement in the conception or the creation of new knowledge, products, processes, methods and systems is limited especially in the regions of Africa, South-East Asia and South America. This includes the participation of researchers at a postgraduate level. Figure 1 also illustrates the difference in participation levels when comparing regions such as North America and Western Europe. This figure further demonstrates the unevenness in contributions to research even in what is considered the global North, which is sometimes referred to as the global science centre. This unevenness in contribution requires greater global participation towards a more equitable and inclusive global research culture.

Amarante et al. (2021, p. 1) affirm such uneven global participation in their findings that conference presentations, journal articles and citations, including the bulk of research on development and development policies in the global South, is conducted by researchers from the global North. Their findings show that Southern universities represent 9% of conference presentations, while Northern universities represent 57%. Furthermore, one in six articles published in prominent development journals between 1990 and 2019 were written by researchers from the global South, whereas three quarters of these publications were produced by Northern researchers. Moreover, only 11% of the published articles included collaboration with a Southern researcher. These statistics show that despite calls for increased North-South collaborations, there has been little or no improvement in the participation from Southern researchers in developmental research.

Literature covering the conducting of research has focused mainly on a research paradigm primarily espoused in the developed world. Both Lupu and Michelitch (2018) and Confraria (2019) have critiqued different types of research methods developed mainly from experiences in the global North, including survey methodology and bibliometric studies. Lupu and Michelitch (2018) argue that most survey methodologies derive from experiences in countries such as the United States of America (USA). Additionally, they note that developing world researchers confront very different challenges when collecting high quality data compared to those in developed countries. Furthermore, Confraria (2019, p. 28) notes that bibliometric studies do not consider the complex reality of research in the global South where scientific research output is not necessarily cited for various reasons. Such reasons include:

- International researcher indifference to contextual topics in the global South
- Language bias in most international journals published only in English.

- Different levels of access to international journals between the global North and the global South (Confraria, 2019, p. 29).

The above scenario has drawn sharp criticism from researchers in the global South. Hence, established researchers from the North do not promote equitable and inclusive global development of scientific researchers, including those from the periphery. Kyobutungi et al. (2021) call for African political and research leaders to take greater responsibility for streamlining research programmes and funding. "We emphasise that responsibility for addressing the current gaps in research and development lies with the international community – as well as with African governments and their institutions" (Kyobutungi et al., 2021).

The United Nations (UN) Sustainable Development Goals (SDG) entrench a collaborative culture between experienced educators and the youth for a research agenda that extends well beyond 2030 in order to ensure progress is made toward addressing and achieving the SDGs (Kyle, 2020, p. 4). Makoni (2017) mirrors this position, citing Professor Mamokgethi Phakheng who notes that universities could help to achieve the SDGs through capacity building and collaboration. Furthermore, international research collaboration can be leveraged to bridge the scientific divide. Momtazmanesh et al. (2021, p, 1670) argue that collaboration and internationalisation can help researchers on the periphery to access expert scientists in their field along with additional resources such as equipment or funds, as well as access to additional knowledge and skills, increased productivity, and enhanced visibility of their work.

The need for advanced quality of research to address development challenges through internationalisation and its potential to lead to new and innovative knowledge, has been widely argued. Tuhiwai Smith (1999) highlights a new agenda for indigenous activity in the global South that goes beyond the decolonisation aspirations of a particular community. Instead, the focus is on the development of continental and global

strategic alliances that involve revitalisation and reformation of education, culture and tradition which have been shaped by the dominant Eurocentric perceptions and impositions of the colonial rulers for centuries.

Toivonen (2021) in pursuing this line of thought, states that collaboration with the global South needs to step out of the traditional form of development co-operation to a more horizontal collaboration in education, research, and innovation, thereby allowing universities to be pioneers who bring in new ways of co-creational collaboration and equally distribute the global responsibility in solving common challenges.

Despite these challenges and various paradigms regarding the trajectory of scientific research, it can be concluded that more focused action research requires a more comprehensive approach to higher education internationalisation. Such an approach would allow for horizontal and vertical integration of all stakeholders involved in knowledge generation. The goal of such an approach is to work toward a more equitable and equal scientific space.

2. Postgraduate Research in Africa

2.1 Participation in postgraduate research

The evolution of academic Doctoral qualifications in Africa has been regionally uneven. In South Africa, numerous policies have been produced to incentivise the increase of Doctoral qualifications. Such policies include the restructuring of the South African higher education landscape with a renewed focus on postgraduate degrees.

Mouton (2011, p. 13) discusses policy documents such as the 1997 Education White Paper 3 and the 2001 Human Resources Strategy for South Africa, which both even then highlighted the issue of postgraduate qualifications as prioritised objectives for improving the supply of high-quality skills. Mouton (2011, p. 13) also highlights The National

Table 1: South African Public Higher Education headcounts

Year	Programme Level					Total
	Occasional Students	Under-graduate degrees and diplomas	Postgraduate, below Master's level	Master's degrees	Doctoral degrees	
2001	23,851	54,4183	55,914	34,901	6,518	665,367
2002	32,409	537,592	60,840	39,364	7,708	677,913
2003	37,194	562,343	65,203	43,953	8,380	717,793
2004	23,175	597,609	69,267	45,333	9,104	744,488
2005	19,271	602,612	61,622	44,533	9,434	737,472
2006	22,633	607,513	58,510	42,899	9,828	741,383
2007	25,696	624,989	59,179	41,172	10,051	761,087
2008	25,474	655,305	66,902	41,712	9,994	799,387
2009	24,613	684,419	74,495	43,723	10,529	837,779
Average annual growth rate: 01 - 09	-2,3%	2,9%	1,8%	1,5%	5,4%	2.6%

Source: Mouton (2011, p. 15)

Development Plan of 2001 for its specific goals that focus on postgraduate education, including recommendations to increase the outputs of master's and Doctoral (PhD) students. Also noted are the recommendations for increasing research outputs through newly established centres of research excellence facilitating more collaboration. Mouton (2011, p. 15) presents in Table 1, the headcounts in public higher education institutions between 2001 and 2009.

Mouton (2011, p. 15) points out that between the years 2001 and 2009, postgraduate student numbers grew at master's and Doctoral level at a rate of 1.5% and 5.4% respectively. These statistics include South African and international students at South African public higher education institutions. The inclusion of international students will be explored further in this chapter through the discussion of internationalisation debates at a postgraduate level. It is important to note here that the SADC protocol calls for the inclusion of 5% of students from the SADC region in student enrolments at universities.

In 2011, Assaf (2022, p. 112) identified PhD studies as being important to national development and argued for a more concerted and called for government to make a focused effort to improve science initiatives. Teffera (2020, p. 239) supports the statistics presented by Mouton and discusses the growth rates in Doctoral participation between 2009 and 2016. In 2016 there were 21 510 students compared to the 13285 students in 2011; however, he also notes (2020, p. 243) that less than 50% of Doctoral students in the country successfully completed their degree. He further argues that Doctoral education has taken centre stage as a vital avenue for the production of knowledge and is critical to foster socio-economic development global competitiveness.

In 2017, the number of Doctoral graduates was 54 per million in the South African population, showing an increase from 28 in 2010. However, compared to SA's BRICS counterparts, the trajectory is shown to be lower (DHET, 2020, p. 2). Figure 2 illustrates the difference in Doctoral degree

graduates per country, including those of the BRICS network, in the year 2015.

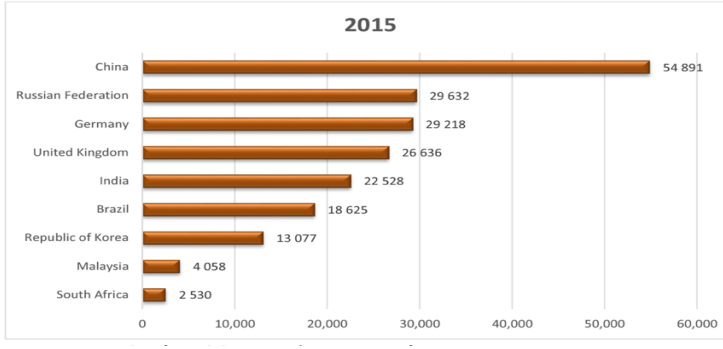


Figure 2: 2015 Doctoral Degree graduates: BRICS Network and other countries.
Source: DHET (2020, p. 4)

The South African National Development Plan (NDP) also recognises that knowledge production must increase if South Africa's developmental goals are to be achieved. The DHET (2020, p. 1) notes that Doctoral graduate numbers in South Africa are significantly lower than those in developed countries. As a result, the NDP targets an increase in the percentage of PhD qualified academic staff from 34% to 75%, which would mean more than 100 Doctoral graduates per million by 2030.

Figure 3 outlines the number of international students enrolled at South African higher education institutions. This includes PhD international students. It is important to note that the enrolment of international students is stronger at a postgraduate level.

Table 2: International students enrolled in South African higher Education institutions.

Country	Contact								Distance								Total Contact and Distance
	Occasional students	Undergraduate Certificates and Diplomas	Undergraduate Degrees	Advanced Diplomas and Postgraduate Certificates in Education	Postgraduate below Master's Level	Master's Degrees	Doctoral Degrees	Total Contact	Occasional students	Undergraduate Certificates and Diplomas	Undergraduate Degree	Advanced Diplomas and Postgraduate Certificates in Education	Postgraduate below Master's Level	Master's Degrees	Doctoral Degrees	Total Distance	
Zimbabwe	30	520	4 871	38	752	2 272	2 134	**10 617**	245	1 215	7 228	175	1 297	573	343	11 076	**21 693**
Namibia	23	98	920	1	367	752	224	**2 385**	28	453	467	243	629	111	34	1 965	**4 350**
Democratic Republic of the Congo	12	1 679	848	39	121	324	114	**3 137**	33	147	281	22	74	51	23	631	**3 768**
Nigeria	8	173	359	13	127	689	1 621	**2 990**	19	49	303	10	93	87	111	672	**3 662**
Lesotho	11	428	1 193	6	241	522	233	**2 634**	22	91	402	16	128	34	14	707	**3 341**
Swaziland	7	280	967	6	114	290	171	**1 835**	26	77	632	48	202	90	23	1 098	**2 933**
Zambia	6	46	339	0	77	281	248	**997**	6	25	222	5	33	39	24	354	**1 351**
Botswana	2	26	281	1	87	292	164	**853**	3	32	335	6	35	36	15	462	**1 315**
Kenya	14	18	253	0	66	249	396	**996**	2	6	66	1	11	38	35	159	**1 155**
Ghana	3	15	48	2	40	218	439	**765**	3	10	68	4	48	29	139	301	**1 066**
Malawi	5	32	193	2	65	230	168	**695**	6	20	112	1	25	9	5	178	**873**
Other foreign nationalities	1 643	1 163	2 821	38	642	2 326	2 246	**10 879**	85	267	1 028	31	281	190	584	2 466	**13 345**
Total	**1 764**	**4 478**	**13 093**	**146**	**2 699**	**8 445**	**8 158**	**38 783**	**478**	**2 392**	**11 144**	**562**	**2 856**	**1 287**	**1 350**	**20 069**	**58 852**

Source: DHET (2020, p. 16)

Cloete, Sheppard, and Bailey (2015, p. 77) posit that Africa has been littered with hasty studies, followed by high-profile conferences with grand declarations and recommendations for the development of Africa through higher education, research and development. However, the challenge is to undertake a more systematic, informed approach to research to diagnose problems rather than pursuing hasty prescriptions. In the South African system, there has been a shift in discourse from equity to development, as central to a highly productive, globally connected economy are high-level skills and extensive participation in higher education. Cloete, Sheppard and Bailey (2015, p. 79) identify performance-based grants to develop centres or networks of excellence within and across institutions. These grants encourage international exchange partnerships, as ways of addressing the challenges contributing to the slow growth of participation in research and development at a postgraduate level.

At a regional level, the Continental Education Strategy for Africa 2016–2025 calls for quality and relevant education, training, and research, thus indicating that these are core to scientific and technological innovation, creativity, and entrepreneurship. Furthermore, the revitalisation and expansion of tertiary education, research, and innovation to address continental challenges and to promote global competitiveness, is highlighted as a strategic objective of this strategy. The reorientation of tertiary education enrolments at a postgraduate level is highlighted in relation to economic, social, and industrial development and included in the strategy as a challenge. Furthermore, the rate of cross border collaboration needed for continental development and the investment by specific countries, are also highlighted as challenges.

Authors such as Brothwell (2015) and Lupu (2021) have described countries such as Tunisia, Egypt, Nigeria, South Africa, and Ethiopia as countries in Africa with strong higher education systems. Teferra (2020, p. 239) asserts that South Africa has arguably the best developed higher education system in Southern Africa, producing the largest share of academic research and publication on the continent.

2.2 *Postgraduate graduation statistics*

The DHET (2021, p. 19) reports that in the public higher education sector, between the period of 2009 and 2019, the growth rate of Doctoral level graduates was the lowest when compared

to that of undergraduate graduates and other types of postgraduate qualifications such as master's degrees. Mphekgwana et al. (2020, p. 16213) illustrate the trend in master's and Doctoral dropout rates at historically disadvantaged universities in South Africa between 2011 and 2017, as depicted in Table 2.

Table 3: Postgraduate drop-out rates in South Africa

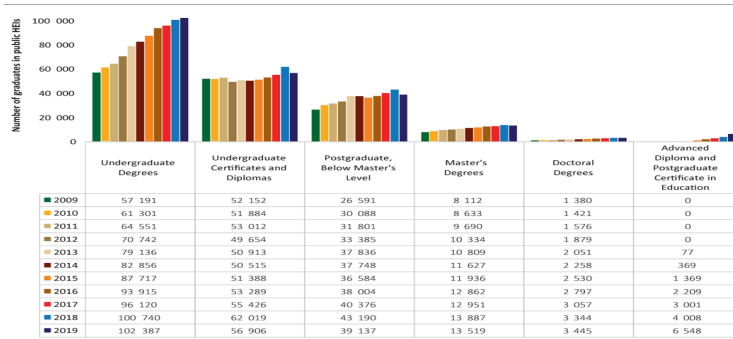
A Trend in Master's and Doctoral dropout at the University between 2011 and 2017

Year	Master's			Doctoral		
	Completion	Dropout	Continue	Completion	Dropout	Continue
2011	15%	17%	69%	12%	14%	74%
2012	15%	32%	52%	9%	26%	65%
2013	20%	34%	47%	8%	23%	69%
2014	20%	45%	35%	14%	30%	55%
2015	26%	44%	30%	21%	25%	54%
2016	13%	45%	42%	6%	36%	58%
2017	18%	36%	46%	26%	17%	57%

Source: Mphekgwana et al. (2020, p. 16213)

Figure 3 outlines the statistics from the Department of Higher Education and Training (DHET) of graduates at different levels of education in South Africa. The figure illustrates the low rate of successful participation in Doctoral level research in the South African public higher education sector.

Figure 3: Graduation statistics between 2009 and 2019 in South Africa



	Undergraduate Degrees	Undergraduate Certificates and Diplomas	Postgraduate, Below Master's Level	Master's Degrees	Doctoral Degrees	Advanced Diploma and Postgraduate Certificate in Education
2009	57 191	52 152	26 591	8 112	1 380	0
2010	61 301	51 884	30 088	8 633	1 421	0
2011	64 551	53 012	31 801	9 690	1 576	0
2012	70 742	49 654	33 385	10 334	1 879	0
2013	79 136	50 913	37 836	10 809	2 051	77
2014	82 856	50 515	37 748	11 627	2 258	369
2015	87 717	51 388	36 584	11 936	2 530	1 369
2016	93 915	53 289	38 004	12 862	2 797	2 209
2017	96 120	55 426	40 376	12 951	3 057	3 001
2018	100 740	62 019	43 190	13 887	3 344	4 008
2019	102 387	56 906	39 137	13 519	3 445	6 548

Source: DHET (2021, p. 20)

Teferra (2020, p. 240 - 242) details that the private higher education sector contributes 0.2% of Doctoral students in South Africa. Furthermore, he argues that historically, the largest producers of doctorates are the privileged universities in South Africa. The historically advantaged universities are defined as those universities that were reserved mainly

for white students during the South African apartheid regime. Most of the doctorates in the Science, Technology, Engineering and Mathematics (STEM) areas produced in South Africa in 2017 were produced by these historically advantaged universities, with the previously black universities adhering to the call to produce more PhDs in the fields of the soft or applied sciences. Notably, Teferra (2020, p. 242) believes that this contributes to the preserving of the historical divide in the South African higher education system.

He also discusses the National Goals to produce 12000 graduates by 2019 and the critique of this goal by Universities South Africa (USAf) of the unrealistic goals and objectives including the lack of recognition of challenges limiting this achievement. An example of this is the low supervisory capacity rates in the South African higher education sector.

At a continental level, Khodabocus (2016, p. 26) discusses the results of a study focusing on Doctoral enrolment at select flagship universities in sub-Saharan Africa. The number of Doctoral graduates between the period of 2001 and 2014 reached 3538 with the University of Cape Town (UCT) producing the majority share of these graduates. Khodabocus (2016) also pinpoints the slow growth rate of Doctoral enrolments in the sub-Saharan African region and similar to Teferra (2020), attributes the slow growth rate in South Africa and broader Africa to the lack of supervisory capacity in the region, noting that in order to produce quality doctorates, adequate importance and emphasis must begiven to quality of supervision.

ANIE, DAAD and the British Council (2018) mirror the arguments regarding the low growth rate of Doctoral participation and graduation, stating that this has occurred against the backdrop of human and material resource challenges. Our World in Data (2021) shows the rate of spending on research and development as a share of GDP globally (Figure 5).

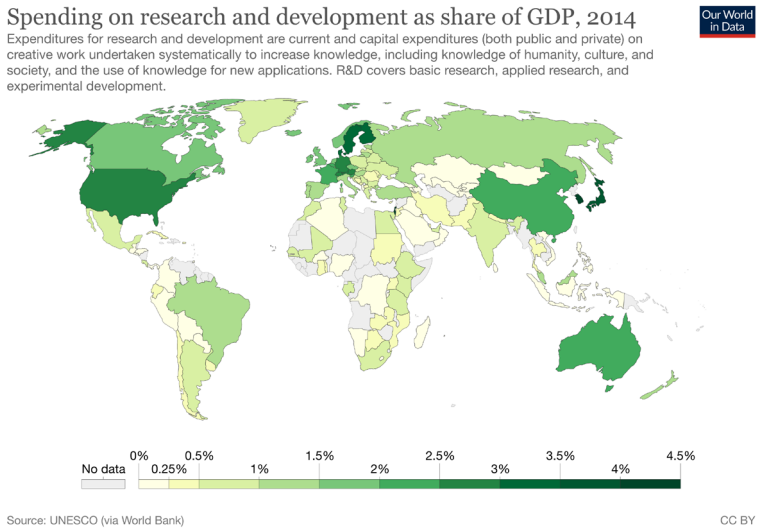


Figure 4: Expenditure on research and development as share of GDP
Source: Our World in Data (2021).

2.3 Research and Internationalisation

This chapter is premised on the belief that in the African context, a university's comprehensive internationalisation strategy can be advanced by the university's commitment to a more tangible involvement in intra-African collaborative postgraduate research. The previous section of this chapter presented the statistics of students, particularly at a Doctoral level in the South African higher education system. In addition, we have attempted to present statistics of students at a Doctoral level at a continental level. The following section aims to contextualise this information in the internationalisation of higher education. Concomitantly, postgraduate research as a strategy to advance internationalisation in general and internationalisation of research in particular, will also be discussed. The role of higher education internationalisation in developing a collaborative research culture across Africa will also be explored.

Hénard, Diamond and Roseveare (2012, p. 15) highlight the Early Researcher Awards (ERA) programme provided by the Ministry of Economic Development and Innovation supporting innovation to increase a knowledge-based economy. This programme is used as a benchmarking example for its inclusion of students in research teams led by early career researchers. Also highlighted as a strategy for internationalisation through postgraduate studies is the practice of joint degrees that allows for enhanced perspectives within the post-graduate curriculum and increased opportunities to collaborate (Hénard, Diamond and Roseveare, 2012, p. 19). Similarly, Uwizeye et al. (2020, p. 1) have highlighted the Consortium for Advanced Research Training in Africa (CARTA) programme which promotes international collaboration between PhD fellows, arguing for this approach to respond to the requirement of Africa for well trained and networked researchers, capable of responding to challenges on the continent. Furthermore, they (2020, p. 1) argue that in addition to international collaboration, interdisciplinary collaborative research is essential for public and population health and could lead to high scholarly productivity through the contribution of various skills and experiences, thereby enriching the quality of research.

We have covered the benefit of international research collaboration which includes increased supervisory capacity; however, there are further motivations for international research collaboration and for universities to internationalise their research programmes and activities. In the context of "big science", Chen, Zhang and Fu (2019, p. 149) define international research as collaboration between individuals, groups, departments, institutions, regions and countries. This is further unpacked by Cahill (2015, p. 9), who argues the way in which this can occur is through a top-down policy, or through bottom-up researcher-led initiatives. The collaborations may also vary in scale, intensity and duration and can vary in effect and impact through complex networks of systems and relations. Somasundaram (2019) further advocates for international research collaboration, arguing

that it allows for increased perspectives on the research problem when collaboration occurs between researchers in different institutions located between different countries.

Science is an increasingly global enterprise and international collaboration is seen to be crucial to addressing global challenges. More countries are placing importance on science and technology collaboration to foster and maintain their global innovation competitiveness. The geographic, linguistic, political and cultural contributing characteristics of international research collaboration distinguish it from domestic collaboration. These reasons have been cited by Allen (2017), Jowi, Knight and Sehoole (2013, p. 17) and Onyancha (2011) as reasons for pursuing international research collaboration.

Despite these advantages, Pouris and Ho (2013, p. 90) argue against international research collaboration due to concerns that spending time on international cooperation is not always beneficial to the paying country. Furthermore, they assert that critical technologies and key knowledge for competitiveness are given away to competitors. Another concern they present is that collaborative agreements advocate strategic or political ends rather than the interests of science and technology. Similarly, Fransman, Hayman and Newman (2018) stress that while the rhetoric of partnerships sounds good, in reality it can be quite challenging and unequal. In many cases of global North-South partnerships, Northern partners hold a considerable amount of power compared to their Southern partners.

Despite these concerns, the benefits and motivations outweigh the risks associated with international research collaboration. Cheruvelil et al. (2014, p. 32) promote international research collaboration for the benefits that include diversity which increases team productivity and the quality of end products. Added benefits also include sharing of knowledge though combined perspectives and thus solving complex issues in an interdisciplinary framework.

This position is shared by Wai-Chan (2017, p. 61) who argues that collaboration allows researchers to access resources beyond their own, especially funding, talent, and equipment to develop innovative interventions for managing complex challenges. He further explains that collaboration also enables leverage and allows researchers to magnify the benefits of their own inputs and maximise their own outputs and outcomes. In addition, global and inter-regional research collaboration may help to overcome fragmentation and lack of critical mass in research investment. Moreover, Cheruvelil et al. (2014, p. 31) argue further for international research collaborative teams, highlighting the necessary and desirable contribution they make, resulting in important research outcomes far beyond what could be accomplished by individuals working independently. To paraphrase, when collaborations are successful, the outcomes surpass any one individual's accomplishments with collaborations referred to as "high performing cooperative groups." Wai-Chan (2017, p. 61) presents further motivation for international research collaboration, arguing that it is a critical component on the international outlook indicator, accounting for 2.5% of the ranking formula used by the Times Higher Education (THE) in the annual World University Rankings.

Limitations are outlined by Haylor et al. (2015, p. 10), who describe the challenges experienced in finding collaborative partners for international research collaboration. They state that close proximity has historically been known to promote collaboration. However, they also argue that in the context of virtual reality and the current context of the COVID-19 pandemic, progress has been made in international virtual engagement. As a result, this challenge may be decreasing, thus allowing for enhanced opportunities to find international research partners to work with.

Kolm et al., (2021, p. 1) add that virtual teamwork was on the rise even before the present crisis because this allows teams to work more flexibly and with less travel required. Rodney-Gumede (2020) notes that the pandemic has enhanced virtual collaboration and argues virtual mobility through research

collaborations can now complement physical engagements and mobility especially where funding limitations come into play. Kolm et al. (2021, p. 1) however, also acknowledge that in some cases there is a lack of competency to use the virtual space resulting in reduced team commitment and lower performance. Furthermore, in Africa, the digital divide poses challenges for this type of collaboration as well. Figure 6 details that the cost of data can cost up to $50.00 per gigabyte in some parts of the continent.

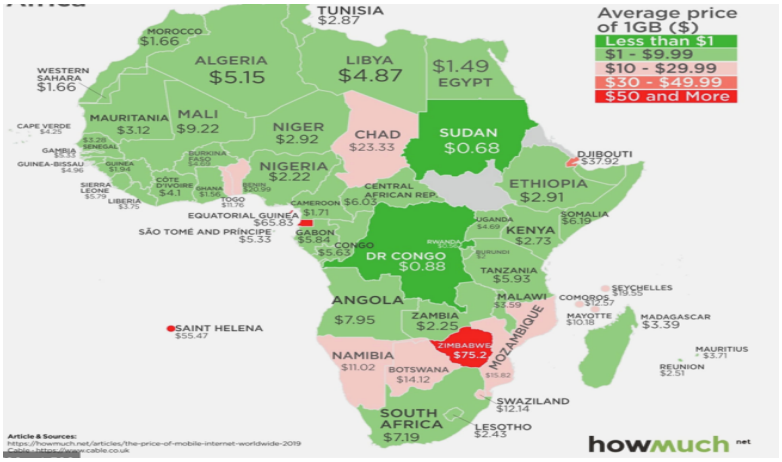


Figure 5: The costs of data in Africa
Source: Titilola Oludimu (2019)

Virtual mobility does, however, pose opportunities to increase international research collaboration. Henderikx (2018) lists reasons for institutions to pursue a blended approach including the following:

- Integrating resources, international research and innovation through open educational resources, open access journals or virtual laboratories.
- The opportunity to organise collaborative learning through learning communities.
- The opportunity to deliver international education through blended joint qualifications.

Henderikx (2018) further argues that international learning communities created through virtual mobility are a particular asset in international education due to the benefits of enhanced international staff skills and knowledge such as systematic observations and non-published material as well as access to international resources.

International research collaboration and internationalisation of research could contribute to the increase in participation from students on the continent in higher degrees. Through a phenomenological explorative approach, we have included an account of the experience of the PhD process. Smith (2013) presents phenomenology as studying the structure of various types of experience including perception, thought, memory, imagination, emotion, desire, volition to bodily awareness, embodied action, and social activity including linguistic activity. The subjective experience of everyday life as an analysis refrains from common sense assumptions or interpretations of everyday reality (Berger & Luckmann, 1966: 18). In this way, the challenge in the previous discussion is supported through the reality of a PhD researcher and the supervisors.

This includes the challenges in relation to methodological processes and how these were overcome through contextualisation and modification of the methodology to ensure progress of the research. Furthermore, the researchers hope to use the lessons learned to inform knowledge on facilitators, which could contribute to the success of higher degrees in the developing world and in Africa in particular.

The PhD research process referred to above aims to understand the structural dynamics of intra-African academic collaborative research teams. Necessary for this understanding was collecting data from role-players integral in intra-African research partnerships and the research projects thereafter. This data collection process proved to be challenging, as explained below.

This researcher in conducting research in the pursuit of her PhD degree through studying the higher education sector in South Africa, had discovered that information or data storage within the South African higher education sector proved to be a challenge. Using a multiphase data collection method of purposive sampling for data collection, the researcher assumed that information needed for data collection was collated and stored within specific directorates and departments within higher education institutions in South Africa. The assumption was based on the researcher's professional experience within the sector, having worked at a few higher education institutions over the span of 14 years. In commencing the data collection, the researcher soon realised that the information required was, in some cases, not collated and not stored in the directorates as initially assumed.

A second challenge experienced by the researcher was having to apply for ethical clearance or gatekeeper permission at each data collection site since the sites included other higher education institutions within South Africa. This challenge was compounded by the fact that each of these protocols was unique and required separate research ethics proposals. In total, 11 proposals were submitted with ethical clearance granted for each site, allowing access to all indented data collection sites. However, the process was more complicated than initially anticipated by the researcher.

Further to this, in the pursuit of research ethical clearance or gatekeeper permission at each of these sites, each research ethics committee proved to have different and unique interpretations of the studies' research protocols. Specifically, in the use of snowball sampling as part of the data collection method, as well as the impact of the now implemented Protection of Personal Information Act (POPIA) on research and data collection in South Africa, the researcher was required to modify the research protocol and data collection methods because of this.

In addition to these challenges, as data collection was operationalised through online semi-structured interviews,

in some cases, the data collection proved to be a greater challenge. This resulted in the length of time needed to collect data for this study having to be extended. Instead of over the period of three months as initially intended, the data collection spanned a period of six months. This was further compounded by the overwhelming workload of the research participants, resulting in many of them not being available, and the researcher having to follow up and wait for participants and available time, to administer the research instruments.

The researcher also experienced personal challenges throughout this process that further impacted the pursuit of her PhD degree. This included contracting COVID-19 and dealing with the political unrest that took place in KwaZulu-Natal in July of 2021. These challenges were further compounded by the overarching issue of work-life balance, and the pursuit of a further degree that already served as an overwhelming task for the researcher.

2.4 A PhD student's account of pursuing a higher degree in the developing world

The following section details the ways in which the PhD student and her research supervisors were able to overcome the challenges outlined above. In dealing with the challenge of locating where information or data is found within the South African institutions qualifying as research sites for the study, the researcher realised that various institutions had different ways of collating information and storing the specific data needed. To understand the nature and extent of intra-African academic collaboration at each of the selected institutions, the researcher, through bias developed via experience gained in the sector, assumed that the information would reside in the directorates of internationalisation or research and that they would be accessed through purposive sampling. However, when attempting this in the first phase of the data collection, the researcher realised that these directorates were aware of the areas in which intra-African research collaboration was happening, but these directorates or units did not necessarily form part of the academic staff involved or assume the lead

in any of the research teams. Therefore, the information regarding the leadership of intra-African research teams required for this study was not accessible through this method.

To overcome this challenge, the researcher added an extra step to the data collection process which entailed liaison with the HODs of academic departments and research centres. While extending the data collection timeline, this step did assist the researcher in reaching sampling saturation. Around 900 initial emails, with three follow up emails (totalling 2700) were sent to all academic department and research centre HODs, who were accessed via the websites of selected institutions. Where this was not available, the researcher made direct contact with Deans, Deputy Deans, or Deputy Vice-Chancellors responsible for internationalisation and/ or research, within their respective institutions.

The challenge of dealing with the implications of POPIA in research and data collection was more complicated. Initially, the sampling method for this study included snowball sampling aimed at reaching population saturation. However, when applying for gatekeeper or ethics clearance at each data collection site, the researcher was informed by many of the institutions that snowball sampling was not permitted as a method of data collection because university staff were not permitted to share contact details of colleagues. To overcome this challenge, the research protocol was modified and on the advice of the research supervisors, other ways in which snowball sampling could be used to achieve saturation were attempted. As a result, a modified version of snowball sampling, referral sampling (Cunningham, 2021) was applied. This entailed sharing the invitation letter to participate in the research with interviewees and asking them to share with colleagues. One limitation of this approach is that the researcher has no control over whether this letter is disseminated or not. However, in trying to ensure that this method was applied, the researcher followed up the initial request, in writing, until confirmation of this was received from the interviewee. In some cases, the researcher did not receive this confirmation, as the interviewee did not reply

to follow ups. This impacts the assurance of population saturation for the study.

The challenge of technology experienced while attempting to collect data for this research could not be mitigated at all. Issues of limited data, bandwidth, as well as electricity load shedding contributed to the challenge. These challenges had to be overcome through delaying interviews or scheduling shorter meetings over additional days to ensure the full administration of the research instrument. Exploring different platforms to overcome the challenge of bandwidth also assisted with this, with the researcher conducting telephonic interviews with some interviewees, instead of the online virtual meetings that were initially planned. Using the smartphone speakerphone functionality while recording the meeting is one way of overcoming this challenge. This proved to be the one challenge that delayed and extended the data collection timeline of the study more than any of the other challenges. Alongside this was the workload of academic staff or researchers and the participants not having adequate time in their diaries to participate until two to three months after the initial enquiry. Overcoming this challenge required both patience and persistence from the researcher in scheduling these interviews.

Finally, the personal challenges that were experienced and overcome were the researcher contracting COVID-19 and still having to collect data during this personal health crisis. In addition, the data collection period also coincided with the political unrest that took place in KwaZulu-Natal in July of 2021. The researcher was directly affected by this with violent protests taking place in her area of residence. However, to avoid rescheduling of interviews and possibly missing the opportunity to include participants because of participant workload or technological challenges, the researcher forged ahead and administered the instruments, despite these challenges.

The researcher found that through sheer persistence and resilience, she was able to make progress in pursuit of a PhD in

South Africa and complete the data collection process in 2021. Even though the intended timeline for the original submission of the thesis at the end of 2021 was delayed, the researcher, through the support and motivation of her supervisors, persevered through these challenges and is now aiming to analyse data collected for this study.

3. Conclusion

This chapter has highlighted key strategies for the development of an inclusive research culture through postgraduate studies and research skills development at higher education institutions. This includes international research collaboration and as outlined by Tuhiwani Smith (1999) and Tiovonen (2021), internationalisation that enables the development of continental and global strategic alliances that encourage new ways of co-creational collaboration equally including cultural and contextual perspectives in solving global challenges.

Further to this, the chapter has highlighted the contextual challenges of pursuing research in the developing world and particularly, on the African continent. For this reason, there is a need to understand and engage in Africa-centric methodologies for more contextual methodologies and enhanced impactful research on the continent and in the developing world.

The chapter has also explored the importance of internationalisation of research through international research collaboration. These concepts highlight the need for mechanisms, policies and procedures that provide for the bridging of the North-South divide and greater integration of institutions in Africa. Fosci et al. (2019, p. V) advocate for enhanced research management capacity in lower- and middle-income country (LMIC) universities. They argue that the current limitations affect researchers' abilities to obtain research funding. Further to this, they highlight the need for capacity in institutions not only to identify funding opportunities, but also to administratively manage research

projects, including those that are collaborative in nature. They add that common areas in need within LMICs are financial management, grants management and monitoring and evaluation activities of research.

As a proposed solution to the identified gaps, Cunningham (2016) has suggested increased coordination between international and research offices at higher education institutions in the global South, which could result in the increased capacity needed for these objectives. Cunningham has been made suggestions for the rethinking and restructuring of international and research departments at universities, which include enhanced integration of the two. He proposes that the "new international office" should be embedded in the project and research mission of the university.

As a suggestion for a way forward, we recommend further research into facilitators of intra-Africa postgraduate collaboration. As discussed earlier, collaboration enhances research quality. Capacity building for research collaboration may result in developmental advantages for the continent.

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