Doctoral Education in Context

Perspectives from Africa

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CHAPTER 4

The feasibility of contextualizing Salzburg I and II Principles for improving Nigeria's doctoral education

Bernard Ugochukwu Nwosu

Nigeria is a West African country with an estimated population of about 200 million. It has 221 universities. Fifty (50) of the universities belong to the federal government, sixty (60) are owned by state governments, while one hundred and eleven (111) are private universities.

The **University of Nigeria, Nsukka** was established in 1960, making it the first indigenous university in Nigeria. At the time of its establishment, the University at Ibadan, Nigeria, was still a university college affiliated to the University of London. The faculty size of its combined campuses at Enugu and Nsukka is 3 130 with an undergraduate population of 46 401 and 7 320 postgraduate students (University of Nigeria, 2023). In 2018, the university awarded 480 doctoral degrees, the highest number of all Nigerian universities in that year.

1. Introduction

University education and research are considered an important part of development all over the world. Indeed, in high-income countries in Europe and North America, there is a general trend towards the knowledge economy hence, a significant emphasis is placed on research. Accordingly, a high premium is attached to high-level research which includes doctoral research in universities. Most countries regard their universities as centres where solutions can be

devised to address development challenges through research and innovations (see Cyranoski et al, 2011). In fact, countries that spend a lot on research and development also rank among the top producers of PhDs in the world. Statistica (2018) reports that the top ten spenders on research and development in the world include the United States, China, Japan, Germany, South Korea, India, France, Russia, United Kingdom and Brazil. According to Cyranoski et al. (2011) the highest producers of PhDs in the world are China (which supplies 40% of the world's PhDs), India (8.5%), Korea (7.1%), Japan (6.2%), the United Kingdom (5.2%), and the United States of America (2.5%). It is therefore tempting to imagine a positive correlation between policy focus on research and development trends in doctoral education. However, Muller (2012) maintains that "there is no evidence to suggest a causal link between the number of doctorates and economic growth". Muller's observation notwithstanding, investment in R&D remains crucial for development and it is not easy to delink the contribution of investment to doctoral training to this outcome.

Doctoral research is given attention in national science and technology policies for several reasons. Essentially, policymakers hold that cutting edge findings in various fields emanate from the research efforts of doctoral researchers. Also, new leadership in scientific innovation draws from the content and quality of work done in the doctoral research environment. This crucial role of doctoral research defines its importance and relevance to the building of the knowledge economy, accumulation of expertise and advancement of science and technology. Accordingly, doctoral education circles are important knowledge hubs that governments nurture for growing the economy and other aspects of the society (see Cloete, 2015). It is the above idea and the desire to enhance research excellence that underpinned the gathering in Bologna on "doctoral programmes for the European knowledge society" held from 3 to 5 February 2005 and attended by European ministers of education (European University Association [EUA], 2005a). The seminar expressed awareness of the importance of the university as one of the pillars of a knowledge-based society. More specifically, it emphasised the necessity of going beyond the focus on higher education at the time to include doctoral level training as a third cycle, whereas the bachelors and master's degrees are the first and second cycles (EUA, 2005a).

Based on the conversations of the European ministers of education during the Bologna seminar, a consensus emerged on a set of ten basic principles upon which doctoral training in European universities could be grounded and these included

i) The core component of doctoral training is the advancement of knowledge through original research.

ii) Embedding strategies and policies by universities to support them carry out doctoral training that meets new challenges and includes appropriate professional career building opportunities
iii) Emphasis on diversity that includes joint doctorates undergirded by sound practice
iv) Recognition of doctoral candidates as early-stage researchers who make key contributions to the creation of new knowledge, with corresponding rights.
v) Emphasis on the crucial role of supervision and assessment.
vi) Achievement of critical mass in doctoral production with the use of different innovative practices and openness to relevant diverse approaches that are useful for different contexts.
vii) Emphasis on the time limit of doctoral programmes which is recommended for a period of three to four years on full-time studies.
viii) Promotion of innovative structures to meet the challenge of interdisciplinary training.
ix) Increasing mobility of doctoral programmes in terms of geographical, interdisciplinary and international collaboration.
x) Ensuring appropriate funding for the development of quality doctoral programmes. (see Salzburg I, 2005)

The Salzburg I principles were enhanced by the Salzburg II principles which resulted in the *Seven Principles for Innovative Doctoral Training* (EUA). These seven principles address the following components of doctoral education: research excellence, an attractive institutional environment, interdisciplinary research options, exposure to industry and other relevant employment sectors, international networking, transferable skills and training, and quality assurance (EUA, 2005b). These principles have been domesticated to a good extent in many European countries such as the Netherlands (EUA-CDE, 2010), Spain (Muerza & Larrode, 2018) and France (Talby, n.d.) among others. It is worth noting that conditions for the advancement of doctoral education are not limited to Europe in spite of my focus on the European Salzburg principles. There are different nomenclatures and doctoral studies enhancement plans in other parts of the world. Japan for instance has what they refer to as Leading Programmes in doctoral education. The main goal of the programme is to foster PhDs with deep specialization and peer leadership who can compete well globally (Okamoto & Matsuzaka, 2015). The United Kingdom has a distinct organisation concerned with the promotion of high-quality graduate education. Indeed, between 2004 and 2009, a significant change in

UK graduate education was driven by international and national regulation and codification of what quality in doctoral education is (McGloin & Wynne, 2015). Australia has a Research Training Scheme (RTS) specifically for supporting research training for research master's and doctoral students. Among the major objectives of the RTS, it enhances the research training provision and ensures the relevance of research degrees to employment needs (McGloin & Wynne, 2015). However, the progress and quality of doctoral training in Europe draws majorly from the underpinning Salzburg principles and according to Salzburg II Recommendations (2010), doctoral education in Europe has been extremely impressive.

In Africa, however, the quantity and quality of doctoral graduates do not compare with those trained in high-income countries in Europe, America and Asia, essentially due to differences in the degree of internalization of the underpinning Salzburg principles or similar policies and other contingent factors. I am convinced that the Salzburg principles can be contextualized and adapted to speak to the realities, challenges and opportunities of doctoral education in African countries. Simply put, doctoral education in Africa could benefit greatly from the implementation of the Salzburg Principles or a set of principles, contextualized for the continent and its goals and needs, inspired by the Salzburg principles. In this chapter, I will illustrate how that could possibly be done using the University of Nigeria, Nsukka, as a case, whose existing practice could draw useful insight from the Salzburg Principles.

Subsequent sections of the chapter will include a comparative review of national experiences of doctoral education in relation to how the Salzburg I and II principles have impacted doctoral education in different countries. This is followed by a presentation of the Nigerian experience of doctoral education, especially the challenges. I further contextualize the work on the empirical case of the University of Nigeria, Nsukka, by examining the university's practices vis-à-vis the ten Salzburg Principles. Finally, I conclude the chapter by synthesizing the narratives.

2. Enhancing doctoral education with reference to the Salzburg I and II Principles: A review of national experiences

Salzburg I and II Principles are of European origin. It was founded on a process that began in Bologna in 1999 and was initially primarily concerned with the first two cycles, bachelor's and master's. But the Salzburg seminar of European ministers of education took place between 3 to 5 February 2005 and was concerned with the third cycle (doctorate). Thus, the historical transition from

Bologna to Salzburg goes back to the 1999 Bologna meeting whose chain of succeeding events, including Salzburg I and II, are referred to as the Bologna process. Overall, the Bologna process is a basis for the doctoral education reforms (see Witte, 2006).

I look at some national context in Europe vis a vis how they have been fairing in doctoral education in the light of the Bologna process. Thus, I consider the UK, selected European countries like the Netherlands, France and Denmark. I also broaden the review to look at the changing environment of doctoral education in non-European countries like Colombia, a few Asian and then Africa formations. The non-European nations provide context for comparative consideration with European states for which the Bologna process was designed.

According to Matas (2012), the UK was one of the countries to heed the call from the Bologna process that gave birth to the principles which made the UK commence training in transferable and generic skills for doctoral and postdoctoral researchers. This was aimed at improving employability through research excellence. The main policy report that created the conditions for the adoption and implementation of the Salzburg Principles in the UK was Roberts' report (2002). Roberts' report demonstrated an understanding of the importance of funding for the promotion of research excellence through transferable skills and prompted government support for doctoral research reforms with the sum of GBP 120 million (Research Councils UK, 2010). An eight-year impact evaluation of the response to Roberts' report carried out in 2010 by an independent review panel commissioned by Research Councils UK found impressive results not only in terms of the competitiveness of young researchers, but also in making British higher education more attractive to international students (Research Councils UK, 2010).

Similarly, the Netherlands, and France have effected reforms that focus doctoral skills development through emphasis on transferable skills (Matas, 2012). Talby (n.d.) attests in the case of France that doctoral education has evolved during the two decades until 2018 since adoption of the Salzburg Principles and recommendations for innovative doctoral training. The general point of widening the scope of doctoral training in these countries is the need to make the training and skills of PhD graduates relevant beyond the classroom and more useful to the wider research and development needs of industries and the market. In the cases of the UK and France, it is easy to observe a clear policy commitment to the growth of doctoral training. Not only does the state assume a central role in supporting knowledge production, but it is also an active part of international processes to set up benchmarks of excellence in that regard. These countries have been quick to contextualize and apply international policies that

support knowledge production which is central to the transformation of their societies and maintenance of their economic progress.

In the experience of Spain, in evaluating Spanish PhD adaptation to the Bologna process, Muerza and Larrode (2018) discuss the contextual factors in the implementation mechanisms for quality assurance of their doctorates in mechanical engineering and identified five factors, namely: (1) the creation of doctoral schools, (2) competences (3), tutoring and supervision, (4) collaboration and internationalization, (5) doctoral programmes and (6) duration of studies. According to this study, specialized doctoral schools in Spain had risen from the first one created in 2006 to a phenomenal 42 in 2015. The reason for this was perhaps to eliminate the distractions of simultaneously managing first and second cycle education with the third cycle which is the PhD. Competences range from knowledge and technical skills of the doctoral candidates' academic training to their personal maturity. Tutoring and supervision focus on the progress of the students towards the completion of their studies. The authors highlighted the social setting, the personalities, relationships between the supervisor and student and the supervisor's expertise as important elements that condition the progress of doctoral education. Regarding internationalization, Spain is said to promote the mobility of students and teaching internationalization. Muerza and Larrode (2018) provide more details in this regard by arguing that international mobility experiences allow interchange of theoretical methods and techniques within a subject of study and give thrust to the growth of knowledge without borders. More specific measures include openness to students from other countries, promotion of short research visits to foreign universities, incorporation of teachers and foreign PhD candidates and engagement with thesis of the international student. According to Muerza and Larrode (2018), such engagement with the thesis implies

- a research visit of at least three months to other research centres and or foreign universities;
- presenting and defending part of the doctoral dissertation, featuring a summary and conclusion in English at the very least; and
- to have two reports from international PhD experts who may not be part of the thesis assessment board. This implies that the subject of the research covers aspects with international relevance (Muerza & Larrode, 2018).

There are seven criteria for the evaluation of research and development of plans for research project of international students:

i) The proposal must establish the main novel aspects of the research to be developed and the primary expected result with a well-written and detailed structure,
ii) gather basic up-to-date references on which the research is going to be based,
iii) provide a relevant methodology with technical scientific details,
iv) establish a work plan for the entire research period which shows the phases of research development,
v) demonstrate the possibility of establishing connections with other studies or research carried out in other institutions related to the current research,
vi) present a programme of planned publications on the expected results in high impact journals,
vii) establish the scope of the research and the technological scientific means required to perform it. (Muerza & Larrode, 2018)

Doctoral programme and duration relate to the content of the PhD training and the length of time by which they are expected to be completed. The doctoral programme refers to the scientific, general and professional contents of the training while the duration is managed by a regulation which requires a three-year completion period for a PhD programme with full-time dedication and five-year completion period for a part-time PhD. Based on the above factors, the authors reported a steady increase of doctoral student enrolments from the 2009/2010 school year to 2014/2015 especially in the field of engineering which was studied by Muerza and Larrode (2018). They ascribed this change to transformations in doctoral regulations in Spain which draws from efforts to adapt to the Salzburg Principles. The Spanish case study here draws attention to an institutional embedding of the elements of the Salzburg Principles. In fact, the five drivers of progress they discussed while evaluating the Spanish PhD adaptation to the Bologna process bear the essence of the Salzburg Principles. The authors equally appeared to take government support for doctoral education for granted. But it is doubtful that the five drivers of progress could have been possible without conscious state support in funding or facilitation of the same or without institutional support for doctoral candidates. Again, it remains to be seen whether equal attention is accorded to the science, technology, engineering and mathematics disciplines on the one hand and the arts and humanities disciplines on the other hand.

In a broader comparative study of six countries, including Canada, Colombia, Denmark, Finland, the UK and the USA, Andres et al. (2015)[1] considered three major factors which include massification, professionalization and the introduction of quality assurance in doctoral studies. Their work reveals a striking significance of the impact of the Salzburg Principles for the European countries in the study. Note that the emphasis of the discourse here is Salzburg which was made for European countries. The rationale is to extend the analysis to non-European contexts to identify comparable policies that may have emerged due to Salzburg. In Denmark, Finland and the UK, the Salzburg Principles are important in considerations of massification, professionalization and quality assurance. In terms of massification, the six countries that were studied experienced a major rise in the number of PhD graduates produced. Increasing the number of PhD graduates is one of the emphases of the Salzburg Principles. In the area of professionalization, countries in the European Higher Education Area – in the case of this study Denmark, Finland and UK – shared very important characteristics in terms of emphasising generic skills and interdisciplinarity, harmonization of PhDs based on European standards and the growth in the number of graduate schools.

Despite these shared characteristics, there are still national differences which condition the thrust of each country's policies around doctoral education. Important to note is how these European countries tend more towards internationalization of quality assurance along the lines of the European Higher Education Area.

A few issues stand out in the discussions above. First, the studies are centred around high-income countries, except Colombia which is an upper middle-income country. Second, the contextual differences in the six countries compared in the study of Andres et al. (2015) are still important determinants of their rates of progress in doctoral education. There is a move towards quality standardisation in Western Europe, although this does not imply an inferior status to other countries studied. However, Andres et al. (2015) noted that Canada needs more effort to achieve the goal of massification of doctorates to meet the needs of the knowledge economy.

Placing the progress of Western Europe in the broader European context, the story of the transition countries of Eastern and Central Europe, according to Kwiek (2004), indicates gaps in the capacity to match the progress of Western Europe. Further, Kwiek (2004, p. 759) holds that higher education in Central and Eastern Europe has been "in a state of permanent crisis since the fall of communism." Besides, there are contextual factors mostly grounded in

1 The UK was still a part of the European Union when this study was conducted.

funding which limit the implementation of the Salzburg Principles to legislation that is difficult to implement at institutional levels. In effect, the operative conditions, including the political economy of the transitional states of Central and Eastern Europe both in terms of educational funding and institutional processes, are insufficient for the actualization of the Salzburg Principles (see Kwiek, 2004).

Deem et al. (2008) maintains that the popularity of the Salzburg Principles in Western Europe and their impact on doctoral education in the region provides impetus for other parts of the world to cluster towards the principles and therefore organise their university systems around the essence of the process. Deem et al. (2008) argue that developments that emanated through the Bologna process are framing the direction of several universities in Asia. Centrally, the quest by universities to attain 'world-class' status, which is another way of referring to teaching and learning along the Salzburg Principles, has spread across Asian universities. The writers noted that universities in Hong Kong, China, Japan, Malaysia and Taiwan and other universities in East Asia are increasingly under pressure to compete internationally and are eager to achieve high rankings in the global universities league which are rated mostly on parameters that could be grounded on European standards.

Looking at the group of countries that rank quite high in PhD production in Asia, one observes how they tend to be high spenders on research and development in addition to funding of universities. Melin and Janson (2006) highlight how countries like South Korea, Taiwan, Singapore, China and others, that used to be small players in the production of doctorates, are growing. Looking at some of the transformations in some of these Asian countries, it is quite tempting to infer that even though their framework of progress may be differently labelled, they are, in essence, implementing the Salzburg Principles.

Bringing the implementation of quality assurance mechanisms in doctoral education closer to Africa, Charlier and Croche (2009) argued on a critical note that one of the tacit objectives

of the Bologna process which supports doctoral studies with Salzburg I and II, was to increase the flow of (good) non-European students into Europe and that while Africa was not the core target of this policy, the relationship between the continent's universities and those of their former colonizing powers made for easy transfer of the best African students to European universities. Continuing, they noted that African concerns were not considered in the Bologna process, hence reforms in African universities can only mimic the forms constructed in Europe. Such mimicry even lacks a guarantee of success because higher

education systems in Africa are mostly in crises rooted in resource gaps and fast-growing student populations.

African conditions for doctoral education differ from their European counterparts. To sum it up, Charlier and Croche maintain that Africa's universities are hindered by many social, economic and political constraints in their environments. Consequently, African universities are not globally competitive. In the university rankings South Africa has most of the globally competitive universities in the continent, with the University of Cape Town as the best. Besides, among African universities, South Africa has for many years continued to produce more than half of the best and this includes the contemporary global rankings (see Times Higher Education [THE], 2019). This would suggest that South Africa harbours a more research-friendly environment than other states on the continent. Perhaps this is attested to by the fact that Africa's 1% contribution to global knowledge capital drops by a third if South African quota is eliminated (Teferra, 2014). Based on these figures, Teffera (2015) noted quite correctly that South Africa is the largest knowledge producer in the continent.

The country arguably has the most attractive funding for doctoral education on the continent. This again takes us to the importance of political will of national governments to grow knowledge for the purpose of development.

In a study of the Southern African region, Bitzer (2016) applied Trafford and Leshem's (2009) categorisation of the factors that influence provision of doctoral education which include contextual factors, administrative factors and academic factors. The contextual factors include international, national and market demands/influences on quality, the functions of doctoral education, career projections, employment opportunities, supervisors and students. The administrative factors refer to the framework in which the degree is constructed, offered and undertaken in addition to all the factors that apply in every stage of the study. Academic factors refer to the scholarly/research considerations that culminate in the quality of the doctorates that are awarded. Considering these factors, he concludes that institutional research (IR) in Southern Africa is still a long way from reaching maturity due to limited emphasis on IR on doctoral education, issues of availability of data from research as a basis of further action, gaps in tracking of candidates and information systems for comparative work with other higher institutions.

Bitzer's conceptual framework is interesting in its own right, but its explanatory power for the applicability of the Salzburg Principles in Africa is limited because, when the ten principles of Salzburg I are considered, it becomes difficult to draw a line between some academic, administrative and contextual factors. Some of the principles crisscross academic, administrative and

contextual factors. For instance, the third principle[2] is both contextual and academic because it involves a synergy of universities, educational policies of governments and other contexts of practice that would support joint doctorates.

Also, the fourth principle[3] about the recognition of PhD candidates as early-stage researchers is one in which administrative factors play a major role. But besides that, it is equally contextual. At the University of Waikato, New Zealand, for instance, one of the important administrative considerations for the admission of a doctoral researcher is the availability of working space to assign to the candidate, with a functioning computer, telephone access, allocation of a sum of money for printing and photocopying, specific funding for the attendance of a maximum two university-funded conferences and the sharing of some facilities with university faculty.[4] So it becomes difficult to locate this principle in only one of the categories of Bitzer's (and Teferra's) framework. Equally, the fifth Salzburg Principle[5] is both academic and contextual. In some national experiences, international assessment is invited, while it is not in others. This cross-cutting character applies to a couple of other Salzburg Principles in terms of their location in the framework.

Research by Cross and Backhouse (2014) outlined a framework for the evaluation of doctoral education in Africa. The elements considered in this framework include the candidates' context, the curriculum of the training, institutional structure for the doctoral training, resources and funding and finally partnership opportunities which all together lead to the expected outcomes. The authors considered the expected outcomes with a view to the rationale for the PhD, namely whether it is for the training of a scholar or for knowledge production. However, in light of the Bologna process, it should be both because knowledge production in the process anticipates relevance for both academia

2 "The importance of diversity: the rich diversity of doctoral programmes in Europe – including joint doctorates – is a strength which has to be underpinned by quality and sound practice" (Salzburg 1, 2005, Principle 3).

3 "Doctoral candidates as early stage researchers: should be recognized as professionals – with commensurate rights – who make a key contribution to the creation of new knowledge" (Salzburg I, 2005, Principle 4).

4 The author is a PhD graduate of the University of Waikato and in the study period between 2010 and 2013 these facilities where available to him. It is also necessary to note that in some universities in New Zealand, academic departments print business cards for doctoral candidates as a subtle strategy to support their network building. In using personal experience which is also a valid source of research data supported by autoethnography (Adams et al., 2017), its limitations in this case can be controlled for by the verifiability of an author's claims from the group s/he writes about.

5 "The crucial role of supervision and assessment: in respect of individual doctoral candidates, arrangements for supervision and assessment should be based on a transparent contractual framework of shared responsibilities between doctoral candidates, supervisors and the institution (and where appropriate including other partners)" (Salzburg I, 2005, Principle 5).

and industry. Relevance to academia refers to the ability of the findings to increase understanding in their field of engagement, while industry relevance, which is similar to societal relevance, refers to their ability to serve the needs of society through application to relevant sectors of society (Shaw & Elgar, 2013). For the candidates in context, the framework seeks to answer the question of who is undertaking the doctoral training. The study observed that most doctoral candidates in Africa are already established professionals who do not have the time for full-time doctoral study. The curriculum addresses the model of training which on the continent is mostly based on the master-apprenticeship model which has become outdated. The structure involves integrating the doctoral candidate into an academic unit or department, where they collaborate with a supervisor or a supervisory team over a designated period to conduct new research. This structure is bound up with the environment of the research both in terms of research infrastructure, educational policies and quality of knowledge production. Here, Cross and Backhouse present one of the most decisive setbacks to doctoral education in Africa, namely, that academic departments in most universities lack a conducive environment for research indicated by paucity of active researchers, limited research seminars and developmental workshops, limited funding and time to attend conferences, mentorship and opportunities to gain external input for their research. PhD scholars find it difficult to travel. Poor funding affects the quality of library resources, poor internet connectivity associated with the high cost of internet and lack of technological support. Finally, African universities have limited partnership opportunities which they could utilise to exploit economies of scale, share experiences and best practices.

All these elements need to be considered side by side with the Nigerian context, but in an analytical approach that grounds each of the setbacks to doctoral education on the applicable Salzburg Principle. In providing an overview of the Nigerian context of doctoral studies in the next section, the ten elements of the Salzburg Principles are discussed in relation to how their realisation is impinged on by socio-economic and political conditions in the country. There are issues related to funding, university staff emolument issues, education policy issues, issues related to expertise, issues related to institutional network building with other institutions within and outside Nigeria.

3. Doctoral education in the Nigerian context

Various accounts of the Nigerian context of doctoral education present a gloomy picture of Nigeria. For example, according to Saint et al. (2003) much of the academic practice in Nigerian universities is based on traditional ways

of teaching and research and falls short of the Nigerian government's own standards. Besides, the expansion of the higher education system during the last three decades (see Van't Land, 2011) has overwhelmed the government's funding ability. Saint et al. (2003) go on to discuss various challenges and problems facing higher education institutions in Nigeria: poor remuneration of university staff and constant disagreements between university staff and the government on wages result in constant industrial actions which have at times left universities closed for several months almost every year since the late 1980s. The Nigerian *Tribune* newspaper (cited by Ashiru, 2022) reports that between 1999 (when military rule ended) and 2020, the lecturers' union in Nigeria went on strike 17 times for a total 1 450 days. The strikes are usually related to issues of funding and emoluments. Due to the challenges of poor funding, research is not prioritized by government. The budget allocation fails to separate funding for tertiary institutions and special funds for doctoral education, as the focus on doctoral studies as a key driver of economic progress does not appear to be a priority for Nigerian policymakers. Further, the incidence of corruption and misuse of the little available funds are part of the local contextual issues that impede on the rise of conditions that could enhance doctoral research in Nigeria.

University education commenced in Nigeria through an affiliate campus of the University College London in 1948 and later metamorphosed into a full-fledged university in 1962, namely the University of Ibadan (University of Ibadan, n.d.). The University of Nigeria, Nsukka, was established on 7 October 1960 as the country's first indigenous university. These two universities were followed by the University of Lagos, the University of Ife (now Obafemi Awolowo University), and Ahmadu Bello University (Obafemi Awolowo University, 2021; The Higher Education Foundation, n.d.). These first five are known as the first-generation universities. They have varying histories in terms of doctoral education. The first ever PhD in Nigeria was awarded by the University of Ibadan in 1964 (Falola & Aderinto, 2011). The expanding population of Nigeria and growing need for higher education has led to the expansion of institutions of higher learning and the corresponding need for highly skilled staff to teach in them. The shortage of adequate academic staff to teach in the universities led to the recruitment of non-PhDs to fill those positions in many Nigerian universities A report in the University World News (Fatunde, 2008) recounts a scenario of a non-PhD, who was not a professor, supervising a PhD. In 2012, the National Universities Commission in Nigeria carried out a needs assessment of Nigerian public universities and found that only 43% of lecturers had PhDs and in only seven universities did up to 60% of the lecturers have doctorates

(see *The Nation*, 2018). The National Universities Commission, which regulates universities in Nigeria, threatened that non-PhD lecturers should be sacked by 2009 (Fatunde, 2008). As a result, the drive for more PhDs has been more vigorous in Nigeria not only for public universities but also for the countries' rising number of private universities. Suleiman Bogoro (2021), head of the Tertiary Education Trust Fund (TET Fund), noted that 60% of Nigerian lecturers now have doctorates. This progress may be accounted for by a few factors including the need to secure teaching jobs and escape the threat of termination by the NUC; the funding support from the government especially for lecturers in federal universities who were still completing their doctoral studies. Through the TET Fund, some lecturers benefitted from funding including for overseas travel for doctoral training.

In November 2021, the National Universities Commission provided the list of 198 universities in Nigeria including 45 federal universities, 54 state universities and 99 private universities (Odunsi, 2021). Out of this number, 30 federal universities, 28 state universities and 28 private universities had accreditation to offer postgraduate courses at master's and PhD levels, while two private universities had approvals to provide master's level training (NUC, 2019). The application for postgraduate admission is increasing especially at the doctorate level and raises concerns about the quality of the qualifications resulting from the training. The degree to which these universities meet the attributes described by Trafford and Leshem (2009) under the rubric of 'doctorateness' needs to be investigated. The term refers to the extent of emphasis on research excellence, capacity to teach transferable skills, attractive institutional environment, interdisciplinary research options, exposure to industry and other relevant employment sectors, international networking, as well as quality assurance in doctoral education within these universities. In some sense, the term 'doctorateness' aligns well with the aims of the Bologna process. The question then is whether doctoral training in Nigeria commits to the principle of doctorateness at least or whether there are elements in Nigerian training practices that lend the systems to the Salzburg Principles.

The conditions in which doctoral training takes place in Nigerian universities are mirrored in the findings of a study of six pilot universities by the International Association of Universities (Van't Land, 2011) on the changing nature of doctoral studies in sub-Saharan Africa (SSA), namely Cameroon, Nigeria, Kenya, Benin, Senegal and Rwanda. In their study the IAU reported that doctoral education in these six countries is subject to the following circumstances:

a) At institutional level, there is a general lack of systematically disaggregated data on doctoral studies and doctoral programmes. There tends to be a lumping up of information on postgraduate studies in a manner that limits sufficient emphasis on the development of PhD studies; there is also a lack of synergies between students' doctoral research and institutional research focus. Indeed, in some instances there is a clear lack of institutional research strategies.
b) At the national levels, government research priorities (in instances where they exist) are not aligned with local development needs and such poor articulation of research priorities affects the developmental usefulness of doctoral research. Consequently, other sources of funding drive research directions in higher education rather than national priorities. More importantly, doctoral research is not shaped by a clear policy that factors in national collaboration and or regional networks in sub-Saharan Africa.
c) At regional SSA level, there is an absence of strategically coordinated collaboration and exchange of expertise to support and enrich research in the region. The IAU report equally stressed progressive decline in doctoral research as well as poor infrastructure/facilities of research. This is further disaggregated into the paucity or total absence of research databases; limited internet connectivity which hinders both national and regional networking; dated library holdings and facilities as well as ill-equipped science laboratories; and lack of dedicated seminar rooms.

In terms of supervision, the IAU reports a lack of transparency, clear information or tracking mechanisms about who is registered where, who supervises them and the progress of the students; absence of proper synergy between supervisors and their students which limits the introduction of such students to their supervisors' research networks or consideration of the doctoral candidates as early-stage researchers who deserve to be valued as such. Students are hardly availed of opportunities for internationalization by being exposed to international networks in order to link up with other experts in their fields of research both at the local, regional and international levels. Supervisors, on their part, are in many instances overloaded with teaching and supervisory tasks in a way that undermines efficiency. Besides, they seldom benefit from institutionally supported staff development opportunities for the enhancement of their own skills (Van't Land, 2011).

There is a disturbing absence of comprehensive centralized information and data collection and management systems on doctoral programmes that could be used for policymaking, planning and institution management in most

SSA universities. These elements are decisive for policy, governance, planning, implementation, monitoring and evaluation of doctoral programmes. Perhaps this gap may account for why institutional research strategies are not well connected with national research and innovation strategies (Van't Land, 2011).

In the area of internationalization of doctoral programmes, the IAU report revealed the absence of institution-wide internationalization strategies in the studied institutions. Doctoral students are not required to participate in international conferences even when there is funding for this purpose. Official international collaboration agreements are generally unknown to most universities. Where these agreements exist at all, they focus mostly on the northern hemisphere and almost completely ignore the need for South–South cooperation for the growth of knowledge.

A contrary point to this IAU finding is expressed in the work of Akudolu and Adeyemo (2018) which noted an increase in the last ten years in collaboration between Nigerian and overseas institutions. Moreover, a recent analysis of research output in the STEM disciplines in SSA reveals that West and Central Africa have higher degrees of collaboration than East and Central Africa. Six out of fifteen centres that are designated African Centres of Excellence are hosted by Nigeria. While the above developments indicate some progress in internationalization, it reports on only a few Nigerian experiences and is, therefore, insignificant in comparison to the number both of Nigerian and other African institutions that engage in knowledge production that would have benefitted more from a better coordinated and more systematic international cooperation. Again, IAU reported the absence of awareness raising campaigns at the national level to signal the importance of doctoral studies in regional development or even for the effective dissemination and use of research findings.

In summary, the IAU report suggests that in sub-Saharan Africa, there is a general absence of conditions that could make the Salzburg Principles applicable for the improvement of doctoral education in Nigeria. The two core contexts for stimulating such conditions are the political context of the government and the context of the universities. In the political context, a demonstration of commitment by governments to the improvement of doctoral education through policies and their effective implementation is fundamental. In the context of the universities, the structures and processes of doctoral education must be aligned to government policies aimed at a contextual reproduction of the kind of principles that were made in Salzburg. It is therefore not impossible to consciously create such principles which would be sustainable in the African situation to reorganise doctoral education in most of the continent and Nigeria.

In the next section, I consider a Nigerian institutional context where doctoral education takes place side by side with the Salzburg Principles.

4. Doctoral education at the University of Nigeria, Nsukka, through the lens of the Salzburg Principles

The University of Nigeria, Nsukka, is an institution operating within the Nigerian doctoral education milieu. Its research practices are affected by the larger systemic characteristics that are engendered by the overarching political economy of the national attitude on research and doctoral education. In this section we consider the ten Salzburg I Principles and relate the discussion with the seven principles of innovative research synthesized in Salzburg II. I shall relate these principles to practices in the University of Nigeria, and then consider the conditions that affect doctoral education at the university.

4.1 First Principle: Advancement of knowledge through original research

The present practice in doctoral education at the university is that students first have to complete course work and then qualify through a written examination to be admitted to the writing of their thesis. At the end of the process, the research reported in the thesis is examined for the purpose of the doctoral award. The University of Nigeria states in Section 39 (iii) of its Postgraduate Regulations (2018, p. 39) that

> *for a thesis to be approved for oral examination for the degree of Doctorate, it shall embody original research of the candidate, display critical judgement and contain materials publishable as definite contribution to knowledge. This must be demonstrated (except for professional doctorate) by at least an acceptance letter in any Impact Factor Indexed Journal approved by the university for promotion …*

An initial guarantee of originality must be established as a matter of requirement of section 39 (i) of the regulation which provides for a plagiarism test and a plagiarism test certificate before the oral examination. This provision verges on both originality and research ethics.

'Originality' does not necessarily mean 'relevance' (BennichBjorkman, 1997, cited in Baptista et al. 2015). Additionally, creativity is essential in doctoral research, as innovation must be aligned with the significance and applicability of the knowledge produced. On the higher end of originality and creativity is

innovation. All these elements could culminate in research excellence when new findings are not only creative but can solve societal and industry needs and drive national economic growth. The University of Nigeria has established structures that suggest its awareness of the connection between original, creative and innovative research and economic growth. The Research Policy of the University of Nigeria (University of Nigeria, 2013:17) mentions the office of Patents and Innovations as wells as strategies for commercialization and links to society and industry. Nonetheless, there is no systematic linking of the contents of the research policy and promotion of innovative doctoral research. Research within the university is hardly linked to the needs of relevant industry. Neither the university nor industry is moving towards mutual tapping of their respective and each other's potentials. This may be part of the overall poor collaboration between universities and industries in Nigeria and a definite setback to the growth of postgraduate research entirely. Such collaboration would have been an important exposure to the existing practice in industries and a basis for exploring new frontiers for improvement on observed practices. The point here is that university–industry collaboration is a support factor for innovation in research and that, despite its research policy, the university has not consciously pursued it as a strategy for growing doctoral research.

The most decisive factor about original and innovative research is funding. The university of Nigeria, Nsukka, is as poorly funded as other Nigerian universities. Nigeria's education budget has never gone above 12% since 1999, while the 2018 allocation to the sector was a paltry 7%. At the university of Nigeria, the quarterly (three-monthly) allocation by the university to its academic departments for expenditure on goods and services in 2018 was approximately NGN 300 000. This translates to about USD 722 to be used over a period of three months. More important about this is that these funds are often sent only in one or two out of the four quarters in a year or even not sent at all. Moreover, the funding is for goods and services used in running both undergraduate, master's and doctoral programmes. Evidently, there are no specially dedicated funds for doctoral studies. Three personal interviews with former heads of academic units and departments at the university (17 May 2022), corroborate the lack of specific funding for doctoral studies. The respondents separately explained that the funds for goods are services are not even sent to the departments. The university only asks departments to approve any of the university registered vendors to supply a few of the needs of the department. Consequently, some of the unmet needs that are part of students' research needs are procured as out of pocket expenditure for the students (Personal

communication, May 17, 2022). Such needs, which students privately meet, are usually quite costly in the STEM disciplines.

4.2 Second Principle: Embedding institutional strategies and policies for PhDs that meet new challenges

The University of Nigeria has institutional strategies for doctoral education in place, some of which were discussed under the first principle. However, these strategies are limited by two major factors. First is the inadequacy of funding to support some of the plans on paper (as discussed in the previous paragraph). The second is the absence of political prioritization of knowledge production as a framework for economic growth and national development. This is evidenced by poor budgetary allocations to education and absence of policy support for doctoral education. In fact, low wages and poor funding of the universities are reasons why academic staff unions often go on strike. From 14 February to October, Nigerian federal university academic staff were on strike in 2022. Among their demands was the disbursement of the university revitalization fund (Olaniyi, 2022) which is to be used to provide essential infrastructure for research.

We can, however, refer to some of the university's efforts in improving the relevance of its postgraduate output for addressing the challenges facing the country. The curriculum of doctoral training has introduced new components with transferable broad skills, like grant-writing. But some of the new components are organised in the form of one-day seminars for students, which is hardly enough time for any meaningful training. Hence such changes in the PhD curriculum do not yet amount to any fundamental transformation in the content of the training.

4.3 Third principle: The importance of diversity

The university of Nigeria has minimal opportunity to integrate diversity into its doctoral education. It has few opportunities for split-site doctoral studies. Several such cases are internationally sponsored through direct application of the concerned student in competitive processes. The split-site doctorate allows the candidate to spend some time in a foreign university to carry out their research, usually under the supervision of an expert in their field of research. They normally return to their university to complete their studies. Ultimately, the PhD degree is awarded by the home university in Nigeria. However, the university does not have a properly structured diversity practice either in the

form of joint doctorates that it co-supervises with other universities or doctoral training programmes in which the private sector participates. This problem impedes the development of industry-relevant knowledge that contributes to solving societal problems.

4.4 Fourth Principle: Recognition of doctoral candidates as early-stage researchers

This Salzburg principle would entail a couple of practices that give the doctoral candidates a sense of membership to a new community where they are expected to contribute to knowledge creation, rather than being trainees waiting for certification. Some of the conditions necessary to underscore such recognition include among others: (a) provision of a working space where the candidate would have a computer assigned to them or an opportunity to purchase a university-subsidized laptop; (b) university-provided internet connectivity with sufficient bandwidth to use the internet. Such connectivity would be useful for accessing library e-resources and other external research resources available on the internet; (c) provision of funding as incentive for students to participate in at least two conferences before the completion of their doctoral training; (d) support by the supervisors for joint publication with their candidates. In such publication, where the student has made a more significant contribution, they should receive lead author credit for the paper; (e) creation of a framework in which the student is accorded commensurate benefits if their work leads to the registration of a patent(s). The University of Nigeria currently does not have any of the above arrangements. In fact, some faculties do not have office space at all. So, it would be unthinkable to prioritize doctoral students in that regard when many newly hired faculties lack basic work facilities.

4.5 Fifth Principle: Crucial role of supervision and assessment

The relationships between supervisor and doctoral candidate at the University of Nigeria is still overwhelmingly defined by the master–apprentice approach. Although, the Postgraduate Regulations provide for the change of a supervisor when a candidate has well-founded reasons for that (University of Nigeria, 2018), in most cases complaints about poor supervisory behaviour end up with the doctoral candidate's work being frustrated. Many supervisors tend to struggle with state-of-the-art doctoral supervision knowledge, and this sometimes extends to the knowledge of their subject areas.

The university's School of Postgraduate Studies started organising annual compulsory training for postgraduate supervisors, which in most cases lasted for two days. This commenced in 2017 and continued in 2018. While it is commendable, the training courses are not deep and may not result in any major transformation in supervisory behaviour. This matters because the quality of supervision, together with the quality of a student's work, usually determines the success or otherwise of a doctoral candidate.

4.6 Sixth Principle: Achieving critical mass

The number of applications for PhDs in the University of Nigeria has grown significantly over the years. But this growth is mostly driven by the need for teaching staff in universities. As demonstrated by Akudolu and Adeyemo (2018), it was after the 2012 needs assessment of Nigerian universities and the discovery that only 43% of Nigerian university teachers had PhDs and subsequent recommendation that faculty obtain their doctorates that the drive for larger numbers of PhD graduates in Nigeria began. There is no evidence of industry needs being considered in this drive for more doctorates.

The massification drive is also reflected in the number of PhDs graduated by the University of Nigeria. For instance, at the 2018 convocation ceremony, 480 PhDs graduated from the university (Mbamalu, 2018). This number is the highest ever achieved in any Nigerian university. While this progress is being made in the direction of achieving critical mass, it is important to note that the industrial sector has not figured much in this production. So, the kind of innovative research that addresses social needs and drives the market is yet to gain attention. This is another pointer to limited university–industry cooperation in research. This kind of cooperation is expected to condition research directions and add to massification.

4.7 Seventh Principle: Duration

The Salzburg principle recommends a duration of 3 to 4 years for full-time continuous doctoral study. For the university of Nigeria, the duration specified in the university's policies are a minimum of eight semesters and a maximum of 12 semesters for full-time study. This translates to 4 and 6 years respectively. Part-time study is given a duration of a minimum of 10 semesters and a maximum of 14 semesters which translate to 5 and 7 years respectively (University of Nigeria, 2018).

The conditions that affect the possibility of meeting these specifications of the university's Postgraduate Regulation include many factors such as: high attrition rate of PhDs due to lack of finance to fund the studies and research; issues of supervision, lack of facilities to perform certain studies, especially in the STEM disciplines; poor funding of universities; and the lack of an organised monitoring system to follow through the progress of the candidates. But more importantly, the massification could easily reach a saturation point because there is little preparedness on the part of industries to find use for university research while at the same time, researchers in the universities do not target the possible needs of industry.

4.8 Eighth Principle: Promotion of innovative structures to meet the challenges of interdisciplinary training and the development of transferable skills

This principle tends to summarise what many other components of the Salzburg Principles set out to achieve and have been addressed in the foregoing discussions.

4.9 Ninth principle: Increasing mobility

This component is about interdisciplinary and intersectoral mobility of candidates during their doctoral training as well as internationalization. It is not cheering to point out that formalized inter-university collaboration for improved doctoral training in Nigeria is almost at zero. The University of Nigeria participates in this narrowly focused training of doctorates. Apart from the invitation of subject experts from other Nigerian universities to serve as external examiners, the sharing of expertise that requires candidates in training to spend some time in other universities within the country is absent. Also, such mobility at international levels, whether it is within Africa or beyond, is quite minimal. In the instances that they occur at all, it is through the efforts of students who win such opportunities through competitive applications. While students are in the most recent Postgraduate Regulations required to attend at least one international conference, there is no form of support from the university for that purpose. Consequently, those who manage to attend such conferences are few and they usually end up attending local Nigerian conferences that are labelled as international.

4.10 Tenth Principle: Ensuring appropriate funding

It would be obvious from the consideration of the entire points above, that poor funding is a recurrent decimal in the factors that challenge the feasibility of reproducing the essence of the Salzburg I and II Principles in doctoral training in Nigeria. There are at least 585 institutions of higher learning in the country including universities, polytechnics and colleges of education. These institutions together with primary and secondary levels of education combine to share the little annual budgetary allocation for the educational sector in the country. What each university receives from the federal government owned universities does not add up to a scratch in terms of the funding needs of a modern university. In Nigeria the federal university funding is allocated and distributed by the National University Commission, which applies the following parameters: enrolment specification, student academic ratios, academic staff structure (professoriate, senior lecturers and other lecturers), non-teaching support staff ratio to academic staff ratio, allowances for direct teaching and services based on facilities and other equipment required, line item funding (such as library costs, research development), administrative support cost and other services (such as university health services), non-academic expenditures (personal emoluments), retirement policy, local income or internally generated revenue and total salaries (Akinsolu, 1990, cited in Ahmad et al., 2016).

There is, however, a special Tertiary Education Trust Fund (TET Fund) that is dedicated to research, staff and the equipment of universities. The TET Fund had been applied to support the doctoral training of academic staff at universities (including overseas training) and upgrade some obsolete equipment and structures of research. In addition, the TET Fund also has a research funding component that includes doctoral research. Doctoral students' applications are submitted at the national level where all applications from public universities in the country are assessed for the grant. But the process of applying for the TET Fund is a bureaucratic nightmare beset by numerous delays, while winning the research grant is quite rare.

In addition to the paucity of research funding, access to basic infrastructure like electricity, presentation facilities for seminars, laboratory chemicals is still problematic. At the university of Nigeria, several aspects of operating costs that could not be met through official funding sources are complemented by students. Thus, despite this government funding, the cost of doctoral training on the part of students is quite high and the environment of such training is replete with funding and other gaps.

5. Synthesis

Considering the discussions above, we can synthesize the factors that affect doctoral studies and the feasibility of applying the Salzburg Principles in Nigeria into political economy factors. The roots of the relationship between market and research in Europe goes back to the industrial revolution where several scientific works were supported by business especially in Britain. Continuous growth of the market and progress of universities also led to the support and sponsorship of various forms of market-relevant research through the establishment of professorial chairs and scholarships in specific areas. The state's role in creating conditions for the growth of the market and research to address societal problems also increasingly moved towards the university in the search for solutions not just of matters of policy and governance but also for growing industries and market. Hence, supporting university research also became an important part of official policies. The decisiveness of doctoral research for this purpose culminated in the Bologna process which led to the articulation of the Salzburg Principles.

It is important to see the strong hand of European states in support of the Bologna process and the policies and actions that emerged in their ministers meeting in Berlin which named the European Higher Education Area (EHEA) and European Research Area (ERA) as the two pillars of a knowledge-based society (Witte, 2006). Based on the Bologna process, governments in Europe and other advanced countries have prioritized knowledge and devoted significant chunks of their annual budget to the support of doctoral studies with a clear expectation of the economic, technological and other benefits for their societies.

In contrast, Nigeria's ruling class demonstrate a hostile posture to the development of universities and qualitative research that grows a knowledge-based society. This is evidenced by the poor funding allocated to universities to complacent attitudes to the fulfilment of their agreements with university teachers on how to improve teaching and research conditions in the country's higher education. Besides, the linkage between universities, industry and state is quite tenuous, not based on formalized processes for the uptake of research findings from the universities, nor is university research demand driven. These factors account for the lack of political will to invest in research in Nigeria and the continuing poor environment of doctoral training. The weakness of this important linkage means that implementation of the Salzburg Principles in Nigeria would be a hard task.

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