ANALYZING RESEARCH DYNAMICS AT THE UNIVERSITY OF GHANA:

A case study of the Department of Economics and the Department of Physics

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Abstract

Nowadays, many universities are championing the idea of becoming a research-intensive university to be able to have world class recognition as it is seen as a necessity to contribute to growth in the national economy. This requires that a university has certain things in place such as the adequate research funding, more infrastructural resources, the required academic staff, and, above all, high research output in the form of publications and PhDs. National flagship universities in the developed countries such as Europe and North America were found to be doing well with regard to the above-mentioned elements, which has given many of them a world-class research-intensive university status.

This has served as a wakeup call to the universities in Africa to improve their research performance as it is now highly recognized as the roadmap to ensuring economic growth. Most of the African universities, therefore, started redefining their vision and mission to have the research component as one of their major goals. Hence, the vision of the University of Ghana is to become a world-class research-intensive university by 2024. To assess the achievability of this vison, the study looked at where the university used to be in terms of its research function, and how far it has come, to be able to make predictions about its future.

The findings revealed that the institution has progressed in its research function compared to some years back. This is, at least, evident in the improved research funding, effective personnel policies, increasing number of academic staff with a doctorate degree, increasing number of graduate admissions, and the increasing number of research publications which have all contributed to an improvement in the rankings of the university (though rankings can be criticized for being subjective in character).

Funding, however, was again identified as the key problem limiting the research activities of the academics as most of their external funding come from the donor agencies that usually have their own thematic priorities which is different from that of the individual academics or the institution in general. This usually has a limitation on the number of academic publications by these academics. In addition, the academics find it difficult to apply for internal funding as it is plagued with poor procedural mechanisms such as nepotism and institutional bureaucracy. Also, the more teaching load of the academics hinder them from engaging in active research activities.

Finally, the findings reveal that the three management levels in this study (central leadership, departmental heads, and the academics) have different views about the level of importance attached to research at the University of Ghana. To the central leadership, research in the university is very important and it should become even more important than teaching. The departmental leadership, on the other hand, think that the level of importance attached to research is not alright and more should be done to make it better. Yet, the academics are of the view that the facilities of the university point more towards teaching than research leading to their conclusion that research in the university is less important at this time.

Dedication

This thesis is dedicated to my late grandmother, Ms. Mary Okyere (Abena Tiwaa), who taught me that the secret to prosperity and a good success is the LOVE for God and my fellow human being. Today, I can testify that heeding to her advice has brought me this far and I know it is going to take me places that I have never even dreamed of. Thanks, granny. And may your soul find rest in the bosom of our Lord.

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Finally, I thank the Norwegian government for granting me a full scholarship that helped me to pursue my studies at the leading research university in Norway, the University of Oslo. God bless Norway. Amen.

List of Abbreviations

APT	Accelerated PhD Training
BMGF	Bill and Melinda Gates Foundation
CACS	College of Agriculture and Consumer Sciences
CHET	Centre for Higher Education Transformation
DANIDA	Danish International Development Agency
DFID	Department For International Development
ECH	Ethics Committee for the Humanities
EU	European Union
EUR	Euros
GH¢	Ghana Cedi
HERANA	Higher Education Research and Advocacy Network in Africa
HES	Higher Education System
HODs	Heads of Department
IAST	Institute of Applied Sciences and Technology
ICDE	Institute for Continuing and Distance Education
IDRC	International Display Research Conference
IGF	Internally Generated Fund
KE	Knowledge Economy
LECIAD	Legon Centre for International Affairs

MA	Master of Art
MAK	Makerere University
NAB	National Accreditation Board
NCTE	National Council for Tertiary Education
NIH	National Institute of Health
NORAD	Norwegian Agency for Development Cooperation
NPM	New Public Management
ORID	Office of Research, Innovation, and Development
PhD	Doctor of Philosophy
PPPF	PhDs, Publications, Personnel policies, and Funding
QS	Quacquarelli Symonds
RD	Research Dynamics
RIPS	Regional Institute for Population Studies
SSA	South-Saharan Africa
TDR	Tropical Disease Research
TEIs	Tertiary Education Institutions
THE	Times Higher Education
UCT	University of Cape Town
UG	University of Ghana
US	United State

USAID	United Sates Agency for International Development
USD	US Dollar
VC	Vice Chancellor
WHO	World Health Organisation

Table of Contents

TABLES

1 CHAPTER ONE: INTRODUCTION OF THE STUDY

1.1 Introduction

This chapter provides a brief background of the study with the aim to provide a better understanding of the topic (Research dynamics at the University of Ghana) by looking at the broader picture first and how it trickles down to the basic units. It also discusses the purpose or objectives of the study, research problem, research questions, potential significance of the study, its limitations, and outline of the study.

1.2 The Research University

Nowadays, universities everywhere are positioned in rapidly changing national and global contexts, which are strongly affected by what has become commonly known as the visions of a knowledge economy (KE) (Gornitzka et al. 2012). These visions assume that the ability of the society to develop is affected by the performance of the university through the integration of education, research, and innovation, implying that education and research have the potential of stimulating innovation. Consequently, investment in scientific research and higher education (HE) has become a key factor in international competitiveness (Scott 1998). For this reason, Scott asserts that "the instruments of international rivalry are no longer fleets and missiles but intellectual property" (Scott 1998: 110). This clearly indicates the importance of the role of research universities which according to Altbach (2013) are referred to as the center of the global knowledge economy. He further defines the research universities as:

"Academic institutions committed to the creation and dissemination of knowledge, in a range of disciplines and fields, and featuring the appropriate laboratories, libraries, and other infrastructures that permit teaching and research at the highest possible level" (Altbach 2013:316).

But it is interesting to note that not all universities are living up to this expectation as their research function may not be up to par. Therefore one could say that for a university to be recognized as 'world class' or being internationally leading, it needs to be a research university which is the heart of KE and also at the pinnacle of the national higher education system (Altbach 2013). Though some may argue that universities are not the sole preserve of knowledge (Brew 2012), it has a core role as the prime knowledge institution (Gornitzka et al.

2012). Hence, the continual call on the research university in the production of new knowledge (Castells 2001) in helping solve the various societal problems such as healthcare, education, and global warming (Cloete & Maassen 2015).

When it comes to responding to this call universities in Africa seem to be lagging behind universities in most of the rest of the world. Hence, the need to explore the state of the African universities to really identify what may be clouding their abilities to strengthen their research activities.

1.3 The African University

Both Castells (2001) and Trow (1970) discuss the functions of the university from different points of view which seem to agree with each other. Castells (2001) talks about the following four functions: *the promotion of ideology, selection of dominant elites, the generation of new knowledge, and the training of skilled labor force*. Trow (1970) on the other hand discusses the autonomous and popular functions of the universities. The autonomous functions are: *the transmission of high culture; the selection, formation, and certification of elite groups; and the creation of new knowledge through pure scholarship*. These are comparable to the first, second, and third points described by Castells (2001) respectively. The details about these comparisons are made explicit in chapter three of this study. Additionally, Trow (1970:4) identifies the popular functions of the university to be the provision of mass higher education to everyone interested as well as useful knowledge and service to nearly every group that wants it.

These functions, however, may have a different connotation in the African context. Castells (2001:213) is of the view that, the recruitment of social elites for the then colonial administration and the new political regimes became the fundamental function of universities in the 'Third World' including Africa. While other parts of the world such as Europe and America have undergone a transition to mass or even universal higher education, HE in Africa still remains an elite system. The participation rate in higher education in Sub-Saharan Africa (SSA), which ranges between 5-10%, is still much lower than in the rest of the world (ibid).

Most African countries wanted to become independent from their colonial masters who were mostly the British and the French. For this reason, 1960 is referred to as 'the year of Africa'

because of the series of events that took place during that year; the prominent among them all is the independence of seventeen African states (Cloete & Maassen 2015). They were very confident that the time had come for the African societies to rule themselves. This is reflected in the popular statement by the first President of the Republic of Ghana, Dr. Kwame Nkrumah during his independence speech on 6th March 1957, *"…That new Africa is ready to fight his own battles and show that after all the black man is capable of managing his own affairs"*. But the African countries were not prepared enough to ensure that. There were acute shortages of professionals to occupy certain positions in the country due to the exit of the colonial administrators and also the fact that the universities were underdeveloped during the colonial period (Cloete & Maassen 2015).

This called for the training of national citizens leading to the growth in student numbers. But such growth mostly took place in the traditional disciplines like law, humanities, and the social sciences, rather than the science fields (Bunting et al. 2014; Kapur & Crowley 2008 as cited in Cloete & Maassen 2015). In all these, the goal of the African universities was to ensure development on the continent. But, amongst other things, because of the limited role (in terms of funding) played by the governments of these countries, it became quite obvious that the universities would not be able to live up to the task, leading to the conclusion by the World Bank that 'development efforts of Africa should be refocused to concentrate on primary education'. But through a better understanding of the role of the university in development by a group of young new economists entering the World Bank, it later embraced the idea that universities have a significant role to play in the knowledge economy, not only in the developed world but also in the developing world including Africa. The call for the developmental roles of the universities seems to be hidden in these two contradictory notions: *a direct instrumentalist or 'service role'* and *an 'engine for development' role* which is based on strengthening knowledge production and the role of universities in innovation process (Maassen & Cloete 2010 as cited in Cloete & Maassen 2015).

In Africa, despite the low academic research productivity, most, if not all, of the universities are working relentlessly in order to be recognized on the international scene, amongst other things, by improving their position in the ranking of world universities (Cloete et al. 2015). To get there requires that a university becomes a 'research-intensive university'– something which is lacking on the continent (ibid). This could be attributed to the low investment in research on the continent. The reason being that almost all the universities in Africa rely

solely on the state for financial support and (in many cases) student fees. Unfortunately, there is a relative decrease in the public funding of higher education across the continent (ibid).

For this reason, their reliance on external bodies, such as donor agencies, has become the order of the day. But as argued by Gornitzka and Maassen (2000), because funding and regulation are two of the main conditions under which higher education operates, the funding from the donor agencies usually comes with some strings attached. Maassen (2000, as cited in Mussige & Maassen, 2015) puts it this way; donor research priorities may be different from that of the university. He adds that this may result in academics becoming more 'reporters to donors' than producers of research-based academic publications since very few donor projects require scholarly output (Musiige & Maassen 2015: 115). This is one of the main factors responsible for the weak performance of African universities on the global research and science stage. As one of the potential research-intensive universities in Africa, what is the University of Ghana doing to break through this pattern?

1.4 The University of Ghana

An important source of data and information for this thesis is the project entitled Higher Education Research and Advocacy Network in Africa (HERANA). In HERANA eight African universities from eight different countries including the University of Ghana (UG) were studied. The HERANA project revealed, amongst other things, that UG's research output has been relatively low. The senior academics of UG, for instance, produced 141 research articles in 2011 compared to their counterparts at the University of Cape Town (UCT) in South Africa whose output was 1,402 (Cloete et al. 2015).

The University of Ghana in its effort to redeem itself from the challenges encountered by the African universities discussed above has developed an institutional strategy aimed at achieving a world class university status by 2024. This calls for the need to revisit the past to know where the university used to be and how far it has come in terms of its research functions, to be able to predict or ascertain whether or not the vision of the university is achievable. As it is stated clearly in its ten years (2014-2024) strategic plan, the vision of the university is to become a "World Class research-intensive University" by 2024 (UG, 2014). To be able to realize this objective, UG may have to put measures in place for the management of research as well as some incentives geared towards improving the research activities of the academic staff. For this reason, among the nine strategic priorities set by the

university namely (1) Research, (2) Teaching and Learning, (3) Internal stakeholders, (4) Gender and Diversity, (5) Institutional Processes, (6) Financial Performance, (7) Asset Management, (8) Monitoring and Evaluation, and (9) External Stakeholders, it is not surprising that research occupies the number one position.

Prior to these strategies, the university had established an office which was to foster and enhance research at UG called ORID – Office of Research, Innovation, and Development. It began operating from the 2010/2011 academic year following the University's Council's decision to separate UG's research functions from the School of Research and Graduate Studies (UG 2015). It is also important to know that for the vision of the university to be accomplished, it will largely depend on the base units or the departments because a higher education institution may be resistant to change due to its 'bottom-heaviness' or the loosely coupling nature (Clark 1983). This is where traditional academic activities, that is, teaching and research take place. As a result, Cloete (2012 as cited in Bunting et al. 2015) is of the view that it is the departments that need to be strengthened if a university, as a key knowledge institution, is to contribute to development.

1.5 Objectives of the Study

The objectives of this study are:

1. To analyze research dynamics at different levels in UG including the individual academics, departments, and the university as a whole.

2. To analyze the way research is being funded at the University of Ghana.

3. To examine the progress made so far by the University of Ghana on its vision of becoming a world-class research-intensive university.

4. To try to fill the knowledge gap in this area and hopefully stimulate further research.

1.6 Research Problem and Research Questions

Based on the above considerations and objectives, the overall research problem that will be addressed in this study is: What are the main features of the research dynamics at the University of Ghana?

Derived from this research problem the following research questions are addressed in this study:

1. How important is research as a basic function at the University of Ghana?

2. What are the main sources of funding for research at the University of Ghana?

The rationale here is that although funding is considered as only an element of the PPPF, this study categorized it as a separate factor to look further into due to the specific role it plays in SSA.

3. What are the main factors influencing the current level of research output at the University of Ghana?

4. What are the institutional strategies, policies, and measures to strengthen research at the departmental level at the University of Ghana?

5. How are the departments responding to the various strategies, policies, and measures put in place by the institutional leadership to ensure higher research outputs?

1.7 Relevance of the study

The research role of the university as the prime knowledge institution has become very crucial as it is regarded as a major means of ensuring development in the national economy. For this reason, the researcher is of the belief that this study will bring to light the factors that have been influencing the research activities of the leading research university in Ghana: the University of Ghana. Most studies in higher education have concentrated on other areas such as the research productivity, teaching and research nexus, funding and so on. But little have been done on research dynamics (which this study defines as the forces which stimulate growth or change in the research activities of a university over a period of time) especially on an African university like the University of Ghana. This calls for the need to examine the past and present research functions of UG to know how they could make changes to ensure growth in the future.

The findings of this study might be of interest to both the departments and UG administrators in general, in developing an environment more conducive to research and scholarship. The reason is that the study looks at the past research activities of the university and compares it

with the present, giving it more room to make predictions about the future. This may pave the way for the administrators to analyse how best they could improve on the areas the university is performing well; make changes to certain policies, strategies and measures that did not help in achieving their goals; and as well maintain those ones that brought maximum satisfaction in an effort to make UG a world class research-intensive university. .

The results of this study may also be used by university managers in Ghana to coordinate activities aimed at improving departmental research activities. Since UG is the flagship university in Ghana, the other universities are likely to follow its success stories in order to get to the level of UG or even do better; In other words, the outcome of this study might serve as a guide to every university in Ghana that has the ambitions to become a research-intensive university.

1.8 Limitations of the study

It is very important to note here that the study by being qualitative and because of the decision to use purposive sampling, falls short of generalizability on the idea of research dynamics across the whole population at the University of Ghana. The purposive sampling, for instance, has the potential of leaving out a number of people who may have been relevant for the study.

It is again worth noting here that, this being a master's degree thesis the data collection process was constrained by practical considerations such as the time to interview more stakeholders. The time mentioned here also posed some constraints on the nature of interviewees chosen for this study. A semi-structured interview was chosen but due to the limited time that was given by the respondents for this study, the researcher did not have enough freedom to follow up on certain questions that may have had a significant impact on the study. Additionally, most of the respondents got interrupted in the course of the interview either by their phones or people budging in and out of their offices. This in a way made them lose track of what they were sharing earlier, though efforts were made by the researcher to remind them at times. Therefore, if this study had been done on a wider scope devoid of the above-mentioned constraints, the results might have been different.

Again, the researcher would like to put on record that due to the timing of this study (beginning of the semester), most of the lecturers especially the professors who could be classified as the active researchers in the university were not available to be interviewed. This

left the study a very little, or no option than to interview the academics who only had a PhD but not so active in research in terms of their output. These inactive researchers were a bit reserved in their responses as they feared I might report them to the central leadership.

Additionally, due to the failure of the researcher to obtain an ethical clearance from the ethics committee of the university (the researcher was ignorant about this and when realised the necessity to obtain one, it was going to take not less than two months to get a response from the committee about whether to carry on with the data collection or not), access to some important documents especially those on the facts and figures of the university that may have helped this study was denied.

1.9 Structure of the study

The study will be developed into five (5) broad chapters. The chapter breakdown is as follows;

Chapter One

This chapter is on the 'introduction of the study'. It provides a brief background of the study (Research Dynamics at the University of Ghana), as well as discusses the purpose of the study, research problem, research questions, potential significance of the study, its limitations, and structure of the study.

Chapter Two

This chapter is titled 'An overview of the higher education system in Ghana and the University of Ghana'. It gives a historical overview of the higher education system in Ghana as well as that of the University of Ghana. It also gives brief information about the Economics and Physics Departments used as case study.

Chapter Three

This chapter is written under the heading 'literature review and analytical framework'. It presents the overview of the seven analytical perspectives relevant for this thesis, namely, the number of PhDs, Funding, Publications, Personnel policies, Central leadership, Departmental leadership, and the Academics at the UG.

Chapter Four

Written under the heading 'Research Design and Methodology' this chapter discusses the chosen research method and its suitability for this study. In addition, such issues as research design, study settings and timing of the research, sample selection, the choice of a case for the study and procedures of data collection and data analysis are presented here. In this chapter also, there is concentration on researcher's assumptions, ethical considerations, validity and reliability of the study.

Chapter Five

This chapter assumes the heading 'presentation and analysis of the findings'. It provides qualitative data gathered during the fieldwork at the University of Ghana with the special focus on the findings from the interviews with the central leadership, the departmental leadership, academics, as well as the documents gathered.

Chapter Six

This chapter focuses on the 'Summary, Conclusions and Recommendations'. It comprises the main conclusions based on the findings of the study. It also provides a link between the empirical findings and the analytical grounding presented in chapter three, as well as, ideas for future research and suggestions for ensuring research excellence at UG. The thesis ends with concluding remarks to the whole study and the list of references.

2 CHAPTER TWO: AN OVERVIEW OF THE HIGHER EDUCATION SYSTEM IN GHANA AND THE UNIVERSITY OF GHANA

2.1 Introduction

This chapter gives a historical overview of the development of the higher education system in Ghana as well as of the University of Ghana (UG). It also gives brief information about the two UG departments selected as case studies namely, the departments of Physics and Economics. The aim here is to provide the reader with relevant background information with respect to the setting of this study. This will contribute to a better appreciation and understanding of the outcome of this study.

2.2 Higher Education System in Ghana

Before 6th March 1957 (Independence Day) Ghana was called the Gold Coast. It is a small country in the western part of Africa covering a total land size of about 238,535 square kilometres with a population in 2014 of about 26.8 million (World Bank 2016). It shares boundaries with Burkina Faso to the north, Togo to the east, Cote D'Ivoire to the west, and the southern part is the Gulf Guinea. There are ten (10) administrative regions in the country with Accra being the capital city.

In Ghana, higher education may be referred to as a post-secondary or tertiary education. It dates back to the early 1940s when Mr. Justice Asquith was appointed by the British government to investigate the principles that will guide the establishment of universities in the British colonies (including Nigeria, Zimbabwe, Zambia, the Gambia, Swaziland, Malawi, South Africa, Sierra Leon, Kenya, Uganda, Sudan, Botswana, Somalia, Lesotho and of course, Ghana) in 1943. That consequently led to the establishment of the first Higher Education institution in 1948 called the University College of the Gold Coast, which was later renamed the University of Ghana after independence in 1957 (Daniel 1997, cited in Atuahene and Owusu-Ansah, 2013). During this period, as was the case in most third world countries, the university's role was, in some way, to carry out the ideologies of the colonial masters (British) and also to train the dominant elites to help in their administration. This echoes what Castells (2001) describes as the first and second functions of higher education institutions respectively.

"…The transition from Mass to Universal Higher Education" as outlined by Trow (1970) could be rephrased as '…the transition from elite to mass higher education' when Ghana's higher educational system is put on the scale. The reason being that over the past two decades, the number of tertiary institutions in Ghana has grown particularly private institutions. And by the 2012/2013 academic year, there were 146 Tertiary Education Institutions (TEIs) accredited by the National Accreditation Board (NAB) in Ghana as have been presented in the table 1 below.

Table 1: Number of Tertiary Education Institutions in Ghana

TYPE OF TERTIARY EDUCATION INSTITUTION	**FIGURE**
Public Universities/Public Quasi/including colleges of Agriculture	19
Private Universities	61
Polytechnics	10
Colleges of Education	41
Colleges of Nursing and Midwifery	15
TOTAL	**146**

Source: NAB (2015)

This growth in the number of institutions has allowed for the increase in the number of students admitted to these institutions. In the public universities including UG, the growth in the enrolment rate has not reflected the proportionate expansion in academic facilities to ensure equity, and inclusion to all social groups which usually results in choked lecture halls, high teacher to student ratio, pressure on facilities and accommodation problems for students (Atuahene and Owusu-Ansah, 2013).

Unfortunately, this increase in student numbers has only taken place mainly in the traditional disciplines like law, humanities, and social sciences. The reason being that there is limited funding for the research-intensive programs like engineering and medicine (Cloete et al. 2015). This has the tendency of making the TEIs in Ghana to focus mainly on their teaching function at the expense of research. Nevertheless, the evidence shows that the number of

students who are pursuing their masters and doctorates is on the increase. The NAB report (2016:5) gives the following information;

Table 2: Number of Research Master's and Doctoral Students in Ghana

DEGREE CATEGORY	2010/2011 ACADEMIC YEAR	2011/2012 ACADEMIC YEAR	2012/2013 ACADEMIC YEAR
Master (Research)	2,837	2,692	8990
Doctorate	715	824	1135
TOTAL	**3,552**	**3,516**	**10,125**

Source: NAB (2015).

From the table 2, master (research) enrolment fell slightly in 2011/2012 from the 2010/2011 figure, but increased by over 200% in 2012/2013 to register an average of 114.4% growth rate. The NAB failed to give reasons underlying the change. However, this study thinks that the influx of first degree graduates in the Ghanaian economy which has contributed to the high unemployment rate among the graduates may be accounted for such an increase in the master's enrolment. Adding value to oneself through further studies is now seen as likely to earn one a job or a career in academia. Again, the table shows that enrolment for doctorate degrees grew modestly by 26.5% on the average from year to year This may have also been influenced by the recent call on teachers in the TEIs in Ghana, especially those in the universities, to have a PhD as a pre-requisite for recruitment. In all, the table demonstrate a sharp increase in the total number of students in the research related programs which rings a positive bell for the future of research in Ghana.

However, like the rest of the African universities, the number of senior academics (Professors and those with doctorate degrees) is very low as expressed in the data of full time academics compiled by the NAB:

Table 3: Academics in Ghana's HES

ACADEMIC RANK	FIGURE	PERCENTAGE
Professor/Associate Professor	436	10.7%
Senior Lecturers	768	18.8%
Lecturers	2157	52.8%
Assistant Lecturers	604	14.8%
Tutors/Others	118	2.9%
TOTAL	**4083**	**100%**

Source: NAB (2015)

It is clear from the table 3 that the majority of full-time academics are lecturers (those without PhDs or who recently acquired their PhDs). It not surprising that the research output of the universities in Ghana is very low compared to their counterparts in South Africa, not to mention, those in the developed countries (Cloete et al. 2015).

To ensure that tertiary education in Ghana functions well to meet the world's standard, there is an agency called the National Council for Tertiary Education (NCTE) that works to bring to light the activities of the various tertiary education institutions in Ghana. Their operations, as well as their roles, are briefly discussed below.

2.3 The National Council for Tertiary Education

The Act establishing the National Council for Tertiary Education (NCTE), that is, Act 454 of the Parliament of the Republic of Ghana entitled the *"The National Council for Tertiary Education Act, 1993"* enjoins the Council to perform certain functions to ensure that all the tertiary institutions in Ghana get to a greater height in the discharge of their roles as academic institutions. It is interesting to note that all the nine functions of the council enlisted in the Act touched on funding. For instance, as provided in Section 2(1) of Act 454 of the Parliament of the Republic of Ghana, the council is supposed to

"to enquire into the financial needs of the institutions of tertiary education and advise the Minister accordingly; ; to advise governing councils of institutions of tertiary education on suitable measures for generating additional funds for their institutions; to advise the

institutions of tertiary education on the applications for and acceptance of external assistance in accordance with government policy;" (NCTE website).

From the above functions, it is quite clear that the role of the council is mainly monetary as all of the items touched on the finances of the tertiary institution. This probably indicates that funding is the key to ensuring that the tertiary institutions in Ghana achieve greater heights as it drives their operations; in terms of their teaching and research activities. Therefore, if the council functions well, it is likely TEIs would not struggle in their finances which often poses a challenge to their research roles. Having said this, each of the institutions also have a key role to play in ensuring that they act accordingly as external funds, for instance, have to be competed for by the institutions themselves and not the council.

As this is a master's thesis, it would be over ambitious to delve into each of the higher education institutions. The University of Ghana which is described as the 'premier university' and most importantly, the focus of this study will be described further to know how they started, where they are now, and where they want to get to in terms of its core functions as an academic institution.

2.4 The University of Ghana

The University of Ghana, which is the premier university and the largest university in Ghana, was founded as the University College of the Gold Coast by Ordinance on August 11, 1948, for the purpose of providing and promoting university education, learning and research. Its formation was as a result of the recommendation by the Asquith Commission, on Higher Education in the then British colonies as has been briefly explained in the above section. It was affiliated with the University of London which awarded its (the University College of the Gold Coast) students with degrees (UG website 2015).

However, in the 1960/1961 academic year, the College Council made a request to the Government of Ghana for legislation to constitute the University College into a university with the power to award its own degrees. The Government appointed an international commission to examine the problem. On the recommendations of that commission, the University of Ghana was set up by an Act of Parliament on October 1, 1961 (Act 79). The then President of the Republic of Ghana, Dr. Kwame Nkrumah, became the first Chancellor of the University, with Nana Kobina Nketsia IV, as the (Interim) Vice Chancellor (UG

website 2015). Currently, the chancellor of the University is the former UN Secretary General, Mr. Kofi Annan with Professor Ebenezer Oduro Owusu being the VC. The government of Ghana through an act of parliament has granted each university the autonomy (semi) to determine how to run its affairs. With government support regarding funding of the public universities, including UG, declining over the last five years (VC speech 2014), UG is left with no option but to look for other sources to secure funds to ensure the smooth running of the university.

The current student population is about 37,740 representing a male to female ratio of 1.4:1. They are classified under the following programmes:

Table 4: Student Population at UG

DEGREE LEVEL	FIGURES
Post-Graduate students	4,820
Bachelor degrees	32, 059
Sub-Degrees	859
TOTAL	**37,738**

Source: UG website (2015).

Also, the senior academic staff members employed by the university are 1,179. These staff members are expected to engage in teaching and research. Again, the senior administrative and professional staff who are too see to the daily running of the university constitute a total of 206 (UG website 2015). The University of Ghana is run on a collegiate system and comprises of 4 colleges, namely;

- College of Basic and Applied Sciences,
- College of Education,
- College of Health Sciences, and
- College of Humanities.

The university is currently ranked number seven (7th) in Africa and among best 600-800 universities in the world (*THE* World University Rankings 2016; QS World University Rankings 2016).

The vision of the university is to become a "World Class research-intensive University" by 2024. As part of its vision to become a world class research intensive institution, UG has identified four priority areas where the university will focus and promote international collaboration in research initiatives to enhance the University's research output. These research areas are:

- Malaria Research;
- Trans-disciplinary Research into Climate Adaptation;
- Enhancing Food Production and Processing;
- Development Policy and Poverty Monitoring and Evaluation.

Its mission is also to "create an enabling environment that makes the University of Ghana increasingly relevant to national and global development through cutting-edge research as well as high-quality teaching and learning" (UG website 2015). It is quite obvious from both the vision and the mission of the university that research is the intended heartbeat of UG. The university will, therefore, need the active role of the various departments to be able to reach its goals by the stipulated time period. To ensure that these departmental research roles are well organized and monitored, UG has a unit called the ORID which absorbs all the research activities in the university. The subsequent sections will elaborate on the role of ORID and its operation as well as the two departments (Physics and Economics) which have been selected for this study.

2.5 Office of Research, Innovation, and Development

ORID as has already been discussed began operating from the 2010/2011 academic year following the University Council's decision to separate UG's research activities which was in the hands of the School of Research and Graduate Studies and make it the sole responsibility of this office (UG website 2015). The underlying reason was that such action was going to help UG achieve its goal of becoming World-Class research-intensive university. So, having this separate office was regarded by the university as the effective way to manage its research functions. ORID, as a result, absorbed the functions of the Research and Conferences Committee, Publications Committee, External Funds Office, Consultancy Unit and the Research Administration Unit (ibid). Its mission is *"to promote, coordinate and facilitate research activities in the University; and also lead the development of the university's strategic plans, including business plan and fund-raising strategies".*

ORID is headed by a Pro-Vice-Chancellor and has been assigned the responsibility for:

I. the development and implementation of the university's research policy and guidelines;

II. the promotion, facilitation and co-ordination of research activities in the University as a whole;

III. establishing operational systems for ethical clearance, as well as their monitoring and evaluation;

IV. setting standards and ensuring effective dissemination of high quality research output;

V. administering contract research;

VI. promoting the development of faculty capability and capacity to deliver high quality research output;

VII. ensuring effective distribution and efficient use of research funds, in line with priority areas identified in the University's strategic plan and national needs; and

VIII. promoting strategic partnerships between the University, other universities locally and abroad, relevant industries and business community.

ORID in its effort to promote research at the faculty level is also channeling its effort towards the transfer of research findings to industry for national development. The office's research support services cut across the following areas: Research and Grants Management; Capacity Building; Intellectual Property and Technology Transfer; Ethics and Research Dissemination; as well as External Funds. Each of these units has staff members assigned with certain responsibilities as discussed below:

2.5.1 Research and Grants Management

This scheme was instituted in the 2008-2009 academic year as a means of encouraging faculty members to contribute to enhancing the research profile of the university. There is a Research Administrator in charge of this unit with three other members as Senior Administrative Assistants. There are three types of grants awarded to the faculty members of the university. These are:

- *Seed Grants* which is for exploratory proposals and the amount does not exceed GH¢ 5000. This amount which does not exceed a period of one year is awarded to faculty members at the early stage of their careers to enable them explore new ideas

- *Investigator-Led Grants* are also up to GH¢ 30,000 and are awarded to multi-disciplinary research projects with at least one collaborator from another UG department/faculty. It is awarded for a maximum period of two years.

- *Multi-Disciplinary Grants* are also up to GH¢100, 000 and are not awarded for more than two years. They are for multi-disciplinary and inter-faculty research projects, which specifically addresses national developmental issue and capable of influencing policy in Ghana.

2.5.2 Capacity Building

This unit coordinates research fundraising activities and the management of donor relations. It is to ensure that the university puts in place mechanisms and strategies in making funds available for faculty research. And through its activities, ORID has been able to develop regulations for monitoring and evaluating funds raised for research. There are two staff members in charge of this unit (the Senior Administrative Assistant and the Assistant Registrar).

2.5.3 Intellectual Property and Technology Transfer

This unit is headed by a Research Development Officer and a Senior Administrative Assistant. It is to foster development, improvement and transfer of new knowledge and innovative technologies to the industry which also has the potential of contributing to the social and economic development of Ghana.

2.5.4 Ethics and Research Dissemination

This section of the ORID is in charge of setting up and coordinating the UG ethics committees as well as research dissemination. It is also tasked with the role of research dissemination, producing the annual UG Research Report, developing policies for research and related activities. This unit also has two staff members, namely, the Research Development Officer who is in charge of this unit and the Administrative Assistant.

2.5.5 External Funds Unit

This unit is in charge of the financial administration of internal and external project funds of ORID. It provides general accounting services to Project Investigators such as managing project budgets, preparing invoices for release of funds from donors, processing requests from Project Investigators for the release of funds for the project activities, preparing accounts for the Project Investigators and Auditors and reconciling project accounts with donors. This unit is headed by a Project Accountant with other three members as Accounting Assistants.

Conclusion

In a nutshell, the Pro-VC is the overall boss and is assisted by the Director. There are 12 staff members who are in charge of the various units discussed above. ORID coordinates all research activities in the university. So whatever research is being conducted by any senior or junior faculty member within the university passes through the office. It makes sure that the interest of the university in terms of whatever the junior faculty or the senior faculty is doing is protected. And from time to time the office monitors and sees whether they are adhering to the tenets of the contract. For this reason, the office has research development officers attached to all the colleges so that they could help the junior and senior faculty members in the development of their research proposals.

Having described the activities of ORID, it has become relevant to know the operation of the Physics and Economics Departments to be able to ascertain how they are imbibing and coping with the research activities of the university.

2.6 Department of Economics

The Department of Economics was established in 1948 and is one of the teaching and research departments under the Faculty of Social Studies. It offers undergraduate, graduate and doctorate degrees in Economics and a Master of Arts (M.A.) in Economic Policy Management. The department services other departments/establishments of the University namely, the College of Agriculture and Consumer Sciences (CACS), the University of Ghana City Campus, the Legon Centre for International Affairs (LECIAD), the Regional Institute for Population Studies (RIPS) and the Institute of Continuing and Distance Education (ICDE).

The Department continues to admit a high number of students in spite of the increasing administrative challenges such as limited funding and other resources to enhance smooth teaching and research. As at 2014, the department had 2559 students. The breakdown is as follows;

Table 5: Summary of Students at the Economics Department

LEVEL	NUMBER OF STUDENTS
Level 100	804
Level 200	609
Level 300	540
Level 400	412
MPhil Economics (I & II)	64
MA. Economic Policy Management	120
PhD Development Economics	10
TOTAL	**2559**

Source: Department's website (2014).

There is a total number of 27 faculty members; 18 representing 66.7% are senior academics with PhDs and the rest are lecturers and below with either MPhil or are now pursuing a PhD (Department's website 2014).

2.7 Department of Physics

The Department of Physics, like the Economics above, was one of the pioneer departments set up at the University College of the Gold Coast in October 1948. It incubated the Department of Computer Science, which is now a full-fledged department of the Faculty of Science (Department's website 2014). The Physics department continues to maintain an active research and teaching links with the Department of Computer Science, Department of Mathematics, Faculty of Engineering Science, School of Nuclear and Allied Sciences, Ghana Atomic Energy Commission, Meteorological Services Department, Centre for Scientific and Industrial Research, and Ghana Standards Board (ibid). Out of the total number of 18 faculty staff members, only 6 representing 33.33% are with PhDs. The remaining 12 representing 66.67% are either with MPhil or now pursuing a PhD (ibid). Unfortunately, data about the

number of students enrolled in each level of the studying programme (as we did for Economics department) was not made accessible. This, however, will not affect the study much as the focus will be on the academics and the leadership of the department.

In conclusion, the academics in these departments generally work by combining research and teaching and duties. They are the life-blood of UG - without them the institution would not exist. Also, the major role of the Head of Department (HOD) is to provide strong academic leadership. He is required to lead, manage and develop the department to ensure it achieves the highest possible standards of excellence in all its activities.

3 CHAPTER THREE: LITERATURE REVIEW AND ANALYTICAL FRAMEWORK

3.1 Introduction

In this chapter a review of the relevant literature on research dynamics at universities is presented which forms the basis for the analytical framework of this study. Since the study is at an African university; the University of Ghana, it would have been preferable to focus the review on relevant literature about Africa and derive the analytical framework from it. But due to the lack of relevant African literature, which might have influenced this study, there is the need to review more general literature that addresses some of the issues this study seeks to unveil. However, this will be adapted to the African context in order to ensure its relevance to this study.

3.2 Literature Review

Functions of the University

In the first chapter of this study, we briefly introduced the functions of the university as identified by both Castells (2001) and Trow (1970). They discuss the functions of the university from different points of views which seem to agree with each other. However, Trow bases his discussion on the American higher education system which this study finds useful, because he expresses in general terms what is expected of the university. This makes its application to other systems across the world, including Africa where the study is positioned, important. Castells (2001) with his sociological background believes these functions are assigned to the universities by the society through political power and economic influence. According to Castells, the university performs four key functions. These are discussed below.

Firstly, *promotion of ideology*: the universities have historically played a major role as ideological apparatus which was rooted in the European tradition of church-based university. For this reason, though the university has the ideology of being an ideology-free institution, the formation and diffusion of ideology is still a fundamental role of the university (Cross et al. 1999, cited in Cloete and Maassen 2015).

Secondly, *the selection of dominant elites*: this follows from the first point, rather than being a substitute for it. The selection mechanisms include the socialization of these elites, the formation of the network for their cohesion, and the establishment of codes of a distinction between these elites and the rest of the society (Castells 2001:207). As a result, values and elite selection became one of a closely connected network (Cloete & Maassen 2015). For instance, the English system is built around the Oxford and Cambridge while in the US, the Ivy League universities play such a role (Rüegg 2004). Unlike the ideology function which remains a key function of the universities, the elite function is becoming a thing of the past. This is due to the emergence of massification (Altbach 1999) which simply refers to the expansion of postsecondary education which goes contrary to the elitist system of having a smaller size. This massification which became an international norm at the end of the 20th century is putting pressure on countries that had previously had a small and elitist academic system to expand (Altbach 1999).

Thirdly, *the generation of new knowledge*: the universities in Europe separated the research function from higher education and confined them into research centers within the state. However, the German system took an exception. This system though operates on the principle of separating research from teaching, remains flexible when it comes to the interaction between the two functions. As a result, this third role is associated with the introduction of the German research university model that emerged in the second half of the 18th century (Cloete & Maassen 2015). Science, therefore, became the most obvious function of the university which calls for the university becoming research-intensive. However, as argued by Altbach (2013, cited in Cloete & Maassen 2015), this forms a minority institution in the higher education system.

The fourth function as discussed by Castells is *the training of the skilled labor force*. He argues that this has been a basic function of the university when it specialized in the formation and training of church bureaucrats. For instance, the Napoleonic model of the university that brought about the introduction of the *grandes ecoles* used specific institutions in the selection and preparation of the state bureaucracy (Castells 2001). The mass training of professionals in the fields of medicine, law, accountancy and engineering also became vital for industrialization development. Hence, the universities were advised to provide both liberal and professional training for this massively skilled labor force (Labaree 2006; Castells 2001).

The above functions of the universities as stated earlier are in line with what Trow (1970) discusses as the autonomous and popular functions of the universities. The autonomous functions are the transmission of high culture; the selection, formation, certification of elite groups; and the creation of new knowledge through pure scholarship. These are similar to the first, second, and third functions described by Castells (2001) respectively. Additionally, the universities have the role of providing mass higher education to everyone interested as well as the provision of useful knowledge and service to nearly every group that wants it (Trow 1970:4).

The Focus of a Research-Intensive University

A research-intensive university places more emphasis on the third function discussed above - *'the generation of new knowledge'* which is argued to bring about innovation for national development. Most universities in Africa are striving to be recognized as a research-intensive university within a certain stipulated period of time (Cloete et al. 2015). For example, the vision of the University of Ghana is to become a world-class research-intensive university by 2024 (UG 2010). Yet the activities of these institutions point towards a different direction (more focus on the other three functions but the generation of new knowledge). Maassen & Cloete (2010 as cited in Cloete & Maassen 2015) are of the believe that there is more emphasis on a direct instrumentalist or 'service role' than on the 'engine for development' role which is based on strengthening knowledge production and the role of universities in the innovation process.

As was explained in chapter one of this study, this came about as a result of the need for professionals to occupy certain positions in the country due to the exit of the colonial administrators and also the fact that the universities were lagging behind because they only functioned to serve the needs of the colonial administration (Cloete & Maassen 2015). This called for the training of national citizens leading to the growth in student numbers. In all these, the goal of the African universities was to ensure development on the continent. However, because of the limited role, amongst other things, in terms of funding, played by the governments of these countries, it became quite obvious that the universities would not be able to live up to the task, leading to this conclusion by the World Bank 'development efforts of Africa should be refocused to concentrate on primary education' (Cloete et al. 2015). But through a better understanding of the role of the university in development by a group of young new economists entering the World Bank, it later embraced the idea that universities

have a significant role to play in the knowledge economy, not only in the developed world but also in the developing world like Africa.

This calls for the need to review some literature on the changes made so far by these universities, what they are doing, and what can be done to ensure an effective and efficient ways of accomplishing their goals. This is what the study refers to as the research dynamics of a university.

Research Dynamics

The Merriam-Webster dictionary defines dynamics as "a pattern or process of change, growth, or activity". Therefore, *research dynamics* (RD) may simply be defined as knowing the major changes that have taken place in the research functions of a university over a period of time. Osborne and Motta (2014) assert that understanding what goes on in a research-intensive university is a complex sense making process, which requires exploring information about a variety of entities, such as *publications, researchers, research communities, funding, as well as understanding their relationships.* From the above, RD in this study is defined as knowing the current state of a university's research functions through the help of some indicators, and comparing it with the past to be able to make predictions about the future. The aim of this section is to help us come up with these indicators which will form the basis for the analytical framework.

The Higher Education Research and Advocacy Network in Africa (HERANA) project which was initiated by the Centre for Higher Education Transformation (CHET) in 2007 has conducted an empirical study that involves eight 'flagship universities' in SSA. These are the University of Botswana, the University of Cape Town in South Africa, the University of Dar es Salaam in Tanzania, Eduardo Mondlane University, the University of Mauritius, Makerere University in Uganda, the University of Nairobi in Kenya, and the University of Ghana which is the prime focus of this study. The aim of the project is to contribute to a better understanding of the factors that may be affecting African universities in their knowledge producing function. The conclusion made so far by the project indicates that Africa's performance on the global research and science stage is not encouraging (Cloete 2015). This is affirmed by Zeleza (2014) who after reviewing Africa's performance in science, technology, engineering and mathematics concludes that Africa remains at the bottom of the global science, technology, and innovation league tables and as well lags behind on key

indicators such as the *gross domestic expenditure on research and development, number of researchers and share of scientific publications and patents*.

Despite the above weaknesses that characterize the African universities, Cloete (2015) gives some positive strides these universities are making. According to him, the number of publications in Africa increased from 11,776 in 2002 to 19,650 in 2008, representing a growth rate of 66.9% in comparison to the world's average growth of 34.5%. This growth is a true reflection of the wind of change blowing across the developing countries as these values explain; Africa's share of publications increased from 1.6% to 2.0%, Latin America from 3.8% to 4.9% and Asia from 24.2% to 30.7%.

At the same time, data from the HERANA project indicates that over the period 2007 to 2011, the eight universities included enrolled far more undergraduate students than postgraduate students at both the masters and doctoral levels (Cloete & Maassen 2015). The statistics in 2011 indicate that, with the exception of the University of Cape Town (UCT) which had an undergraduate admission at below 70%, the rest of the eight universities including UG had a record of about 88% (ibid). This usually results in low number of potential research leaders (academics with PhDs).

According to Bunting and his colleagues (2014), as at the year 2011 UG had about 58:24:18 percent of their academic staff under the categories of Lecturer and below, Senior lecturer, and Professors and Associate professors respectively. This is far below their counterparts at UCT who had 31:29:40 for the same categories. The number of publications by an academic staff is important in determining which of the above categories an academic staff could be classified under. In other words, the research publications of the Professors and Associate Professors are more likely to be higher than that of the lecturers and below. Meaning UG may not be doing so well in terms of research publications which may be as a result of some hidden factors.

Sawyer (2004) is of the belief that as a result of the factors such as the poor remuneration of the university staff members (senior academics), heavy teaching loads, inability to mentor young faculty, and inadequate infrastructure that characterizes most African countries, research has been greatly compromised in the universities on the continent. These factors are very important in determining the way a university goes about research and how efficient and effective they can be in that regard. Though Avital and Collopy (2001) are of the view that

spending does not guarantee results, a university that pays its academic staff very well, is well resourced, and on top of it all, have adequate infrastructure is likely to do better in terms of research than the one that lacks them.

Hence, Sawyer (2004) suggests that there must be an improvement in the management of research, identification, and concentration of areas the universities seem to be doing best, as well as the pooling of resources with other institutions. Maassen (2012) asserts that the development mission of the universities in SSA is linked to poverty reduction and community support more than economic competitiveness, entrepreneurship, and innovation. Cloete and Maassen (2015:12) classify the above notion into two by referring to the former as a direct instrumentalist or 'service' role and the latter as an 'engine of development' role. Because of this service role, African universities seem to have little focus on research which brings about the innovation for national development. This compounded with the factors such as the lack of funding, lack of research infrastructure, and the lack of qualified staff have resulted in the low research output in the African universities (Maassen 2012). At this point, it is clear that both Sawyer (2004) and Maassen (2012) share a similar view about the factors that may be hampering the research output of universities in SSA.

Creswell (1985) is also of the believe that productive researchers may have acquired certain advantages such as being trained in a prestigious graduate program, employment in a major research university, and the availability of adequate resources for research. Not only these but when colleagues cite and praise their works, it drives them to do more. There is more to these factors identified by Creswell as these researchers have their roots in one discipline or another. Therefore, it could be said that productive researchers are guided by the norms of their discipline to publish in selected outlets and to engage in specific research activities. Gaston (1978 in Creswell 1985) gives this example, in disciplines in which knowledge is highly classified and individuals agree on important questions and methods (e.g, physics), faculty publishes more in journals (an abbreviated form of communication) than in books (an extended form of communication). Becher (1994) on the subject 'disciplinary differences' indicates that there are differences between disciplines such as Economics which he calls soft pure and Physics which he referred to as hard pure. Such differences according to him, may account for the number of research publications that should be expected of a discipline because of some characteristics it possesses.

Institutions, however, set the stage for the research performance of their staff members who are employed in one department or another. Creswell (1985) is the view that institutional objectives and policies serve as guidelines for the development of performance evaluation principles that inspire its staff members to give out their best. He asserts that departmental staff members in most institutions are expected to contribute in three domains: research, teaching, and service. The degree to which institutions place an emphasis on each of them may be defined by their level of expectations. For instance, whereas research or doctorate-granting institutions tend to highlight research as the most important domain, community colleges tend to foster teaching at the expense of research (ibid). In this regard, every institution that claims to be a research intensive institution or is marching towards that must have research as its main focus.

The above-reviewed literature has given us an idea about the state of African universities when it comes to their research functions. The conclusion that could be drawn here is that these universities including UG are not doing so well in terms of their research functions compared to the universities in the North. Yet, the goal of most, if not all, of these universities is to become a research-intensive university. The study looks forward to exploring the possible ways of ensuring that such visions are realized by these universities. However, there are some challenges that can be pointed out in the above-reviewed literature. For instance, the data from the HERANA project was up to the 2011 period which suggests that there may have been some significant changes in how those universities are performing at the time of the writing of this thesis (2016).

Taking a look at the data in 2007 and 2011 which is a five-year difference, it was clear that these universities were making a significant improvement in those factors considered by the project such as the number of doctoral students, permanent staff members with a doctoral degree, as well as the number of research publications. That is why it is imperative to analyze the RD of one of these universities (UG) to ascertain its progression or recession at least for the last five years (2011-2016) which the HERANA project has not covered yet. It is as a result of these shortcomings and much more that this study has become important and necessary. This set the stage for the next section which is titled ‘analytical framework’ that will form the pillars of which this study will be situated.

3.3 Analytical Framework

The literature review indicated that, among the functions of a university discussed by both Castells (2001) and Trow (1979), *the generation of new knowledge* has become the prime focus of almost every research-intensive university. This has resulted in some changes in, for instance, the number of publications and academic staff with PhDs on the African continent, at least among the flagship universities that the HERANA project studied for the five year period (2007-2011). Again, poor remuneration of the academic staff members, and inadequate infrastructure and resources were identified as some of the reasons why this new knowledge generation capacity of the African universities is low. Based on these, this study has come up with certain indicators that will help us know the features of research dynamics at one of the African universities: UG. They are the number of PhDs, the number of publications, personnel policies, and funding (PPPF).

The reasons for the introduction of these indicators are that they sum the above factors that have witnessed some changes (positive or negative) on the continent as well those identified as the reasons for the low research output in SSA and tend to offer solutions to them. For instance, personnel policies such as salary increase may offer a remedy to the poor remuneration, and the inadequate infrastructure may be due to the lack of funding to acquire them. These indicators cannot stand alone. As indicated by Creswell (1985), researchers find their roots in one discipline or another. Again, he argued that it is the institution that set the stage for the research performance of these academics. Based on this, the study also identifies three key agents that work to bring into fruition the indicators (PPPF) identified above. They are; the central leadership, the departmental leadership, and the individual academics. Each of the indicators as well as the agents is discussed further below.

3.3.1 PhDs

Every institution that wants to perform well in terms of its research function must have most, if not all, of its staff members with PhDs (Altbach 2013). The reason is that these are the personnel that are expected to increase the research publications of their institutions. But as argued by Cloete (2015:2), African universities, in general, are not strengthening their self-generative capacity in the sense that, unlike their counterparts in the developed North, they do not have a stable PhD-producing university sector and are thus struggling to make a substantial contribution to either new knowledge or the application thereof. Bunting (2015)

compiled various data on the eight flagship universities that explains Cloete's assertion. These are illustrated in the table 6 below;

Table 6: Africa's Total Permanent Academics Between 2007 and 2011

YEAR	FIGURE
2007	6,509
2009	7,190
2011	7,974
Change (2011 compared to 2007)	**1,465 (23%)**

Source: Bunting (2015)

The above figures represent about 23% change in the total number of permanent academic staff between 2007 and 2011. UG alone recorded a change of about 38% which is above the average on the continent. The figures for UG are presented in the table 7 below.

Table 7: Total Permanent Academic Staff at UG between 2007 and 2011

YEAR	FIGURE
2007	767
2009	890
2011	1,058
Change (2011 compared to 2007)	**291 (38%)**

Source: Bunting (2015).

However, in all the 8 universities with the exception of UCT, only a few of the permanent academics had doctoral degrees between the periods under review as demonstrated in the table 8 below;

Table 8: Africa's Permanent Academics with Doctoral Degrees between 2007 and 2011

YEAR	FIGURE
2007	2,760
2009	2,952
2011	3,443
Change (2011 compared to 2007)	**682 (25%)**

Source: Bunting (2015).

We go on to determine the number of permanent academics without a doctorate degree by comparing tables 6 and 8 as illustrated in the table 9 below;

Table 9: Comparing tables 6 and 8

YEAR	TOTAL PERMANENT ACADEMICS	TOTAL ACADEMICS WITH PHDs	DIFFERENCE (ACADEMICS WITHOUT PHDs)
2007	6,509	2,760	3,749 **(58%)**
2009	7,190	2,952	4,238 **(59%)**
2011	7,974	3,443	4,531 **(57%)**

It is clear from table 9 that more than half of the academics in the region do not have doctorate degrees. If this is the case in the African flagship universities, then it is likely that the less known universities on the continent may be doing worse. Again, there is the need to assess how UG alone is faring in this category. We start from the permanent academics with PhDs as demonstrated in table 10 below:

Table 10: Permanent UG Academics with Doctoral Degree between 2007 and 2011

YEAR	FIGURE
2007	360
2009	454
2011	529
Change (2011 compared to 2007)	**169 (47%)**

Source: Bunting (2015)

We do the same for UG by comparing tables 7 and 10 to be able to determine the number of academics without PhDs as shown in the table 11 below.

Table 11: Comparing tables 7 and 10

YEAR	TOTAL PERMANENT ACADEMICS	TOTAL PERMANENT ACADEMICS WITH PHDs	DIFFERENCE (ACADEMICS WITHOUT PHDs)
2007	767	360	407 **(53%)**
2009	890	454	436 **(49%)**
2011	1,058	529	529 **(50%)**

Again table 11 indicates that about half of the total permanent academics at UG are without a doctorate degree. This is a little below the overall average on the continent.

In general, there seem to be an increase in the performance of the African universities in terms of the permanent staff members with PhDs. Yet this is not enough as the percentage in terms of the proportion of academic staff with doctoral degrees compared with those without it is low. UG's performance though not encouraging compared to their counterparts at UCT, it seems to be making some strides in its PhD holders as the same study by Bunting (2015)

indicates that there is a growing record of the number of masters' students who have the potential of becoming PhD candidates; the doctoral admissions have also increased which corresponds to the increasing number of doctoral graduates for the periods that were reviewed (2007-2011).

3.3.2 Publications

"Publish or perish" is an academic adage coined to describe the pressure in academia to continuously publish academic work in order to sustain or further one's career. This point follows from the above factor as the more PhD students and permanent staff members an institution has, the more likely its research output in the forms of research publication will be high. This assumption may not hold for all as the evidence by the HERANA project reveals that the groups of staff (those with PhDs) in the eight flagship universities who were expected to be productive in terms of their research output were doing the opposite. As mentioned earlier, though Africa's share of publications increased from 1.6% in 2002 to 2.0% in 2008 (Cloete 2015). In terms of share of researchers by region the number decreased from 2.2% to 2.1% as shown in the table 12 below:

Table 12: Share of Researchers by the Developing Regions

REGION	2002	2007
Asia	35.2%	38.2%
Latin America	3%	3.8%
Africa	2.2%	2.1%

Source: Cloete (2015)

From table 12, the decrease in Africa's share of researchers may be due to the low level of permanent academics with PhDs on the continent. This is likely to have an effect on the number of research publications are shown in table 13;

Table 13: Africa's Total Research Publications from 2007 to 2011

YEAR	FIGURE
2007	1641
2009	2125
2011	2574
Change (2011 compared to 2007)	**933 (57%)**

Source: Bunting (2014).

From the figures given, the picture is clear that the eight flagship universities are not doing enough in terms of research publication. However, an effort is being made by the individual universities to uplift their productivity in that regard. The improvement made by UG alone was impressive. It almost tripled the 2007's total research publications within a space of 5 years (2011) as reflected in the table 14 below:

Table 14: UG's Total Research Publication from 2007-2011

YEAR	FIGURE
2007	61
2009	124
2011	170
Change (2011 compared to 2007)	**109 (179%)**

.

Source: Bunting (2014)

From the table 13, it is obvious that UG keeps showing progress in its number of research publication. The average rate of increase is far above the overall average on the continent. If UG has been keeping up with this consistency, then it is likely that the figure as at now (2016) may be more than tripled of the 2011 figure.

3.3.3 Personnel Policies

This also has a closer link with the above point; in that, a research-oriented university may have to find a way to manage the 'publish or perish' practices. It has to do with the researchers and how their research activities could be supported or restrained. Here, there is the belief that some pressure to produce cutting-edge research is necessary to motivate scholars especially those in their early careers to focus on research advancement. This has the possibility of increasing research outputs as more publications may usually come with a reward such as promotion and salary increase (Avital and Callopy 2012).

Giving training to the academics may also be another way to incite them to do more (Bartel 1994). It is interesting, however, to note that the pressure to 'publish or perish' also have a significant impact on the time and effort the academics can devote to teaching undergraduate students as well as mentoring graduate students. Usually, the rewards for exceptional teaching could no way be compared to the rewards for exceptional research. This has the potency of encouraging the academics to favor the latter (research) whenever it conflicts with the teaching workload.

The situation in African universities is the opposite. In Makarere University (MAK) in Uganda for instance, income from tuition fees generated from privately sponsored students are used to pay lecturers who have additional teaching loads and not research (Musiige and Maassen 2015). This has the capacity of stimulating the academic staff members with PhD degrees to choose teaching over research whenever there is a conflict between the two.

3.3.4 Funding

Another indicator apart from the above is funding. It is very important when it comes to the research functions of a university as it is used to acquire the appropriate laboratories, libraries, and other infrastructures that permit research at the highest possible level (Altbach 2013). Higher education institutions in the industrialized world rely mostly on the government for funding for both their research and teaching activities (Jongbloed 2000). Jongbloed, however, argues that the governments of these countries have begun shifting this role to the universities as they see this as benefiting the individual students as well as the firms and other organizations that may be using the research outputs of these institutions.

McGuinness (2005:6) on ‘changes in financing and state policy related to American Public Research Universities’ indicates that state funding as a percentage of total educational funding has decreased over the past decade. Higher education institutions must, therefore, rely on other funding sources such as student tuition fees and money from external bodies such as the businesses and donors agencies. This often results in the two main sources of funding for such universities: internal and external sources.

The situation is not different in Africa, and it is even worse as there is a very limited funding from the governments (Castells 2001). Despite the vision of the African universities to become ‘development universities’ Cloete and Maassen (2015:7) assert that the governments of these countries did little to promote the development role of these institutions. The reason is that the little funding that will come from the government may be used for other purposes such as teaching instead of promoting the research activities of the universities (Jongbloed 2000). To provide a remedy for this situation, the universities may engage in different types of public-private partnerships such as parent-university, student-university, employer-university, business-university, and university alumni, in order to safeguard them against over-reliance on the government for funding (Jongbloed 2000:36). The ability to secure enough funding from these sources (internal and external) may be the roadmap in ensuring higher productivity when it comes to the research functions of the university.

In the context of UG, most of its research funding comes from private donors and foreign development agencies (Vice Chancellor of UG, 2014). But Maassen (2012 cited in Musiige & Maassen 2015) is of the view that donor research priorities might not be in line with those of the institutions and the country. As a result, he concludes, “academics become more ‘reporters to donors’ than producers or research-based academic publications since very few donor projects require scholarly output” (Musiige and Maassen 2015:115). This is an indication that the nature and source of research funding are important in determining the research output of a university. For instance, MAK’s research income can be compared to that of the UCT. Yet, the research publications of UCT in 2011 was 1, 517 which far outweighed that of MAK who only had 382 publications (Bunting et. al. 2015). The reason for this vast difference is that most of UCT’s research funding comes from research councils and other competitive sources whiles about 80% of MAK’s research funding comes from donor agencies (Musiige and Maassen 2015).

3.5 Central Leadership

The central leadership coordinates the various research activities of the departments within the university. In other words, it pulls them under one umbrella to forge for a common goal. Therefore, all units within the university are completely bonded by the same beliefs. Institutions differ significantly in terms of their focus and emphasis (Avital & Collopy 2005) in the sense that, while some may have research as its main focus, others tend to foster teaching at the expense of research. One school of thought is of the view that university research diminishes quality teaching while another school of thought believes this is not true; for them, they believe that courses taught by those doing the research are of good quality than those who use the research output of others (Healey 2014).

ORID at the University of Ghana is a typical example of the central leadership when it comes to the research activities of the university. Their operations as well as responsibilities have been spelt out in chapter two of this study. The challenge that the central leadership is likely to face is the fact that the university do not have strong interdependent parts due to its loosely coupled of nature (Weick 1976). This is capable of ensuring that some units or departments continue to hide in their old shell even when there is the need of them to respond to some changes taking place in the environment.

3.6 Departmental Leadership

Below the central leadership comes the departmental leadership. So while the central leadership represents the university in general, the departmental leadership, as the name suggests, are the representatives of the various departments within the university. As the scientist would define a 'cell' as the basic unit of life, so are the departments of the university. Without them, there would not be anything called the university as they work together to really define what a university is. But unlike the 'cell', the failure of a department to function as it is supposed to does not automatically affect the others. For instance, the inability of one department to raise enough funds for research should not stop the more capable ones from doing so. Again, while teaching and learning may be the heartbeat of one department, research may be the focus of the other. This may be called the culture of the department (Clark 1983). But the problem arises when these units with different cultures are made to believe in one culture (the culture of the whole – the university). They (departments) may prioritize their culture to that of the university. For this, Clark (1983: 30) asserts that "give the

academic worker the choice of leaving the discipline or the institution and he or she will typically leave the institution". This may pose a big challenge to the university since the department is where the real action of the goals of the university takes place (Zechlin 2010).

Every leader has goals and ambitions to be accomplished at least in the tenure of office allocated to him or her. But such goals are often entangled with some challenges. For instance, though spending does not guarantee results, a limited amount of funds is likely to limit the research output of a department (Avital & Collopy 2005). For this reason, the inability of the institution to provide the adequate financial resources and facilities should awaken the leadership of the department to find an alternative means to ensure that research is always in progress especially if that is the key focus of such a department (ibid). There may be the need for effective collaboration among the staff in the department in order to make the vision of the leader comes to pass. But this may be hard to do especially when the departments have various research groups with a particular research focus.

3.7 Individual Academics

Another factor to consider here is the individual academics within the department. There is evidence that the average rate of faculty publication tends to be low and the variation in performance very high (Fox 1983 cited in Creswell 1985). This has to do with the goals and aspirations of the individual researcher. Not only that, the academic ranks play a key role here as those with PhDs and senior academics are expected to do more than the junior lecturers and those below (Cloete & Maassen 2015). There is the possibility to develop individual research strategies, based also on limited or no dependence on collective resources which the university or department manages (Creswell 1985). For this, he or she may have the power to direct the research in a particular area, which most likely may be the intention of getting much-anticipated funds from there.

Conclusion

In a nutshell, the indicators (PPPF) discussed above are interlinked. For instance, more funding and favourable personnel policies are likely to increase the number of PhDs and publications of a particular institution. The reason is that PhDs is very costly which requires that the university has the adequate resources (funding) in training such personnel. However, more PhDs without adequate funding is likely to affect the research output of a university

(Publication). Again, the agents (central leadership, departmental leadership, and the individual academics) work to ensure the success and smooth running of the PPPF.

These factors will be of great importance in identifying the features of research dynamics at the University of Ghana with evidence from the data collected from the field work in February 2016.

4 CHAPTER FOUR: RESEARCH DESIGN AND METHODOLOGY

4.1 Introduction

This chapter discusses the chosen research method and its suitability for this study. In addition, issues such as the research design, timing of the research, sample selection, the choice of a case for the study and procedures of data collection and data analysis will be presented here. In this chapter there is also a discussion of the assumptions, ethical considerations as well as the validity and reliability of the study. The aim is to inform the reader about how the researcher went about this study in choosing an appropriate and valid approach for arriving at the intended outcomes.

4.2 Design

This study employed a case study design because as Bryman (2012: 66) argues “the single case study entails the detailed and intensive analysis of a single case”. It is important to be aware of the fact that a study, consisting of one case, is considered to be too small for confident generalizations as it focuses on the intensive analysis of a single case (in this study one university), associating a study with a location (Patton, 1990). According to Bryman (2012) and Patton (1990), it is the case itself that is of a particular interest in the researcher’s pursuit to generate an intensive, detailed examination of the setting and to provide a suitable context for the study’s research questions and purpose. Again, the richness of the context presumes that the study could not rely on a single data collection method, but needed to use multiple sources of evidence (Yin 2009). It is important to note here that the study also used a comparative aspect of design since the researcher intends to compare research dynamics in two different UG departments: the Economics and Physics departments.

The ontological position that was employed in this research is a ‘constructivist' approach. In this the study follows Bryman (2012: 33) who states "the social phenomenon and their meanings are continually being accomplished by social actors". Here, the analysis that was done from the interviews conducted may be subjective in its interpretation. Having determined the framework in which to see reality, we can now determine which epistemological position best fits the philosophy and this particular research. In this respect, the interpretivists’ position is considered (Bryman 2012: 36). This is an indication that this study employed a ‘qualitative method’ (Bryman 2012).

4.3 Method

As indicated a qualitative approach was chosen as the dominant strategy for conducting research on the issue of research dynamics. Generally speaking, a qualitative method of inquiry is characterized by depth, openness, and detail and is concerned with the generation of the theory, rather than testing of it, thus employing the inductive scientific method (Bryman, 2012). The main perspective is that a qualitative approach is aimed at understanding the meanings which people attach to phenomena within their social surroundings and natural settings (Bryman 2012). This assumes close contact between the qualitative researcher and the research participants, which is expected to result in a large volume of rich data, unique case orientation and holistic perspective of the phenomenon under study (Bryman 2012).

The process of data collection took place in January and February 2016 at the University of Ghana. Prior to the data collection, a research proposal was discussed and later approved by the supervisors. Inquiries were made from some officials of the university to know about the process one must go through in order to have a smooth and successful data collection in the university. The researcher being an alumnus of that university experienced no difficulty in locating and finding access to different departments and offices during the data collection.

4.4 Data Collection Tools

Many authors such as Bryman (2012) and Patton (1990) emphasize the following key aspects of a qualitative approach: explanation and understanding of social phenomena by learning about people's experiences and perspectives, design flexibility in case the research situations change, purposeful sampling, limited amount of quantification of the data, and a presentation of multiple perspectives of data gathered. Given these key characteristics, a qualitative approach is identified with such methods of data collection as observational methods, in-depth interviewing, group discussions, document and text analysis, and biographical methods such as life histories and narratives (Bryman, 2012). Often social researchers rely on a combination of two to three of these while conducting their empirical work. This study relied mostly on the *in-depth interview* and the *document and text analysis*. While the documents tended to emphasize research dynamics at UG, the interviews provided information about how this was played out in everyday life.

4.5 Sources of Evidence

In order to know the features of research dynamics at UG, the thesis examined two sources of evidence as have been indicated above. The first one was *documents*; they are the common source in case studies and their advantage is that they can be reviewed continuously and as well serve as a valuable source of information prior to field visits (Bryman 2012). Some of such documents that were used in this study and their sources are presented in the table 15 below

Table 15: Documents

DOCUMENT TYPE	ACCESS
University of Ghana's Strategic Agenda 2014-2024	University website
ORID Report 2013/2014	Hard copy
ORID Report 2014/2015	University website
ORID Research Policies	University website
Vice Chancellor's speech at the July 2013 congregation	University website
Vice Chancellor's speech at the July 2014 congregation	University website
Vice Chancellor's speech at the July 2015 congregation	University website

These documents were selected after meeting the basic requirements put in place by the researcher, that is, could they provide useful information to answer the research questions raised in this study? And the answer was a 'YES'. Permission was sought from the university to use these documents especially the hard copy which was given to the researcher by the university itself. With regard to why these documents were selected, the study thinks that they meet all the four criteria for assessing the quality of documents as given by J. Scott (1990:6 cited in Bryman 2012). These are;

1. *Authenticity*. Is the evidence genuine and of unquestionable origin?
2. *Credibility*. Is the evidence free from error and distortions?
3. *Representativeness*. Is the evidence typical of its kind, and, if not, is the extent of its typicality known?
4. *Meaning.* Is the evidence clear and comprehensible?

In general, all the documents used in this study met the quality requirements by Scott. For instance, when it comes to their authenticity, they are the documents of UG which have been made accessible to the general public. And since they are for public consumption, errors and distortions are assumed to be low, and have high representativeness. Also the language used in these documents is clear making it comprehensible by its users.

The second one was conducting *interviews* with the central leadership (ORID), the departmental leadership as well as the individual academics (Economics and Physics Departments) to help identify some hidden factors that may be influencing the research dynamics than what the documents really outline. These officials are represented in the table 16 below:

Table 16: Respondents

LEVEL	ORID	ECONOMICS	PHYSICS	TOTAL
Central Leadership	1	-	-	1
Departmental Leadership	-	1	1	2
Individual Academics	-	1	1	2
Total	1	2	2	**5**

The goal here was to be able to get a better understanding of what goes on at these levels in the organizational structure. The choice of those two departments was for comparative and validity reasons. The reason is that the study wanted to get a balanced view on research dynamics from the perspective of both the social sciences and the natural sciences. In all, 5

people were interviewed as it has been made explicit in the table 16 above. However, the study made some general interactions with the Pro VC of ORID (who was initially the target for the interview) out of which some information relevant to this study was gathered. This was not the real interview but may rather be seen as an interview between him (regarded as the interviewer) and the researcher (regarded in this context as the interviewee) because he needed some clarifications about why the researcher was conducting a study in this area and the choice of UG as well as the two departments) He, later on, referred the researcher to another official for the real interview to be conducted since he had an urgent task to attend to. The following codes will be assigned to the respondents during the presentation part in the next chapter.

Table 17: Respondents and their assigned codes

RESPONDENTS	**CODES**
Central leadership	R01
Departmental leadership (Economics)	R02
Departmental leadership (Physics)	R03
Individual Academic (Economics)	R04
Individual Academic (Physics)	R05

Semi-structured interviews were conducted using three interview guides: for the central leadership, the departmental leadership, and the academics. Open-ended questions were used to seek responses from the participants, because as Bryman (2012:247) argues, the strengths of open-ended questions include the fact that respondents have the freedom to answer the questions in their own terms without any force; they are useful for exploring new areas which the researcher has limited knowledge of. This also gives the interviewer a lot of room in asking questions and responding to what the interviewees say to seek clarifications. However, due to the limited time that was given by most of the interviewees, this opportunity was not utilized to the fullest.

4.6 Sampling Procedure

In this study, a purposive sampling was used. The choice of the University of Ghana as the prime case of our focus was because it is the biggest and oldest higher education institution in Ghana. It is also an interesting case since it is Ghana's 'flagship university'. The rationale for the selection of the two departments aside the fact that they represent the social sciences and the natural sciences is that they are among the pioneer departments. Meaning those two departments were also formed in the very year (1948) the UG was established (UG website). Though there were other departments in the social sciences such as the Geography and Resource Development that were also formed in 1948, this study takes as a starting point that economics by its nature is positioned a bit closer to the natural sciences if a careful look at the disciplinary differences given by Becher (1994) is taken into consideration. For this reason, the study assumed that this would provide the grounds for effective comparisons to be made.

The goal here was to sample cases in a strategic way so that those sampled were relevant to the research questions that were posed (Bryman 2012). Patton (1990) asserts that the selection of the population is crucial for conducting a qualitative study. Lewis (2003:78) adds that only those respondents who are able to provide the most relevant, comprehensive and rich information should be identified for the research by virtue of their relationship with the research questions. Furthermore, according to Hoyle et al., (2002), a good sampling plays a critical role when the conclusions are generalized beyond the samples that have been studied, and as well becomes very important in ensuring validity.

The selection of R01 (ORID) was because they are responsible for the promotion, facilitation and co-ordination of research activities in the university as a whole. Therefore, having a close contact with them through the interview was going to help the study identify the measures the university is putting in place to strengthen research at the departmental level. Since the departments also have leaders who see to their (departments) day to day affairs, there was the need to know from them about how they were responding to the policies and strategies put in place by the central leadership. Finally, since the real research activities of the departments are performed by the academics, there was no way they could be left out. The basic criterion used in selecting these academics was PhD. The reason was that the HERANA study found out that doctoral qualification of the university academic staff members has an influence on the number of research publications (Cloete et al. 2015).

The selection of the two departments as have been indicated was for comparative reasons – to know whether disciplinary differences (shown below) play a role in the research functions of the departments;

- *Hard pure* (Natural Sciences e.g. Physics),
- *Soft pure* (Humanities e.g. History and Social Sciences e.g. Economics),
- *Hard applied* (Science-based professions e.g. Engineering), *and*
- *Soft applied* (Social professions e.g. Education)

Kolb (1973) cited in Becher (1994).

The reason is that disciplines have their distinctive cultures but this consideration tends to be largely overlooked in research into, as well as policy-making within, higher education (Becher 1994: 151).

4.7 Data Analysis

The data collected in this study were of a qualitative nature. The recorded responses obtained from the interviews were transcribed, and summaries were made about the similarities and differences gathered from the responses. It is worth noting here that notes (especially when one of the respondents refused to be recorded) were also taken which aided the analysis. In all, only one out of five interviewees refused to be recorded. The patterns and relationships from these responses were refined to get the findings in relation to the research questions. The data were analyzed some few weeks after collection, but the context of interaction was still fresh in the mind of the researcher due to the constant pondering over the whole data collection process.

4.8 Validity and Reliability Issues

The issues of validity and reliability are considered to be central concepts when it comes to qualitative research (Bryman, 2012; Patton, 1990; Silverman, 1993). Silverman (1993), for instance, argues that they secure the correspondence of the social research findings to the social world reality they are describing. Furthermore, validity, defined as the extent to which a measure is devised to determine a concept of researcher's interest (Bryman, 2012: 280), requires reliability which refers to the consistency of that measure (Bryman 2012).

Researchers' preoccupation with these two concepts helps to maintain the reliability of generated data and provides reliable descriptions of particular aspects of the social world. In this study validity was maintained by several aspects.

First of all, the variety of methodological procedures and sources were secured by triangulation of data collection methods (interviews and document analysis) and the choice of different categories of informants at the university (central leadership, departmental leadership, individual academics). Cross-checking of information, together with the purposive sampling was also used in the study in order to increase validity and reliability of the findings.

Moreover, direct quotations were also used in the presentation of the results of the study as one of the strategies for promoting qualitative research validity. Again, discussions with peers who were familiar with my research and self-reflection on my potential biases and preferences, that could possibly affect the interpretation of the findings, were also of importance and relevance for the study.

4.9 Ethical Issues

In this study, the researcher sought the consent and approval of the leadership of UG (ORID, Physics and Economics) to conduct research in the university. He was supposed to get an ethical clearance which is one of the policies of the university to ensure that research in the university meets the international standard. This was going to take almost two months for a decision to be made. However, due to the limited time at the researcher's disposal, he had to skip that procedure by writing separate letters to the places where the interviews were to be conducted.

To clear any misconceptions about the intentions of the study, a synopsis of what the research entails and how the findings will be utilized were given to the respondents. Again, the researcher promised to offer privacy and confidentiality to the respondents especially the lecturers, in order to gain confidence from them. There was an instance when one of the respondents refused to be recorded. The researcher agreed to that so a successful interview could be conducted. Notes were taken instead. Again, the interviews were interrupted by series of calls from the respondent’s end as well as people budging in and out of their offices. But in all these, the researcher kept calm and remained focused on what he sought to achieve in the end.

5 CHAPTER FIVE: PRESENTATION AND ANALYSIS OF FINDINGS

5.1 Introduction

Having gone through the preceding chapter which presented the methodology underpinnings of this study beginning with the research design, through to the ethical considerations, this chapter will present and discuss the findings of the study. The analysis of the findings will be done in relation to the research questions. The seven factors that were discussed in the analytical framework: PhDs, publications, personnel policies, funding (PPPF); central leadership, departmental leadership, and the individual academics will help us here to understand the RD of UG. The PPPF will be discussed under each of the three latter factors (the agents). The chapter ends by giving a conclusion from the findings.

5.2 CENTRAL LEADERSHIP

This section seeks to present the various efforts by the central leadership of UG, ORID to be precise, in coordinating research at the university. This discussion will revolve around the four indicators labelled PPPF.

5.2.1 PhDs

As discussed in the chapter three of this study, the PhD output of universities in Africa is very low, compared to their counterparts in other parts of the world especially Europe and Northern America. In addition, among the African universities there is a vast difference in output between UCT which is recognized as the top-ranked university in Africa and other African leading universities, such as UG (the Times Higher Education World University Rankings 2016). UG's leadership intends to change this situation. This can be illustrated by a speech delivered by the Vice-Chancellor (VC) of UG at the College of Humanities congregation in July 2013, in which he highlighted how the university would put more emphasis on graduate training as compared to the traditional emphasis on undergraduate studies. He stated in his address that:

"As a Research University, greater emphasis will be placed on postgraduate work and a significantly increased amount of rigorous research. It is proposed to achieve a ratio of 50:50

between regular undergraduate and postgraduate students over the next decade. That is why graduate admissions will be increased by 15 percent in the next academic year. This will be enhanced by the establishment of colleges, putting together large research projects in related disciplines, as well as systems of recognition to ensure that our programs are comparable to others throughout the world" (VC, July 2013:6).

The table 18 below illustrates the effort made so far by UG in achieving the undergraduate: graduate ratio of 50:50.

Table 18: Undergraduate and graduate admissions

ADMISSIONS	**2012/2013 ACADEMIC YEAR**	**2014/2015 ACADEMIC YEAR**	**CHANGE (2014/2015 compared with 2012/2013)**
Undergraduates	15, 272	11, 944	-3, 328 (-22%)
Graduates	2, 547	2, 939	392 (15%)
Total	17, 819	14, 883	-

Source: VC (July 2015)

Table 18 makes it clear that UG in the 2014/2015 academic year decreased the number of undergraduate admissions by about 22% in order to make way for more graduate admission; which witnessed an increase of about 15% compared with the 2012/2013 figure. This change is in line with the VC statement in his address that graduate admissions would be increased by 15% in the next academic year.

In an interview with *R01*, he reiterated the need for more graduate students who are regarded as the tool in becoming a research-intensive university. When asked about how he sees the importance of research as a basic function at UG, he asserted,

"We have redefined our vision and mission to be a research intensive university. All over the world you know research is very important for growth and development and also for the

welfare of the citizens. We also know that if there will be any progress in the economy, research plays a very important role. As a result, we place more emphasis on graduate training. So we are now trying to recruit more graduates for MPhil and PhD because research is graduate students and these graduate students will drive the research, unlike undergraduate" (R01, 2016).

The effective training of these graduate students is very important in ensuring that UG achieves its desired outcome. For this reason, various efforts including the restructuring of PhD programs have taken place in the university. This is made explicit in an address by the VC during the July 2014 congregation;;

"The University adopted a restructured format for PhD programs starting from the 2013/14 academic year. The main aim of the restructuring was to improve the quality of the university's PhD output, and also to place PhD programs at the university in line with international standards, making them more competitive and attractive and thereby improving recruitment and completion rates. It also aims to make our PhD graduates more versatile in their understanding and application of the intellectual and practical traditions of the selected program of study" (VC, July 2014:4).

The result of improving the PhD programs as well as increasing the PhD outputs is that UG may have opportunity to hire some of these graduates as permanent staff of the university. As have already been indicated, these are the qualified people who are expected to increase the research publications of the university. UG seems to be utilizing this opportunity as the reports show that there has been an increase in the number of its permanent academic staff with a PhD. For instance, the ORID report 2013/2014, indicates that the percentage of its permanent academic staff with a PhD had increased from 50% in 2011 (HERANA report) to 63% in 2014.

5.2.2 Funding

Funding is very crucial in ensuring that UG is able to achieve its goal of increasing the number of its PhD output and to carry on with other equally important activities in helping achieve the goals and aspirations of the university. For this reason, the University of Ghana Research Grants Scheme was instituted in the 2008/2009 academic year as a means of

encouraging faculty members to conduct research and contribute to enhancing the research profile of the university (ORID report, 2013/2014). In an interview with *R01* about how research is funded at UG, he indicated that the funds are sometimes from the university's *Internally Generated Fund* (IGF) such as those listed below;

- School fees,
- Consultancy services it renders to the public and international agencies, and
- Administrative charges.

These reason why UG resort to these sources as have already been stated in the chapter two of this study is as a result of the recent decrease in government funding for the universities in Ghana. And because UG is poised in becoming one of the best universities in the world, it could not rely on the little money they get from the government. The university therefore uses the IGF to promote effective teaching and research.

The ORID report (2013/2014:8) indicates that there are 3 categories of grants for research at the university. This was also confirmed by *R01* during the interview. As has already been outlined in the chapter 2 of this study, they are the *Seed Grants*, *Investigator-Led Grants*, and *Multi-Disciplinary Grants*.

When asked how this money is dispensed, the interviewee expressed that;

"We don't distribute it. You apply and it is on a competitive basis. You apply and then we review your proposals. We make sure that the proposal that you develop is going…what we call research uptake- is going to solve a problem within the community. Or it's going to add very important knowledge to the already existing information available. And then papers are sometimes sent to people outside the university, to other universities, to people outside Ghana to try and review particularly with the multi-disciplinary grants. But we try as much as possible to look for reviewers within the university or within Ghana to review the proposal" (R01, 2016)

The report again indicates that UG has been able to win USD 650,000 to support PhD training at UG. The goal of the project which is Accelerated PhD Training through University of Ghana- Diasporan Linkages (APT-Ghana) is for the university to become a hub for an African

regional doctoral training, drawing on its diaspora partnerships to enhance its PhD programs (ORID report, 2013/2014:17). The same report indicates that UG during that academic year signed a contract of EUR 11,654,195 with foreign donors which are solely for research activities. These *external funds* come from the following sources

- Alliance for a Green Revolution in Africa (AGRA),
- Bill and Melinda Gates Foundation (BMGF),
- Danish International Development Agency (DANIDA),
- Department For International Development (DFID),
- European Union (EU),
- Food and Agriculture Organization (FAO),
- International Display Research Conference (IDRC),
- LeverHulme-Royal Society,
- National Institutes of Health (NIH),
- Norwegian Agency for Development Cooperation (NORAD),
- United Sates Agency for International Development (USAID),
- World Bank (WB), and
- World Health Organization (WHO).

(ORID report 2014/2015).

For understanding the impact of these research funds at UG, it is of importance to point to the difference between external research funding coming from a research council, as in the case of universities in the North, or from donor agencies as in the case of UG. The main difference is that funding from research councils are distributed on a competitive basis and are for direct research purposes, while donors usually have their own thematic priorities which are often different from those of the individual academics or the institution in general (Maassen 2012; Musiige and Maassen 2015).

This obviously has an impact on the research output of a university as the funding from research councils are expected to contribute to high research productivity, while the project investments by donor agencies have some characteristics that contribute to low research productivity. Musiige and Maassen (2015) identify some of these characteristics: the donor agencies in general do not expect the academics who receive funding for a research project to produce academic publications; donor research funding is not distributed through an open competition in which peer review is used to select the projects that are considered best

academically. It is not surprising, therefore, that despite the increase in UG's research funding, it still lags behind (compared to the universities in the North and even its counterpart in South Africa- UCT) in terms of its output in the form of research publication.

Again, though, the report seems to paint a positive picture about the funds available for research in the university. Yet when asked about the major constraints that the university sees as inhibiting their development of a research-oriented relationship with the industry or public institutions, the issue of funding and infrastructure were raised.

"The main constraints are funding and equipment and then facilities. Because of that, the university set up IAST- Institute of Applied Science and Technology so that whatever problems or challenges that corporation or private or public institutions face or whatever idea that a senior member has in terms of trying to solve a problem; it will be at that institute. But unfortunately we don't have the building now; we don't have the different types of equipment and the machines to help resolve these issues. So that's one of the constraints we have. We are working towards it- money, space, equipment. As for personnel, we have them, but the main issue is the constraints I spoke about. And because the economy is now on the low side most of the institutions and corporations find it difficult to provide substantial money for these activities. So that has been the main constraint" (R01, 2016).

This clearly indicates that funding still remains a major constraint limiting the research function of the university.

5.2.3 Publications

This is a key indicator of the research output of a university. After all the funding has been provided, and there is the availability of staff members with PhDs, it is expected that research publications become a norm rather than an exception. The HERANA project reported that the total number of research publications by both doctoral graduates and senior academic staff at UG for the year 2011 stood at 141 out of the total of 170. The interview with *R01*, however, revealed that this figure had increased in 2015. But he failed to give the actual figure. When asked how he would describe and rate the current research output of UG, he stressed on the current ranking of the university as an indicator of its improvement in their publications. He asserts:

"Oh, recently we have been ranked in Africa…I have forgotten but I think the research development officer will be able to supply you with the information. Even in the whole world, we have been ranked…so we have made a significant improvement in terms of the ranking. Also in terms of trying to solve problems within the communities, within the country, sometimes the government agencies they approach us for …or to help them with a solution. And the majority of senior members' publications are in world peer-reviewed journals with a high impact. So that's what I think people use to measure our ability to help the institution" (R01, 2016).

Rankings play a very important role such as helping students in the choice of a particular university to attend, securing funding from donor agencies, gaining research affiliations, and also granting institutions the chance to reflect on their strengths and weaknesses and putting in place the required measures to help them improve or become better. For this reason, the issue of ranking was highlighted by the VC in his address at the congregation for the college of humanities in July 2015.

"The latest university rankings compiled by Thomson Reuters places the University of Ghana in the 10th position among African universities. This is the best position we have ever attained in any rankings, and it is exciting to observe that our placement in the rankings has consistently improved across all the major ranking organizations. The Times Higher Education list of the top 15 universities in Africa places the University of Ghana at number 12. In the Webometrics ranking for Africa, the University of Ghana moved from number 52 in 2009 to 19 at the beginning of 2015. In the QS ranking, we remain one of only four universities from Sub-Saharan Africa listed for the first time ever in 2015. The University of Ghana has therefore become the highest ranked university in West Africa across all the different tables" (VC, July 2015).

A careful look at one of the university rankings, the Times Higher Education (*THE*) World University Rankings became necessary in this case because it was indicated by the VC, to really know the performance of UG. On July 31, 2015, *THE* on the ranking of African Universities placed UG at the 12th position. However, at its recent release (April 21, 2016), UG is now placed at the 7th position among the top 15 universities in Africa with the first 6

from both South Africa (5) and Uganda (1) as shown in the table 19 below:

Table 19: The Top 15 Best Universities in Africa in 2016.

RANK	INSTITUTION	COUNTRY
1	University of Cape Town	South Africa
2	University of the Witwatersrand	South Africa
3	Stellenbosch University	South Africa
4	Makerere University	Uganda
5	University of KwaZulu-Natal	South Africa
6	University of Pretoria	South Africa
7	**University of Ghana**	**Ghana**
8	University of Nairobi	Kenya
9	Suez Canal University	Egypt
10	Alexandria University	Egypt
11	Cairo University	Egypt
12	University of Marrakech Cadi Ayyad	Morocco
13	University of South Africa	South Africa
14	University of Ibadan	Nigeria
15	Mohammed V University of Rabat	Morocco

Source: Times Higher Education (2016)

The methodology used in this ranking was to look at these factors; teaching, international outlook, industry income, research, and citation. Both teaching and research had 30% each of the overall score. And the data shows that UG had 15.6 each for both teaching and research. Based on this, it may be said that both teaching and research are equally important at UG. But it is worth noting that a large part of the indicators in these two categories are not linked to productivity but to reputation. The 'reputation', however, can be criticized for being subjective in character. For this reason, the rankings may not be the right tool to measure quality and performance like the way UG officials are emphasizing.

Though the study could not get the total number of publications from the university (UG), the data from the HERANA project indicates that from 2007-2011 (5 year period), the total number of research publications was 355. The *THE* also gives the total number of all publications from 2009-2013 (5 year period) to be 804. This indicates more than 100% increase in the research publications of UG within the short period of time. It must, however, be noted that *THE* may have used a different definition of publications than the HERANA project.

5.2.4 Personnel Policies

As was discussed in the analytical framework, the personnel policies of a university play a crucial role in improving the research performance of a university. Even in the absence of adequate funding which has been identified as the key factor around which the research activities of a university revolve, academics may be encouraged to do their best when personnel policies are in place. The interview revealed that UG has various personnel policies which have been very helpful in making the university realize its goals. The *R01* in the interview indicated that UG came up with a policy that all lecturers who hold just a master's degree must be given 5 year ultimatum to complete their PhD or else lose their positions. Meaning every newly hired lecturer must have a PhD.

Another policy he indicated was about promotion to a higher level in the academic ranks which is as a result of a larger number of publications produced. The study was, therefore, curious to know if the personnel policies were among the main factors influencing the current level of research output at the University of Ghana. The following were spoken about by the *R01*:

"publication improves lifestyle of the researchers as the research earns them money; you are also able to collaborate with people outside because once your papers are published it attracts other experienced researchers outside to collaborate with you and that gives one an exposure; Faculty members have a lot of graduate students trying to work with them and at least there is money for you also as an investigator. Lastly, which is more important, it earns a promotion, because when it comes to promotion we look at your publication records, grantsmanship, and then the graduate training whether you have PhD student or MPhil

students that you are supervising. So these are these are the motivating factors which help junior and senior members to engage in research"(R01, 2016).

Again, as indicated in the analytical framework, the pressure to 'publish or perish' also have a significant impact on the time and effort the academics can devote to teaching undergraduate students as well as mentoring graduate students. Usually, the rewards for exceptional teaching could no way be compared to the rewards for exceptional research. This has the potency of encouraging the academics to favor the latter (research) whenever it conflicts with the teaching workload. But the interview reviewed that, the situation is a bit different at UG. The university has three campuses as indicated in the chapter two of this study. Usually the academics who teach at the main Legon campus are the same ones who teach at the city campus.

The reason, according to *R1,* is due to the inability of the university to hire more academic staff (there is an embargo on teaching appointments by the government of Ghana) for both campuses. And since those students at the city campus are charged full tuition fees, the income generated from these privately sponsored students are used to pay the lecturers who have additional teaching loads and not research. The R1 expressed his concern about this as reflected in this statement:

"Yes, the university is worried about this situation because we want our academic staff to work relentlessly in helping to make the vision of the university becomes a reality. But here is the case that the teacher to student ratio is so high to the extent that the academics with doctoral degrees, which I am also a part because I teach at the Korle campus, are left with a little or no option than to favor teaching over research whenever there is a tension between the two. I said they may favor teaching because it fetches them some extra income, in that, having extra classes at the other campus…city campus earn them additional income to supplement their meagre salaries. I have been there before so I know what I am talking about"(R01, 2016).

The university believes that the personnel policies are there to serve as a guide to the junior and senior faculty members to help improve their research activities. Though UG may not be at the peak of its research activities, they regard themselves as a star leading all the public universities in Ghana to achieve the economic growth and development through research (*R01*, 2016).

5.3 DEPARTMENTAL LEADERSHIP

Since the department is where the real action of the university takes place, the study conducted interviews at the departmental level to solicit departmental views on the various measures put in place by UG and how the department is responding to them. As has already been stated, how the central leadership sees research dynamics may be different from how the departmental leadership who are at 'the war front' really see them. The discussion will revolve around the PPPF indicators.

5.3.1 PhDs

Having identified the various measures by the central leadership, such as, to increase the number of academics with a doctorate degree as well as improving the PhD programs, there is the need to find out from the departments about how those policies of the top level management are being implemented at the departmental level. The interviews revealed that both *R02* and *R03* are in support of the vision of the university to become a research-intensive university by 2024. However, when asked about the importance of research in the departments there were some divergent views. While one department place emphasis on both teaching and research, the other focuses mainly on teaching:

"Teaching and research go hand in hand. You cannot teach very well without doing research and you cannot research without doing the teaching. So research is very important to us in this department. And we have strived to achieve that. We belong to the school of social science and at its last colloquium; the department basically topped the list of faculty with the highest list of publications. The best young researcher came from the department, and the best teacher also came from this department. So it tells you how we place emphasis on teaching and research" (R02, 2016).

And this is what the *R03* had to say;

"Well, for us it has a long time been a teaching department. Before this idea of world class came it had been a teaching department. Though when it comes to a promotion they tell you to do research to get promoted, yet the facilities and everything provided point to teaching more than research. So though we are told and also believe research is really important, but

the resources gave us point to the fact that teaching at the moment is more important than research. The financial resources to do the research is not there, though we have people here who finance their own research to actually show that you are working. So there is nothing like research resources anywhere. The way is to get proposals going…but we are not there yet. So if you ask me I will say research is important but our load and everything do more teaching than research" (R03, 2016).

There seems to be a difference in focus in these two departments, but this section attributes this to the category of staff members each of these departments have. The literature revealed that senior academics or the permanent staff members are expected to publish more than the junior lecturers and below. That the Economics Department is doing so well in terms of both teaching and research (according to the interviews) is not surprising since the majority of its staff members are senior lecturers with PhDs (The department' s website, 2014). Out of the total number of 27 faculty members, 18 (representing 66.7%) were senior academics with PhDs. The exact opposite was the situation in the Physics department. Out of the overall number of faculty members of 18, 12 (representing 66.7%) were without PhDs (The department's website, 2014). This is what the *R03* had to say about the composition as at the time of the interview (February 2016):

"…Even the profile of our staff, all the senior people are on retirement, and presently those who are on the ground no one is a professor, the highest is a senior lecturer (only two of them). All the rest just acquired a PhD or are still trying to get a PhD" (R03, 2016).

So aside the factors identified by the *R03* as inhibiting their research function, this study sees the level of qualification of the staff members as really an essential indicator for the level of research activities of a department.

5.3.2 Funding

Funding as has already been indicated plays a key role in the research functions of a department. Therefore, the lack of it is likely to affect the research functions of a particular department. The necessity of this factor called for the need to know more about the departments' sources or efforts in getting the adequate funds to facilitate their research activities. Both departments agreed that for research to take place there must be an adequate

funding system to ensure its success. However, there is no fixed amount of money allocated to the departments to perform their research duties. This money has to be competed for with other departments in the university. So the study was curious about how research is funded by these departments and this is what the *R02* had to say:

"We have the Office of Research, Innovation, and Development (ORID) as part of the university. Each year there is seed money, I think one million Ghana cedis or so, that faculties across the university can apply and use to undertake research. That is one source. But it is done on a competitive basis. We have won quite a few. The other source is through other competitive sources like the African Economic Research Consortium, they also send course of proposals, we apply and we win. There are other outlets like the Swiss and other places where people have had partnerships and research collaborations and all of these yield positive results" (R02, 2016).

The *R02* sounded positive and his assertions indicate that they are doing quite well in getting research funds from both the internal and external sources. No wonder they seem to be getting along with the vision of the university.

The *R03* on the other hand had this to say;

"For us, there has been no funded research here before. Maybe we have not searched enough but the feeling we have is that no one is interested in financing Physics. Maybe we may have to go out there for them to know that Physics is the foundation of all things. Well, at the moment we write proposals to source for funds. But really we don't have funded projects and this makes it difficult for graduate students because school fees are very expensive and there is no reason why a Ghanaian will pay over 10,000 Ghana Cedis to do Physics unless to do a PhD which would enhance his position in his job. But no one will come in just do it for fun or as a career, because it's not something you do and right after that you get a job in Ghana unless the research institutions or the academic institutions and I don't think there is enough for them to get employed" (R03, 2016).

The two interviews make it clear that the Economics Department is really on their toes in securing funds for their research activities while the Physics Department seems to be relaxing

with the belief that they may not succeed. Could this be attributed to the leadership situation in the two departments? The Pro VC believes that the answer is emphatically 'YES'. In a discussion with him before referring the researcher to *R01* for the real interview to be conducted, he mentioned that other departments in the sciences are doing so well in terms of raising funds for research. However, departments such as Physics, Computer Science, and Mathematics are doing the opposite. He thinks that the leadership must find some means to raise funds as the research funds will not come to them unless they work hard for it.

5.3.3 Publications

Since the PPPF are related, without going further it may be concluded that the Economics Department is doing better in terms of its research output than the Physics Department. Even though the interviewees from these departments could not give the actual figures about their department's research production, *R02* is of the believe that they doing very well and this is reflected in them emerging as number one in terms of the faculty with the highest number of publication in the last colloquium organized by the school of social sciences. He attributes this performance to a number of factors which he summed up as:

"This is an academic institution so we say 'publish or perish'. Either you publish and if you don't you perish. Your promotion is based on your publications. Teaching counts but your publications are the major determining factor for you to be promoted. Each person enters the university, you are given a two-year probation period, after the two years we assess every lecturer how well you are doing then we confirm you for 6 years. After the six years that you have to renew your contract, you are expected to publish then you move to senior lecturer. If you are not within the six years you are given some time to do that. But if it gets to a point and you don't progress then you are asked to leave and say goodbye. And each progression comes with an increment of your salary, and it comes with even occupying certain positions if you are at a certain level you cannot be appointed to occupy certain positions" (R02, 2016).

The Physics Department, on the other hand, contributes very little to the research output of the university (*R03*, 2016). Though not sure of the figure, R03 thinks averagely 2 to 4 publications in a year.

Additionally, both agree that research in the departments is organized on an individual and a collective basis. The departments do not really define what their staff should do as they are independent-minded researchers. But they agreed that people define their own research agenda based on their area of expertise and also international agenda - they make a call, they will tell them the specific areas and if it falls within their area of expertise then they apply. However, they differ in terms of their relevance to the society. While *R02* thinks that they are making a significant impact in the society with both their teaching and research output as expressed here;

"It's very important. First, I will take it from the angle of teaching. When we do research it feeds into the teaching we do. So if you are going to teach students very well, they step out there with the relevant adequate knowledge, to work and impact on society. That's one benefit. Then the publications we do, the research we carry out people read them, sometimes government, agencies, and the rest also fall on them which helps to promote policy making. We also support other government agencies like the National Development Planning Commission, for instance, we have teams that track the Ghana shared development growth agenda or any medium-term development policy. So our research work and extension really feed into national policy making" (R02, 2016).

The *R03* believes that their research does not directly benefit the society because it is a natural or basic science. Their output must, therefore, be used by, for instance, the electronic or computer engineers for the benefit of the society.

The above is an indication that the Economics Department is making a more significant impact in the society than the Physics Department who though may be making an impact but it takes another department to really know their output. This probably could be the reason why the Economics Department is able to raise more funds for research than the Physics department.

Also, they believe that the current level of importance attached to research in the university is not alright and that much needs to be done. The *R02* puts it this way;

"It is not alright. We have come a long way. I must say currently we are doing extremely well.

It is not alright. We still have to do more in terms of research, in terms of publishing in internationally acclaimed journals and other important outlets. But I must say we have really come a long way. People are publishing in high esteemed outlets in the university. We seem to highlight this in our websites, in our publications" (R02, 2016).

This is what the *R03* also had to say;

"Well, I think the university really place emphasis on research because your promotion and everything for you to progress you need to show an output of your research and that is good. But what is lacking is the university is not well resourced to really make it possible" (R03, 2016).

In conclusion, both *R02* and *R03* expressed their perceptions of their own departments. This is what they had to say:

"I will say it is a department which not much attention has been given to because we do not really generate funds; you always beg for money to do your work and it is very difficult to get money to do that. So it is a department struggling to be seen. And we hope to make it someday. Things are not that good here. But we are growing" (R03, 2016).

Again, the *R02* sounded positive here;

"It is the icon for economic policy and knowledge; it is an icon for teaching and learning; and economic policies and issues" (R02, 2016).

The picture seems quite clear that the Physics Department is pessimistic about its research functions which they always attribute this to the lack of funding and resources. On the other hand, the Economics Department seems to be pushing harder which has been yielding positive results.

5.3.4 Personnel Policies

The two departments do not have personnel policies of their own for their academic staff. They indicated, however, that the policies set up by the central leadership, which has been

elaborated above, are binding on them. For this reason, each of the departments is encouraging its members without a PhD to acquire the degree as well as increase publication output for a better salary and promotion. These policies seem to be yielding positive results as the academics find ways of ensuring that nothing hinders them from living up to expectations. The *R03* expressed this in his statement;

"The financial resources to do the research are not there, though we have people here who finance their own research to actually show that you are working" (R03, 2016).

The *R02* also thinks that the willingness of the academics to earn promotion as well as have their salaries increased are helping them to be focused on their research duties despite the heavy teaching load in the department. Again, it is the only way for the academics to keep their job. This is reflected in the statement below;

"…Your promotion is based on your publications. Teaching counts but your publications are the major determining factor for you to be promoted. Each person enters the university, you are given a two-year probation period, after the two years we assess every lecturer how well you are doing then we confirm you for 6 years. After the six years that you have to renew your contract, you are expected to publish then you move to senior lecturer. If you are not within the six years you are given some time to do that. But if it gets to a point and you don't progress then you are asked to leave and say goodbye. And each progression comes with an increment of your salary, and it comes with even occupying certain positions if you are at a certain level you cannot be appointed to occupy certain positions" (R02, 2016).

Despite the fact the departments are doing their best in ensuring that the vision of the university becomes a reality, the leadership of the departments think that the central leadership is not putting the right measures in place to make these personnel policies effective. According to them, the extra teaching assignments of the academics in the department keep them busy to the extent that it derails them from focusing on research as part of their duties. For this reason, some of these academics fail to earn promotion because of the lack of research publications. It is, therefore, not surprising that the R03 indicated that his department is able to produce averagely 2 to 4 publications per year, and out of the total number of 18 lecturers in the department, only 2 are senior lecturers, no professor, and the

rest are junior lecturers and below.

5.4 INDIVIDUAL ACADEMICS

The third part of this chapter is focused on individual academic staff. Again the PPPF indicators will be analyzed at this level.

5.4.1 PhDs

The study ensured that those interviewed were all having their PhDs. However, none of them had the position of a senior lecturer. Nonetheless, the interviews with individual academics provided insights into how this group of academics is contributing to the research output of UG. As explained above, UG is making a significant increase in the number of its permanent staff members with PhDs. The expectation is that these are the right kind of people to help UG achieve its goal of becoming a research-intensive university. How is this situation perceived on the ground?

Firstly, the interviewees agreed that now more emphasis is being placed on research than teaching. Here is the view of *R04*;

"More emphasis is now placed on research. Some time ago people used to concentrate on teaching but now if you do not publish, hardly will you get a promotion so now more people are now concentrating more on the research than the teaching"(R04, 2016).

R05 also shared a similar view;

"It's difficult for me to say but I have the feeling that there is more focus being placed on making the university a research institution as opposed to a teaching institution in the first instance. And what I can see is that as part of the long-term program to make the university a post-graduate training center, there seems to be a shift in focus such that more emphasis is being placed on research output of the academic staff. So I believe that as an institution, there is a transition towards the university being a research university as opposed to a teaching and training center" (R05, 2016).

And as individual academics, they agreed that research is very important to them as it is interesting to see that their research is being implemented out there and it is helping to improve peoples' lives as well as helping in the development of the nation.

These academics seem to be aware of the vision of the university but the study is yet to know if in reality they are also contributing their quota in making it come to pass. If they are not, what may be hindering them from doing so? The sections below should help us to address these issues.

5.4.2 Funding

The central leadership has made it clear that there are funds for the academics engaged in research. This part is to find out how and where academics get funding to support their research activities. This curiosity led to the question, what is your opinion about the way in which research is organized and funded at the department? While *R04* believes that the organization so far has been good, the *R05* is of the view that they need to do better than what is going on. He believes that their challenge is in bringing members together to work for a common goal. This is as a result of leadership problem. He gave an instance where there have been 3 attempts to build a strong research team but all to no avail.

"I worked very hard at the first call to have something published by the department. I was hoping the others would do the same and that the leadership would make sure we get it done. But it never got anywhere. So at the subsequent ones I also did not take it serious since I knew it was going to turn out to be a fiasco and truly it did. So leadership is our problem" (R05 2016).

Both agreed that there are both internal and external sources of funding for the academics. However, it is difficult in securing funding as it is always competitive.

"It is difficult getting funding for your research. So mostly we have a situation whereby as individuals we end up doing more of a desktop research where you use existing data. But then you know the limitations of using this existing data. For instance, how variables are measured may not be the way you want but because you find it difficult raising funds for your research you tend to do this kind of research" (R04, 2016).

He again added that he preferred to compete for external funding because it is very difficult to get internal funding due to nepotism - the fact that if you do not know someone makes it very difficult to get internal funding for your research. The R05 also shared a similar view. For him, he is not encouraged to apply for internal funding sources as a result of a bitter experience he had.

"I have a bitter experience. There was this faculty development fund of 6000 Euros in 2011 for which I applied and won. For this reason, I even acknowledged it in my PhD dissertation. However, as at now, I have not received the money. This is really killing my spirit for research as the internal funding they claim to give is most often not as it is. That notwithstanding, I have been successful in getting some external funding like a Canadian funding" (R05, 2016).

Since funding and research publication have a positive correlation as indicated in the literature review, these academics are expected to perform poorly in terms of publications due to their limited sources of funding. Also, their reliance on the external funding sources (due to the lack of trust in the internal one) may also be another limitation to their number of research publication. The reason is that most of these external funding sources as have been indicated in the analytical framework come from donor agencies that usually have their own thematic priorities which may be different from that of the academics.

5.4.3 Publications

Having known the academic status of those interviewed as well as their sources of funding, this study went further to ascertain whether or not they were making a significant contribution to the research output of the university. Because these academics teach and at the same time conduct research, the curiosity was, is there any tension between their teaching activities and research duties? 'Yes', was the answer from both ends as expressed below;

"Oh, yes. Because teaching large classes will mean that it takes much of your time which gives you very little time to concentrate on your research. And we are not talking about just the teaching. Even after teaching the marking because we are talking about having about 700 students in my class and I have to mark all the scripts, that is a hell. And marking doesn't

mean that I'm marking based on my own timeline. The University gives you a timeline that you must mark and submit your results. That takes a lot of your time" (R04, 2016).

Data from the department's websites as have been discussed in chapter two of this study indicate that there are significantly more undergraduate students than graduate students. It is clear from those figures that each of the undergraduate classes has a large student population which confirms what *R04* expressed above. This is what *R05* also had to say;

"Yes, I think that is common everywhere because time is finite and each of these things takes time. So there is always a competition between how much time can you dedicate to this and how much can you dedicate to that. So definitely there is that conflict. There is also tension…you call it tension; I will call it conflict and competition, time and mental resources. The fact is you will be teaching an undergraduate course which really doesn't have an impact on your research. However, you can't teach your research to undergraduates because it is way above their heads. So in that sense, they don't really enforce each other" (R05, 2016).

Simply put, the interviewees were of the view that their teaching load is limiting their research activities. To really know the nature of the impact the study wanted to find out about how they have contributed to the research activities of the departments in the past few years. They both agreed that not much has been done in the past few years and attribute it to factors such as the lack of funding or resources as well as the heavy teaching loads. This is what *R05*, for instance, had to say:

"My PhD is a major contribution I have made so far. My outputs have been less because of the lack of facilities. Nevertheless, I assist people in their research but it is so unfortunate I sometimes do not receive the acknowledgment I deserve" (R05, 2016).

Though these academics seem not to be doing so much in terms of their research output, the study wanted to know how they make the 'little' research they do relevant to society. And here is the view of *R04* also:

"By publishing it, and also trying to disseminate it through other means, presenting it at stakeholders' workshops and so on. So you push it through trying to make sure that people

will get to know the research is out there. But unfortunately in this country, our governments don't believe in research. They don't take research seriously and they do whatever they want and sometimes you have situations whereby policies are not informed by research".

But for *R05*, like what *R03* said, his research output is not of direct benefit to society. He thinks that because it is a core science if you make an important finding it does not directly impact anybody because of what it is. He added that it is not like you are doing engineering unless the project is directly linked to something that is socially useful. But it is rare that you do something on Physics and the next day somebody is benefiting. It takes a long time.

As we did for the central leadership and the departmental leadership, the researcher finally asked the two lecturers to give a term that they feel best describes their departments. The *R04* believes that his department is growing while the *R05* laughed and asked whether his laughter could stand for an answer. To know what he really meant, he finally said: *"it is a department with no vision" (R05, 2016).*

5.4.4 Personnel Policies

Finally, the study wanted to know how the personnel policies of the university are affecting the research duties of these academics. They all agreed that the policies have been very helpful as they motivated them to pursue their doctoral degree at the time they were lecturing with just the master's degree. Also, the promotion aspect encourages them to look for avenues to raise funds in order to stay active in research. *R04*, for instance, had this to say;

"I do not want to remain where I am now. My dream is to attain a professorship and this does not come on a silver platter. The personnel policies of the university are reigniting this zeal in me. Therefore, I am doing my very best to do better with regard to my research activities"(R04 2016).

As already indicated, *R04* is able to go by a desktop research even when there is no research funding to do a field work. This is likely to make him more active than R05 who thinks that though he is aware of the benefits of having a high number of research publications, his program requires a lot of experiments, practical, and laboratory works. And all these involve money. The inability of the university to provide the department with these resources means

that the academics are compelled to look elsewhere for funding. But R05 discloses some positive measures he thinks the university is putting in place to avert this challenge.

"There are two things that I can point to: First, there seems to be increased investment in equipment, so I can see that there is some equipment that is being bought. We could always ask for more and better but there is… I mean there is equipment that has been purchased. I can also see that more and more emphasis is being placed on dissemination of research work. So you see that the Colleges and stuff are organising schools and conferences and stuff to enable people disseminate their research. So that also is something which is increasingly becoming evident. So with those two it does appear that there is a physical evident of the effort by the university to help the academics to rise higher in their research duties (R05, 2016).

Again, *R05* expressed some personal motivation (in addition to the university's personnel policies) that inspires him to always work harder despite the financial hindrances and other challenges such as the heavy teaching load.

"I mean this is a Physics department, clearly when you think about it the core function is to research. And even if you are teaching a large number of students the core function of a science department is research "(R05, 2016).

Finally, it was found out that despite the heavy teaching load and the lack of research funding, research is still of prime importance to the academics. This is one of the reasons why they would spend time at their department because if it were just the teaching, they could teach in so many other places. But for the possibility of doing added research, that is why they are interested in working in academia.

5.5 CONCLUSION FROM THE FINDINGS

Having presented the various findings from the interviews as well as the document analyses, this section presents a conclusion of the discussion which will then take us to the last chapter by concluding the whole study as well as giving recommendations for future research and other stakeholders.

The findings reveal some updates on the HERANA project which played a key role in this study. The HERANA project reported that UG in 2011 had 50% of its permanent academic staff with a PhD, but the study found out that this number had been increased to 63% in 2014. When it comes to the number of publications, the HERANA project indicates that UG made a significant increase from 61 in 2007 to 170 in 2011 representing 179% change between those two periods. The findings from this study again confirms that there has been a steadily increase in this number after the 2011, though no figure was given by the university to support that claim. The university thinks that its continuous improvement in the rankings of world universities which has the number of publications as one of the key indicator tells it all.

Data from the HERANA project as has been stated above indicates that from 2007-2011 (5 year period), the total number of research publications was 355. But the *THE* Rankings of world universities also gives the total number of all publications from 2009-2013 (5 year period) to be 804. This indicates more than a 100% increase in the research output of UG within the short period of time. But as have already been indicated, *THE* and the HERANA project may have used a different definition of publications. When it comes to funding for research, UG continues to rely on private donors and development agencies as reported by the HERANA project.

The findings, again, reveal that funding is a key factor that influences the research dynamics of UG. As a result, UG attempts to increase its funding sources in order to facilitate the research duties of the academic staff. This has yielded a positive result by securing more funding from the donor agencies. About the disbursement of these funds, it was clear that UG does not allocate funds for research activities equally throughout the university. The available research funds must be competed for by the staff of the university. This is subject to review and the best proposals are considered for funding. However, it was revealed that the academics find it difficult in applying for the internal funding as it is plagued with poor procedural mechanisms such nepotism and institutional bureaucracy. This discourages the academics in applying for the internal funding sources. External funding sources, therefore, become their alternative. The problem with the external funding, however, is that they come with some strings attached such as influencing the direction of the research which does not give the academics the liberty to publish as they want to.

Following from the above, it is interesting to note that the symbolic side of research which often refers to as the ‘research culture’ of an organization (Musiige and Maassen 2015) was

not paid much attention to as only the more visible elements such as the number of research publications and funds were the main focus of UG. With culture being the way of life of a group of people, the study found out that the academics at the university regarded the research culture as more associated to funding opportunities than organizational structures. Donor agencies were identified as main sources of funding for these academics as has already been indicated. The donor funding for these academics, however, influenced the nature of their research project. But due to their low salaries, they are ever willing to engage in such research in order to support their low salaries with the income they get from the donor agencies. This according to the academics have an impact on the number of research publications for the university as the donor research priorities are usually different from that of the individual academics and the university in general.

Funding also influences the research performance of the two departments studied. While the academics in the Economics Department could afford to go by a desktop research even when there is the absence of research funding, their colleagues in the Physics Department find it difficult to do same. The reason is that Physics involves in general laboratory work. Unfortunately, UG's laboratories are not well resourced and the funds to acquire them are not available. This seems to have crippled the academics in the department leading to low research output. And because of leadership problems in the department, they seem not to find a solution to it, thereby making it a dormant department.

The University of Ghana in the effort to improve its research functions wants to increase the number of graduate students admitted each year while at the same time reducing the undergraduate admissions. The UG leadership is of the belief that the more PhD graduates UG produces, the greater its chances of meeting its goal of becoming a research-intensive university. This has also compelled the university to expect their academic staff without PhDs to acquire one within a stipulated period of time.

Also, personnel policies such as promotion and salary increase have been identified as some of the important tools used by UG in influencing the individual academics to undertake research despite the key hindrance of limited or no funds. It was found out that because of the passion some of the academic staff have for research, they go to the extent of funding their own research when all other means of getting the needed research funds prove futile. This passion, however, is driven by the academic maxim 'publish or perish'. For this reason, the study found out that despite heavy teaching loads, the academic staff of UG are doing their

best to publish in internationally highly acclaimed journals. Those academics that make such sacrifices are rewarded by the university in various ways such as earning a promotion in the academic ranks which automatically comes with a salary increase and other related benefits.

Though UG is poised in becoming a research-intensive university, the teaching load of its academic staff tends to affect this goal. The findings revealed that the teaching workload of the academics gives them little time to embark on research. For this reason, the interviewed academics believe that at the moment teaching is what drives the university despite the emphasis on UG becoming a research-intensive university. Findings from the Physics Department, in particular, explain the above assertion better. If Physics does not function well, the university also does not function well as it is regarded as the foundation of all sciences. Yet, this department is not given so much attention; there is lack of research funding, inadequate research personnel (academics with PhDs) resulting in the lack of mentorship for graduate students and very few research publications. Again, it was revealed that research in the Physics Department is a highly individual activity. This is due to the lack of commitment to the group research which has been attributed to the failure by the leadership of the department in bringing these academics to forge for a common goal.. The Economics Department on the other hand sometimes has a collective research in the department, but most of its research is also on an individual basis.

The findings reveal that the government of Ghana shows little or no interest in the research done within the university, which is manifested in the little or no financial support. The private sector (industry) would have been the next best alternative. However, due to the weak performance of the Ghanaian economy in the recent times, the university is not getting the needed financial support as some of the industries are collapsing while others are exiting the country.

Finally, the findings reveal that the three management levels identified in this study (central leadership, departmental leadership, and the academics) have different views about the level of importance attached to research at the University of Ghana. To the central leadership, research in the university is very important and it should become even more important than teaching. The departmental leadership, on the other hand, thinks that the level of importance attached to research is not adequate and that more should be done to make it better. Yet, the academics are of the belief that the facilities of the university point more towards teaching

than research; this coupled with the high teaching load leads to their conclusion that research in the university is less important at this time.

6 CHAPTER SIX: SUMMARY, CONCLUSION, AND RECOMMENDATIONS

6.1 Introduction

This chapter presents a summary of the study as well as its main conclusions, and makes recommendations for future researchers and other stakeholders that may find this study useful. The chapter starts by discussing the extent to which the study allowed for answering the research questions that were introduced in chapter one:

1. *How important is research as a basic function at the University of Ghana?*

2. *What are the main sources of funding for research at the University of Ghana?*

3. *What are the main factors influencing the current level of research output at the University of Ghana?*

4. *What are the institutional strategies, policies, and measures to strengthen research at the departmental level at the University of Ghana?*

5. *How are the departments responding to the various strategies, policies, and measures put in place by the institutional leadership to ensure higher research outputs?*

The above questions were addressed in this study, and here we will discuss in how far the study has made it possible to answer them. As the heading of this chapter suggests, there will be three sub-sections. The first one will provide a summary (discussion) of this study by linking the research questions to the analytical framework that was used in this study; the second section will also give concluding remarks, and finally the third section titled 'recommendations' will suggest possible options to future researchers and policy makers.

6.2 Discussion

The overall objective of this study was to get a better understanding of the features of research dynamics at the University of Ghana. The study identified some factors that have evolved over a period of time as analytical tools for getting a better understanding of the research dynamics at UG. These are the number of PhDs (doctoral graduates), the number of publications, personnel policies, as well as funding (PPPF). To better understand how these factors work, the study discussed each of them under the three analytical levels that were

considered, namely, the central leadership, the departmental leadership, and the individual academics. Next, the research questions and their answers will be presented:

6.2.1 How important is research as a basic function at the University of Ghana?

The study traced where the university used to be in terms of its research functions, how far it has come, and where it wants to be in the years ahead. With this as a starting point, the literature showed that UG used to be a teaching institution that was to train people to help serve the colonial administrators. And even after independence highly educated civil servants and other workers were needed to fill those positions that were occupied by the colonial administrators in order to see the country running. However, due to the change of the wind that has blown over the African continent about the urgent need for the universities to provide a developmental role to help solve the various challenges facing the national economy, UG has shifted its focus from being a teaching institution to a research institution. For instance, Cloete et al. (2015) talk about how South Africa now wants to become a hub for PhD in Africa. The ORID reports indicate that UG is also having a similar aspiration.

The reason is that if knowledge and information are the new engine of the economy, then the university as the main knowledge institution in the society will become increasingly important. As a result, its apex training product, the PhD, is expected to lead the way (Cloete et al. 2015:75). UG in its effort to achieve the desired outcome is supporting PhD training through the project: Accelerated PhD Training through University of Ghana Diasporan Linkages (APT Ghana). The goal of the project is that UG becomes a hub for African regional doctoral training, drawing on its diasporan partnerships to enhance its PhD programs, thereby attracting top performing PhD and postdoctoral candidates and enhancing its research outputs (VC July 2014:4).

The study revealed that the institution is doing well in terms of its research functions as it has progressed compared to some years back. This is at least suggested by the ranking of the university by the various ranking institutions across the world which shows a significant improvement. And because the methodology used by the ranking institutions considers research as one of the key factors, then it may really confirms UG's improvement. For instance, the UG was ranked among the 601-800 universities out of the 980 worldwide that the *THE* considered in 2016. It is interesting to note that in 2015, among the methodology used by the *THE*, UG's strongest pillar was international outlook. But in 2016, *THE*

considered research as the strongest pillar of the university. This performance, in addition to the university's emphasis on research, makes the central leadership believe that the university's vision of becoming a world-class research-intensive university by the next decade (2014-2024) is on course. But we cannot rely on the evidence from the rankings since a large part of the indicators in its methodologies are not linked to productivity but to reputation. The 'reputation', however, can be criticized for being subjective in character. For this reason, the rankings may not be the right tool to measure quality and performance like the way UG officials are emphasizing.

Nonetheless, data gathered in this study which confirmed an increasing rate of graduate admissions compared to undergraduates, an increasing number of permanent academic staff with a doctorate degree, and the increasing number of research publications (though the absolute number is still very low compared to other African universities like UCT and MAK) are all evidence that show that UG has really progressed.

Since the vision of UG is to become a World-Class research-intensive university by 2024, the central leadership regards the research function of the university as very important and must be given more attention than even teaching. Nevertheless, key factors such as funding and adequate resources seem to be having an impact on the research duties of the academics in the university leading to their conclusion that in reality research is not the heartbeat of UG at the moment. So to the central leadership, research is more important; the departmental leadership also believe that, yes it is important, but more needs to be done as the current resources of the university hardly speak about such importance; yet the academics think that their teaching load and the lack of funding and other resources make them feel that teaching at the moment is what drives the university.

The views of these three analytical levels may not be as a surprise to many since the analytical framework indicated that the top level management anywhere else usually wants to paint a good picture about its organization (Zechlin 2010). For this reason, it is sometimes hesitant to disclose what is not right in the organization, especially to the outside world. The bottom level management is, therefore, the one who can really tell what is going on in the organization since that is where the real action of the university takes place (Clark 1983; Cloete 2012 cited in Bunting et al. 2015). For the middle level management, it is also expected to be passive and always wants to play it safe in order to appease both the top and

bottom level managements (Zechlin 2010). Based on this, if the views of these analytical levels are anything to go by, then the academics are the ones who may be painting the real picture of the state of research at UG. Findings from the Physics Department, for instance, explain this assertion better. If Physics does not function well, it is likely to affect the image of the university in terms of its research function. The reason is that Physics is regarded as the foundation of all sciences. Yet, this department is not given so much attention; there is lack of research funding, inadequate research personnel (academics with PhDs) resulting in the lack of mentorship for graduate students and very few research publications.

6.2.2 What are the main sources of funding for research at the University of Ghana?

As could be expected the study confirmed that funding plays a key role in the research functions of the university. It is the fulcrum around which the other indicators that were considered in this study revolve. It not surprising, therefore, that the lack of research funding or the inadequacy of the level of research funding makes some of the interviewed academics draw the conclusion that UG is not yet at the point of being a research-intensive university. Keeping this perception in the back of our mind the study revealed the following concerning what in practice the main sources of funding at UG are.

In this a distinction has to be made between the main internal and the main external sources. The internal funds come mainly from the University's Internally Generated Funds (IGFs) - from the school fees, from the consultancy services it renders to the public and international agencies, as well as from administrative charges. The external funds come mainly from donor agencies, such as the AGRA, BMGF, DANIDA, DFID, EU, FAO, IDRC, NIH, NORAD, USAID, WB, and WHO. The ORID reports indicate that the number or level of external funding sources have increased over past few years. UG tends to rely more on these external funding sources due to the limited IGFs - limited in the sense that income from the IGFs is most at times not enough to finance research activities of the university as it is mostly meant to support its teaching activities. In other words, the internal funds of UG are for both teaching (mostly) and research (sometimes) purposes while the external funds referred to here are earmarked for research purposes, at least they are intended to fund projects with a research purpose.

In general, external funds for research may either come from a research council as in the case of universities in the North or donor agencies as in the case of UG. The difference here, however, is that funding from a research council is distributed usually on a competitive basis and is for direct research purposes whiles donors usually have their own thematic priorities which are often different from those of the individual academics or the institution in general (Maassen 2012; Musiige and Maassen 2015).

This obviously has an impact on the research output of a university as the funds from research councils most likely contribute to high research productivity and the investment by the donor agencies have some characteristics that contribute to low research productivity. Musiige and Maassen (2015:122) identify some of these characteristics to be as follows: the donor agencies in general do not require the academics who receive funding for a (research) project to produce academic publications; donor research funding is not distributed through an open competition which relies on peer review to select the projects that are considered as best academically. So the source and nature of UG's research funding is likely to influence its current level of research output as the next question explains.

6.2.3 What are the main factors influencing the current level of research output at the University of Ghana?

The current level of research output at UG has improved compared to be some years back. For instance, the university has progressed by increasing the number of its research publications. The study found out that funding, personnel policies, and the number of PhDs, are the key factors influencing the current level of research output at UG. Firstly, funding makes it easier for the academics to carry out their research. The infrastructure, facilities and other laboratory equipment needed to necessitate productive research activity can all be acquired if there is enough funding. But from the perception of the interviewed academics, funding situation at UG with regard to research is still negative which is directly having a negative impact on their research output. This is attributed to the difficulty of these academics in applying for internal funding as it is plagued with poor procedural mechanisms such as nepotism and institutional bureaucracy.

Again, the source and nature of the external funding also pose a challenge to the research functions of the academics at UG. Therefore, it is not surprising that despite the increase in UG's research funding sources as the previous research question addresses, it still lags behind

(compared to the universities in the North and even its counterpart in South Africa- UCT) in terms of its output in the form of research publications.

However, Personnel policies were identified as playing a crucial role in improving the research output of the university. For instance, since promotion which usually comes with the number of publications has the potential of increasing the salaries of the academics interviewed, some go to the extent to supporting their own research when all means of getting other funding sources prove futile.

Also, another important indicator of the level of research output of UG is the number of its PhD graduates and permanent academic staff with PhDs. The University of Ghana for the past few years started to decrease the number of undergraduate enrolment in order to make way for more graduate admission. This has seen a positive result as the number of PhDs has increased over the years. And to increase the research outputs of its academic staff, those without PhDs have been required by the university to acquire one by a stipulated period of time. All these have, in no small way, influenced the current level of research output at UG.

6.2.4 What are the institutional strategies, policies, and measures to strengthen research at the departmental level at the University of Ghana?

Taking the low level of research funding that is at the university's disposal, one of this study's objectives was to shed more light on what it is doing to stimulate research dynamics at the departmental level. The study found out that UG has instituted three main sources of funding which the academics in the departments are entitled to apply. They are the seed grants, investigator-led grants, and multi-disciplinary grants. These funds are established with the aim to stimulate the research activities and productivity of the academic staff. In addition, the institutional management has introduced specific personnel policy measures, such as promotion and salary increase, for strengthening research dynamics in the departments.

The university is also promoting, if not requiring, academic staff without PhDs to acquire one by a given period of time. In view of this, it no longer hires academic personnel without a doctoral degree which is regarded by UG as an important strategy in getting the qualified people to contribute to the research output of the university. There are a number of other policy guidelines by the university to strengthen research dynamics at the departmental level. They include guidelines on assurance of academic freedom, guidelines on making research

findings understandable and accessible, as well as guidelines on the promotion of high-quality cutting edge research.

6.2.5 How are the departments responding to the various strategies, policies, and measures put in place by the institutional leadership to ensure higher research outputs?

The study found out that the departments are doing their best to make sure that the vision of the university becomes a reality. The departmental leadership is encouraging the academics without PhDs to upgrade themselves and increase their number of publications. However, as a result of the challenges faced by the university as a whole, the departments also seem to be crippled as the funds and the adequate resources to stimulate research dynamics are very minimal or unavailable. Hence, some departments, and especially those in the sciences, find it difficult to train more graduate students and even lack the qualified people to mentor the younger ones. This has in no small way contributed to the low research output of such departments in the university.

Nevertheless, some of the departments are trying hard to find alternative means to support their own research. The successful ones are able to pursue their research goals while the unsuccessful ones have no option than to focus on teaching as the main goal of that particular department. This coupled with the teaching load of their academic staff tend to pose a challenge to the research role of the departments.

6.3 Conclusion of the Study

Nowadays, many universities are championing the idea of becoming a research-intensive university to be able to have world-class recognition. Being a research-intensive university is seen as a necessity to contribute to growth in the national economy. This requires that certain basic framework conditions are fulfilled in a university, such as the adequate research funding, more infrastructural resources, the required academic staff, and, above all, high research output in the form of publications and PhDs. National flagship universities in the developed-North were found to be doing well when it comes to the above-mentioned elements which has given many of them a world-class research-intensive university status. Universities in Africa, on the other hand, focused on a service role, such as the training of personnel to occupy certain positions in their countries after independence. Therefore, the research function of the universities was very minimal.

However, universities in Africa have become aware of the necessity to improve their research performance as it became highly recognized as the roadmap to ensuring economic growth. Most of the universities, including the University of Ghana which was the focus of this study, started redefining their vision and mission to have the research component as one of their major goals. Hence, the vision of UG is to become a world-class research-intensive university by 2024. To assess the achievability of this vison, the study looked at where the university used to be in terms of its research function, how far it has come, to be able to get a better understanding of its future status and functioning as a research university.

This led to the development of an analytical framework that sought to facilitate a better understanding of the features of research dynamics in a university like UG. The study looked at three management levels in the university, namely, the central leadership or top level management, the departmental leadership or middle-level managements and finally the academics or lower level management. The lower level can be regarded as the level where the actual research activities of the university take place. The reason is that it is where the research output in the form of publications and PhDs of the university is produced. Therefore, the necessary inputs such as funding and personnel policies required for a successful research function of the university is expected to flow from the top level management to the lower level management. But the case in UG is a bit complicated in the sense that the internal research funding which are intended for the academics are often plagued with poor procedural mechanisms and nepotism as has already been made known in this study.

The study used semi-structured interviews as well as document analyses to be able to get a better insight into the research dynamics of the University of Ghana. The study found out that despite UG's key problem of funding, it has been able to improve its research functions at least to some extent. This included more graduate admissions instead of undergraduates, more graduate outputs, higher number of publications, and many other indicators of high research potentials. This is made evident, at least, in their recent progress made in the various university rankings across the globe. While some regard it as among the top 10 universities in Africa, others see it as being counted among the top 600-800 universities in the world. But the interviewed academics still think that these are not enough grounds to classify the university as a research university as will be explained below.

While the top level management see research as the most basic function of the university and attach much importance to it; the middle management sees it as a step in the right direction

but more needs to be done in order to make that become a reality; and yet the lower level management tend to emphasize that in reality teaching seems to be the important function of the university due to the inadequate research funding and the more teaching load of these academics.

In a nutshell, though UG has progressed in its research functions, it has not yet reached the point where it could be classified as a research-intensive university because of the various reasons that have been raised in this study such as the inadequate research funding, inappropriate laboratories and other infrastructures that permit research at the highest possible level. Therefore, in order for UG to realize its vision, the leadership may have to put various measures in place such as the following;

- Improve its research funding sources as well as the nature of funding by focusing on those from competitive sources such as research council instead of their dependence on donor agencies.
- Make competition for internal funding sources for the academic staff very transparent to boost their (the academics) confidence in the system.
- Improve the infrastructural resources that make it easier for smooth research activities to take place in the departments especially those in the pure sciences.
- Decrease the teaching workload of the academic staff in order for them to have enough time for their research activities (either by hiring more lecturers by lobbying the government in order to reduce the teacher to student ratio or by reducing the undergraduate admissions drastically).
- Continue to work hard to increase the numbers of academic staff with a doctorate degree who are likely to increase the research publication of UG and serve as mentors for the younger ones.
- Institute more conducive personnel policies to inspire the academic staff to give out their best in making their research function a number one priority.

6.4 Recommendations

The focus of this study was to analyze the change processes that have taken place in the research functions of the University of Ghana. It looked at indicators such as funding, PhDs, personnel policies, and publications as ways of understanding how they have evolved over a

period of time. At this point, the study seeks to give recommendations to future researchers as well as policymakers to be able to explore this study further and come up with the outcomes this study would have done differently if given the chance.

Firstly, while this study focused on the research dynamics at UG by looking at two departments, another look at research dynamics at the departmental level would be of great importance. The rationale here is to bring to light how the departments where the real actions of the university take place work to help a university like UG becomes a research-intensive university.

Secondly, a closer look at why the department of Economics which is a social science discipline, seems to be performing better than a Department in the physical sciences, like Physics, may help us to understand whether or not the disciplinary differences have an impact on the research functions of a department.

Also, another comparative study between the research activities of the academics in a pure science and a social science discipline may be explored. Since this study could not interview those at the highest level on the academic ladder (Professors) that may have given a better insight into their own research activities and their departments for that matter, it is recommended that interviews with two academics (those who are actively involved in research and the dormant ones) from both departments may result in a better outcome.

Also, future researchers must be aware that UG as one of its policies to become a world-class university requires every researcher to obtain an ethical clearance from the ethics committee before they could be allowed to carry on with the research, especially those in the humanities. The process of obtaining this takes not less than two months so an earlier preparation may be of great help. The Ethics Committee for the Humanities (ECH) meets every other month in each academic year (September, November January, March, May and July). The requirement for applying for ethical clearance is as follow: All applicants for ECH clearance must submit the following for consideration;

- 11 hard copies and a soft copy of the proposal and all supporting documents (i.e. proposal, new protocol submission form, consent form, interview guide, questionnaire, letters, CVs, etc.) sent by email to the Administrator at ech@isser.edu.gh or ech@ug.edu.gh

- CVs of all Investigators with a cover letter signed by the Principal Investigator
- A cover letter signed by the Supervisor and Head of Department (Applies to Student Investigators only)
- An Informed Consent Form for Potential Research Participants (Subjects) (which can be downloaded from the ECH webpage
- Research Instrument (Questionnaire)
- Fill out new protocol submission form, which can be downloaded from the ECH webpage http://isser.edu.gh/index.php/the-ethics-committe-for-humanities#ech-forms

Outline of Proposal for Ethical Clearance

- Abstract/Executive Summary (Not more than 250 words)
- Introduction/Rationale (Not more than 5 pages)
- Literature Review (Not more than 5 pages)
- Aims or Objectives of study
- Methodology (Include Inclusion and Exclusion Criteria)
- Ethical Considerations: (i.e. consent procedures, confidentiality, privacy, risks and benefits, etc.)
- Expected Outcome/Results
- References
- Work Plan
- Budget and Budget Justification

(ECH webpage 2016)

Finally, this study has something for the government of Ghana: most of the university teachers in Ghana are knowledgeably equipped but financially weak to conduct research to help combat the numerous challenges confronting the country. The secret behind the wellbeing of Europeans and North Americans may be grossly attributable to their devotion to research, and the readiness of their governments to sponsor those research activities. If these regions are developing on the wings of research, then Ghana can do same by sponsoring her brainy lecturers who are ready to champion the course of research in the country.

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APPENDICES

APPENDIX A

DOCUMENTS USED

The University of Ghana Strategic Agenda 2014-2024

The ORID report 2013/2014

The ORID report 2014/2015

The Vice Chancellor's speech at the July 2013 congregation

The Vice Chancellor's speech at the July 2014 congregation

The Vice Chancellor's speech at the July 2015 UG congregation

The ORID Research Policies

APPENDIX B

INTERVIEW GUIDE

This guide was designed for the three management levels relevant for the studies, namely, the central leadership, the heads of departments, and the academics.

CENTRAL LEADERSHIP

1. How important is research as a basic function at the University of Ghana? Is it e.g. equally important, more important, less important than education?
2. What is the role of research performance in the internal personnel policies/Human Resources Management (HRM) of the University of Ghana?
3. How important is the relevance to society of the University's research activities?

Can you briefly describe the authority distribution in the University of Ghana in the area of research management? What are the responsibilities in research management of the central level/institutional leadership; what are the responsibilities of the faculty and department/(or equivalent such as research institute)?

4. What are the main institutional policies and instruments aimed at supporting the university's research productivity?
5. How is research funded at the University of Ghana? What are the main funding sources for research undertaken in the University?
6. Does the University have internal, earmarked funds to support research activities of the university's academic staff? If so, how is this money distributed? (e.g. through individual applications of staff, through earmarked allocations to faculties or departments, etc.)
7. How would you describe and rate the current research output of the University of Ghana? (e.g. 1) mainly basic/fundamental research output vs applied/community oriented research output; 2) output in the form of academic articles & books and PhD graduates, in the form of consultancy reports and reports to donor agencies, or in the form of community services?
8. What are the main factors influencing the current level of research output at the University? Has the university taken any measures, e.g. incentive systems, for stimulating the increase of the research output?

9. How do you perceive the University's opportunities and constraints in developing research-oriented relationships with industry/ business/ public institutions in Ghana? (This concerns relationships aimed at getting an input in the university's research activities in the form of funding, research themes, research capacity, etc.)
10. Could you please give me a metaphor or term you feel describes the University of Ghana best with regards to its research function?
11. Is there anything you want to add?

DEPARTMENTAL LEADERSHIP

1. As a Head of Department, what is your take on the vision of the university, which is, "to become a world class research-intensive university over the next decade"?
2. How important is research at your department? Is it e.g. equally important, more important, less important than education?
3. In your opinion, how important is research in the University of Ghana? Do you feel that the current level of importance of research in the university is alright, or should it become either more, or less important?
4. What role does your department play in the production of the research output of the University?
5. How is research in general organised and funded at the department?
6. Who defines research problems at the department, individual academics, departmental leadership, external actors?
7. Does one needs to obtain permission before undertaking research at the department? And if yes, what kind of permission and when?
8. Does your department have internal earmarked funds to support research activities, including participating in conferences?
9. What are the main sources of funding for research undertaken in the department? (University of Ghana funds, governmental funds, private sector funds, donor funds, other?)
10. Are these funds geared towards strengthening the most productive and active researchers in the department or to stimulate the academic staff members who are less productive and active?
11. How are the departments' externally funded projects organised?
12. How important is the relevance to society of the department's research activities?

13. What is the role of research performance in the departmental personnel policies/Human Resources Management (HRM)? Is this role determined internally in the department, or does it follow general regulations and guidelines of the University of Ghana?
14. Could you please give a metaphor or term you feel describes your department best?
15. Is there anything you want to add?

ACADEMICS

1. In your opinion, how important is research as a basic function at the University of Ghana? Is it e.g. equally important, more important, less important than education? And how about the importance of research in your department?
2. How important is research for you personally as a university staff member?
3. What is your opinion of the way in which research is organised and funded in the department? Is it stimulating and supporting you to do research; is it neutral; does it hinder you to do the research you would like to do?
4. How have you contributed to the research activities of the department in the past few years?
5. What would motivate you in applying for internal or external research funding sources?
6. Do you feel you are supported or discouraged in applying for funding sources?
7. Do you feel any tension between your research activities and your teaching duties?
8. How do you make your research relevant to society?
9. How do you perceive your opportunities and constraints in developing research-oriented relationships with industry/business/public institutions (incl. other Ministries and government agencies than the Ministry of Education)?
10. Could you please give a metaphor or term you feel describes your department best?
11. Is there anything you want to add?