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Examining the Incentives for Knowledge Production: The case of the University of Nairobi in Kenya.

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ABSTRACT

Following the understanding that incentives influence behaviour both in terms of eliciting and sustaining it, this thesis seeks to explore the link between incentives and knowledge production at the University of Nairobi. Given the backdrop, higher education institutions have a key role to play in economic development through knowledge production; the study seeks to see how academics can be steered to produce knowledge. The principal-agent model primarily informs the study, whose primary argument is that for incentives to attract, motivate and retain employees, these incentives have to be sufficient, fair and consistent. Additionally, the model predicts that a higher sum of monetary incentives triggers higher effort, resulting in higher productivity. Using a single case study approach, the study focused on the University of Nairobi in Kenya. The data for the study was mainly provided by the structured interviews, institutional documents and archival. The findings of this study show that there are several incentives related to research at the University of Nairobi. These include: promotion opportunities, time resources, research funding, and financial allowances for publications and successful supervision of postgraduate students. Multiple principals including the government, national research council and the university itself provide these incentives. The general perception of academics is that, the incentives are weak and do not encourage the maximization of the University's research goals. In addition, academics are also confronted with other principals who reinforce non-research behaviour. These principals offer significant rewards for consultancies, and incentives for teaching on the full-fee-paying stream by providing additional payments, over and above regular salaries, to academics that teach on these programmes. Given the weak nature of the incentives for research, academics at the University of Nairobi seem to respond more favourably to the non-research incentives. Overall, the study confirms the economic principle that individuals, in this case, academics, respond to incentives. However, in the context of competing incentives, the research incentives have to be adequate, systematically applied and continuous to reinforce a vibrant research culture.

November 2014

DECLARATION

I declare that ***Examining the Incentives for Knowledge Production: The case of the University of Nairobi in Kenya*** is my own written work that has not been submitted to any degree or examination at any other university. All the sources I used have been indicated and acknowledged.

Agnes Omulyebi Lutomiah November 2014

Signed……

DEDICATION

I dedicate this thesis to everyone who continually supported and encouraged me during this journey.

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ABBREVIATIONS AND ACRONYMS

AAU: Association of African Universities
AERS: Applied Educational Research Scheme
CAV: College of Agriculture and Veterinary Medicine
CBA: Collective Bargaining Agreement
CHE: Council of higher Education
CHET: Centre of Higher Education and Transformation
CHSS: College of Humanities and Social Sciences
CHE: Council of Higher education
CUE: Commission of University Education
DESA: Department of Economics and Social Affairs
DPADM: Division for Public Administration and Development Management
FKE: Federation of Kenya Employers
GDP: Gross Domestic Product
GOK: Government of Kenya
HEI: Higher education institutions
ICT: Information, Communication and Technology
IMF: International Monetary Fund
IPUCCF: Inter Public University Council of University Councils Consultative Forum
JKUAT: Jomo Kenyatta of University of Agriculture and Technology
KIPPRA: Kenya Institute for Public Policy Research and Analysis
LARMAT: Land and Resource Management and Agricultural Technology
LIA: Letters of Interim Authority
MOHEST: Ministry of Higher Education Science & Technology
NCSTI: National Commission for Science, Technology and Innovation
NGO: Non-governmental organization
NORAD: Norwegian Agency for Development
NRF: National Research Foundation's
NSCT: National Science Commission and Technology
OECD: Organization for Economic Co-operation and Development
PhD: Doctor of Philosophy
RAE: Research Assessment Exercise
RCB: Research Capacity and Building
SAPs: Structural Adjustments Programmes
SRC: Salary and Remuneration Commission
STI: Science Technology and Innovation
UASU: Universities Academic staff Union
UK: United Kingdom
UN: United Nations
UNESCO: United Nations Educational, Scientific and Cultural Organization
UoN: University of Nairobi
USA: United States of America
UWC: University of the Western Cape

CHAPTER ONE

Introduction and Background to the Study

1.1 Background

The concept of the 'knowledge economy' has continuously gained significant attention from international development organizations, scholars, commentators and policy makers. In the knowledge economy era, knowledge is increasingly acknowledged as a major factor in economic development and key to a country's competitive advantage in the global economy (Powell & Snellman, 2004; Metcalfe & Ramlogan, 2005; Chen & Dahlman, 2005; Sorlin & Vessuri, 2007). Generally, the global knowledge economy characterizes economies that "create, disseminate and exploit scientific and technological knowledge, as well as other intellectual assets, as a means of enhancing growth and productivity" (Organization for Economic Co-operation and Development [OECD] 2004, p. 11). The current study seeks to explore the incentives and dis-incentives for research and supervision of postgraduate students; and how they influence knowledge production and productivity in a Kenyan public university, particularly at the University of Nairobi.

Consequently, the idea that knowledge is a major driving force of national development has resulted in an increasing focus on the role of higher education institutions in knowledge production, dissemination and utilization for improved productivity (Chen & Dahlman, 2005; Castells, 2009; Guruz, 2011). Castells (1994) argues, if knowledge and information are the electricity of the knowledge economy, then it is a valid assumption that the university, argued to be the main knowledge producing institution in the society, will increasingly become important, as well as its apex research and training product, new knowledge and the PhD**.**

Universities are assumed to contribute to economic growth and development through pathways directly linked to its core functions of teaching, research and innovation (Clark, 1983; see also Oketch, MacCowan & Schendel, 2014). Higher education institutions are required to contribute to formation of human capital by training qualified, high-level skilled and adaptable workforce for the knowledge economy, among them, professionals, scientists, technicians, basic and

secondary school teachers, future government civil service and business leaders (World Bank, 2002; Santiago, Tremblay, Basri & Arnal, 2008). Studies have shown a relationship between high-level skills and competencies, such as the postgraduate training, and economic growth and development (Castells, 1994; Sorlin & Vessuri, 2007). According to Brown, Green and Lauder, (2001) cited in Oketch et al. (2014), high-level skilled and competent graduates are a prerequisite for economic growth and development, not only for their increased earnings and 'capabilities'; rather such labour force plays a key role in interaction with existing knowledge, adaptation and transfer of innovations and technology to local industries and contexts (see also Castells, 1994; Powell & Snellman, 2004). However, according to World Bank (2002) both developed and developing countries have not produced sufficient knowledge in terms of research and graduates to steer economic growth. .

Furthermore, universities are required to support innovation systems by producing new knowledge, directly through basic and applied research, and indirectly through dissemination of knowledge and advanced training and research programmes at postgraduate level (Etzkowitz, Webster, Gebhardt & Terra, 2000; World Bank, 2002: see also Oketch et al., 2014). Notably, new knowledge has advantages including the replication linked to production of new technologies and processes, thus, reduced costs of production of such technologies over the years. Equally, new knowledge results in efficiency, through processes and innovation, which leads to profitability, when new knowledge is converted to processes and products of practical value (Castells, 1994; Pillay, 2010).

Studies analyzing determinants of national innovation systems illustrated that "countries that have located a higher share of research and development in the education sector have been able to achieve significantly higher patenting productivity (Stern, Porter & Furman, 2002, p. 25). Graduates with high-level skills are expected to form the human resource of the public and private R&D institutions, together with high technology manufacturing firms and industries (Etzkowitz et al., 2000; Castells, 2010). According to Etzkowitz et al., (2000), the above institutions are key agents of transfer of knowledge and technologies. Also, postgraduate programmes, especially at the PhD level, are keys in training of university professors, hence enhancing the quality of the universities that are keys for the global economy.

Following the increased acknowledgement of the importance of knowledge in economic development, both developed and developing countries have incorporated knowledge and innovation policies, together with higher education into their national development plans (Maassen & Cloete, 2006). Successful known examples of these countries include: Finland, South Korea, China, Singapore, Australia, New Zealand, Denmark and Taiwan (Pillay, 2010; Cloete, Bailey, Pillay, Bunting & Maassen, 2011). The experience gained from the above-mentioned countries influenced African countries enabling them to realize the importance of higher education institutions as knowledge producers in economic development. This realization is manifested as African countries are increasingly recognizing the need to invest in science technology, and innovation capabilities, as well as commit to supporting and promoting research innovation activities and the prerequisite human capital in order to address the socio-economic challenges they face (African Union–New Partnership for Africa's Development [AU-NEPAD], 2010).

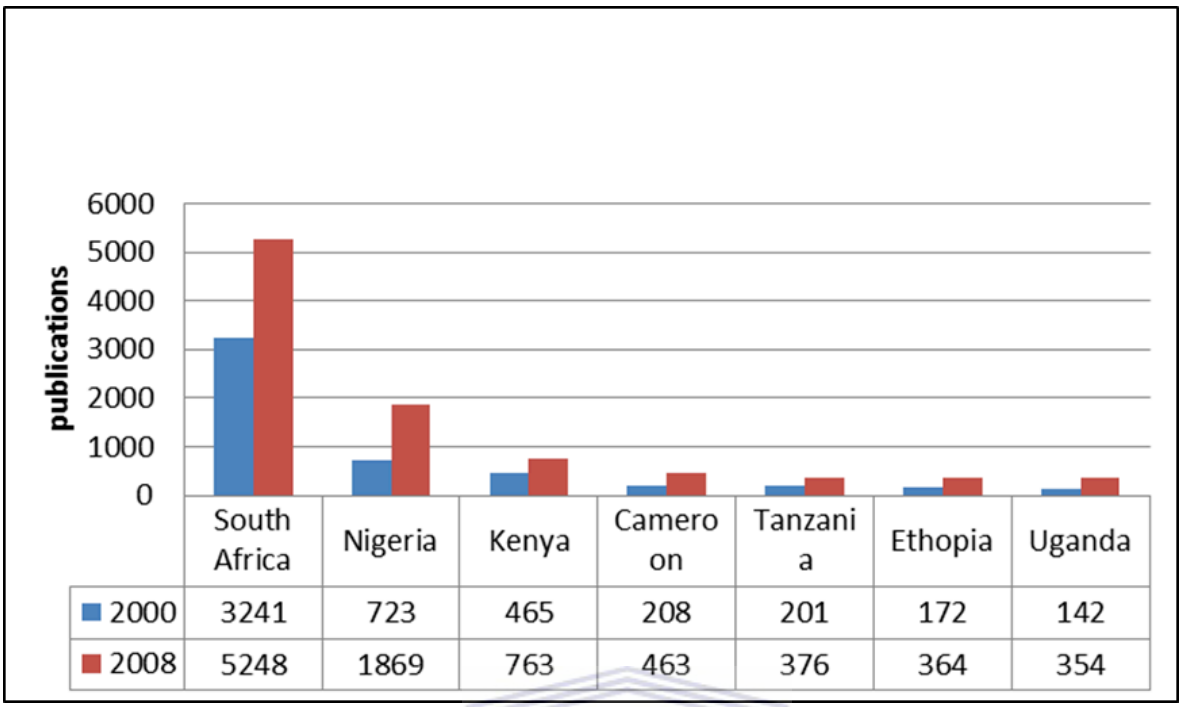
At a national level, amongst other Sub-Sahara African countries, Kenya has exhibited awareness of the concept of the knowledge economy and the role of higher education in economic growth and development. The country, as espoused in its Vision 2030, intends to become a globally competitive and prosperous nation by 2030. To realize its national developmental goals, Kenya recognizes that it has to rely on creation, adaptation and use of knowledge as its key factors for enhancing economic growth and development. Therefore, this awareness is manifested in the emphasis on education and training that inculcates use of knowledge in science, technology and innovation to create wealth, improve social welfare and promote democratic governance by 2030 (Government of Kenya, 2007; see also Ministry of Higher Education Science & Technology [MHEST], 2008).

However, despite the awareness of the knowledge economy in the African context, Sammoff and Carroll (2004), argue that it is far from clear that increased attention to knowledge production and knowledge dissemination will enhance national competitiveness and sustainable development for most of African countries. The above observation is also illustrated in a study conducted by Cloete et al. (2011), in eight African universities, including the University of Nairobi, to establish the presence of long-term commitment of higher education institutions in

their role of knowledge production entities in national development plans. Cloete et al., (2011), among other things, established minimal emphasis on the role of higher education in socio-economic development, coupled with non-articulation of the policies and practice both at the national and university levels.

Furthermore, according to Cloete and his colleagues, knowledge production in terms of research and graduate output at the eight African universities does not seem strong enough to enable the universities to make a sustainable contribution to economic development. In their view, the universities are not changing from their predominant undergraduate teaching roles to contribute to new knowledge production required for the economy. Inasmuch as a number of universities were reported to have the relevant input factors such as: substantial numbers of qualified academics with doctorates, manageable student ratios particularly in the Science, Engineering and Technology programmes and increased enrolment at the Master's and PhD level, the research output and PhD graduates remained at a low base. For instance, at the University of Nairobi, research publications were found to be low at the ratio of 0.11 per permanent academic staff implying production of an article in 10 years (see Cloete et al., 2011, pp. 92-93).

According to the United Nations Education, Science and Culture Organization (UNESCO) 2010 statistics, Sub-Saharan Africa has fallen behind in its contribution to world science output. Furthermore, the UNESCO 2010 science report shows that, Sub-Saharan Africa produced about 11, 142 scientific articles in 2008. Although the share of the world output rose from 0.9 percent in 2002 to 1.1 in 2008, the increasing scientific output has grown more slowly relative to the international growth rate. Furthermore, most Sub-Sahara African countries were not able to produce 100 publications in the natural sciences in 2008 (UNESCO, 2010; see figure 1.1) Thus, according to the UNESCO report these figures were below the theoretical threshold that would allow a virtuous interaction between science and technology.



	South Africa	Nigeria	Kenya	Cameroon	Tanzania	Ethopia	Uganda
2000	3241	723	465	208	201	172	142
2008	5248	1869	763	463	376	364	354

Figure 1.1: Scientific publications in Sub-Saharan Africa, 2000-2008: for those countries that produced more than 100 publications in in the natural sciences in 2008 - top seven countries in terms of productivity (Adapted from the UNESCO Science Report 2010)

Correspondingly, the *SIR World Report 2011: Africa Supplement,* based on quantitative data of citations and publications illustrates that in terms of the scientific output, the Kenya Medical Research Institute (KEMRI) and the South African Medical Research Council had normalized scientific impacts of more than 1.80. Normalized citation impact as a value expressed in percentages to show the relationship of an institution's scientific impact, at 1.80 implies the two institutions were rated at 80% above the World averages. This shows that some research institutes outperform other knowledge producing institutions including universities, hence the significant deviations in the normalized citation rates. South Africa benefiting from the historical factors, has old and well-established research universities, therefore has advantages over the systems where higher education was established four or five decades ago. Thus, the higher education sector in South Africa accounts for the bulk of the country's research output, accounting for almost 86 percent in 2007 (Mouton & Gevers, 2009). However, the case differs across other Sub-Sahara African countries. In Kenya, although the major universities (UoN, Kenyatta, Moi, Egerton, JKUAT), contribute significantly to the country's research output, the country has an array of other scientific institutions including government funded laboratories and institutes and internationally based agencies that characterize Kenya's low scientific output (AU-

NEPAD, 2010). The contribution of higher education to scientific output in these countries cannot be over-estimated, as knowledge production is dominated by the academics in the major universities.

Further, in terms of production of human capital, a study at eight Sub-Saharan African countries carried out by the Higher Education Research and Advocacy Network in Africa (HERANA) project, illustrated sub-optimal levels in doctoral training manifested both in terms of enrolment and graduation rates. The total doctoral enrolment at eight Sub-Saharan African countries in 2011 stood at 2,614 (Bunting, Cloete & Schalkwyk, 2014), a number that is argued to be low given the high enrolments at the Master's level at Universities such as UoN (12 percent increase annually) and University of Ghana (13 percent increase annually). To substantiate the above observation, Wangenge-Ouma (2008) writing in a Kenyan context noted that, following the introduction of parallel programmes (privately sponsored students), there has been a rise in non-research Master's (Master's by project). Wangenge-Ouma (2008a) states several University departments stopped teaching full Master's theses that require research as a mode of examination. Hence the argument, that the Master's graduates lack sufficient research skills mainly required for doctoral training. According to Bunting et al., (2014), the total number of doctoral graduates at the eight African universities increased from 154 in 2001 to 367 in 2011. Further, the statistics show that, the University of Nairobi, the University of Cape Town and Makerere University produced 80 percent of the doctoral graduates in 2001, 82 percent in 2007, and 76 percent in 2011 consecutively.

As signaled earlier, several authors have argued that new knowledge and technology cannot be adopted in production without sufficient research, innovation and high-level skilled manpower, hence the need to establish capacity that produce, disseminate, use, and adapt knowledge and information. Based on the above perspectives of sub-optimal levels of knowledge production in African Universities, Cloete et al., (2011) claim that incentives for academics to conduct research, publish and supervise postgraduates, as is the case in other countries, are a challenge in African universities. The study recommended that African universities and countries should invest in incentives for academics to engage in knowledge production. Citing the example of South African universities that have attached monetary rewards to research publications and

graduate output, the authors argue that incentives will encourage academics to publish and supervise postgraduate students (Cloete et al., 2011).

According to Milne (2007), many organizations are currently implementing or planning to implement incentive programmes trusting that such programmes will assist in bringing about the desired behaviour or productivity that will stimulate the organization. In some institutions, principals, for instance, invest in extrinsic incentives such as: compensation, recognition, rewards and appreciation to motivate the agents (Milne, 2007; Gneezy, Meier, & Rey-Biel, 2011). However, this theoretical standpoint on incentives is not necessarily specific to universities, but may be suited to any setting where productivity is a concern. Proponents of using incentives for employees argue that application of higher incentives would motivate workers and, as a result, lead to greater effort that will cause higher performance and productivity, retain employees, attract and recruit skilled employees, reward high performance and foster teamwork (Milne, 2007; Gneezy et al., 2011).

Against this background, the current study seeks to find answers to the main research question and sub-questions in order to establish reasons for both incentives and dis-incentives for academics to engage in research and supervise postgraduate students in a Kenyan public university, particularly at the University of Nairobi. The next section provides a brief overview of knowledge economy, knowledge production and incentives that developed over time in the Kenyan context.

1.2 Higher Education and Knowledge Production in Kenya

The history of universities in Kenya can be traced back to the early years of independence in 1963. University education started with the establishment of the University of Nairobi, the oldest university, first established in 1956 as a Royal Technical College of the University of London. In 1961, the Royal Technical College was transformed to a second university college of the University of East Africa under the name Royal College Nairobi, awarding students degrees of the University of London. In 1964, the Royal College Nairobi was renamed University College Nairobi, a constituent college of the Federal University of East Africa, alongside Makerere and

Dar Es Salaam University colleges. Following the dissolution of the Federal University of East Africa in 1970, UoN became the first independent national university in Kenya (Mwiria, Ng'ethe, Ngome, Odero, Wawire & Wesonga, 2007). During this period, the government controlled services such as education in order to ensure equal participation and access of all socio-economic groups to the system (Pillay, 2010b).

Following independence, university education was expected to play a key role in national development. During the early 1960s, Africa's new national universities were expected to train and produce large numbers of high-skilled human resources for the country, in particular in producing person power for the profession and bureaucracy (Yesufu, 1973). This was to fill in the shortages in this sections that had resulted due to departures of the expatriates following independence and the underdevelopment of the colonial education system. By early 1970s there was a shift, as was illustrated during the Association of African workshop held in Accra, where the focus was on the role of African universities in development (Yesufu, 1973).

In aligning the education sector to the development of the nation, the Kenyan government introduced a number of reforms recommended by the Kenya Commission of Education in 1964 to replace the colonial education policies that were considered discriminatory in training the Kenyan populace and lacked integration of programmes for the nation's well-being. These reforms included: an education system that would help in enhancing national unity, serve Kenyan citizens without discrimination and invest in human capital for the advancement of the country (Republic of Kenya, 1964; Republic of Kenya, 1965; see also Eshiwani, 1993; Njeru & Orodho, 2003; Pillay, 2010b).

Notwithstanding the question of the 'development university', largely during the following decades African governments, including Kenya, put in little effort to ensure the developmental role of these universities. Cloete et al. (2011) in their study noted, partly, this could be attributed to African governments, lacking coherent development models, with inculcation of what the exact role of the universities could be. Similarly, during the later period of the 1970s and 1980s, there were political and socio-economic struggles, often caused by cold wars and shifts in the agendas of the international funding agencies such as the World Bank (Sammoff & Carroll,

2004). Arguably, these problems had a negative influence on training of human resources and research projects needed to address the socio-economic problems of the country. Particularly, as mentioned above, reduced government funding negatively influenced academic remuneration as a result of cuts on staff costs.

In the late 1990s and early 2000s, there was a call from influential voices on the 'revitalization' of African higher education and linking the university to development (Sawyer, 2002; see chapter two for detailed discussion). For instance, Koffi Annan, then General Secretary of the United Nations, noted "the university must become a primary tool for Africa's development in this new century' (Bloom, Canning, & Chan, 2006, p. 2). This shift in the role of higher education institutions also played a great role in shaping university education in Kenya. Following the emphasis on the importance of knowledge production and application as key factors in economic development and for the country's competitiveness in the global economy (Sorlin & Vessuri, 2007); the Kenyan Vision 2030 recognises the important role of higher education and training in attaining its developmental goals (GoK, 2008). Like other developing countries, Kenya has undertaken significant policy initiatives with regard to the higher education systems, aiming to attain its developmental goals by 2030. These policy initiatives include: improving quality, access and equity to higher education and training; recognising relevance of economic needs; making curriculum reforms to promote science technology and innovation training; strengthening the national science, technology and innovation competitiveness; promotion of research and enhancing funding and resource mobilization of higher education (See GoK, 2008; MHEST, 2008). According to the World Bank (2002), higher education can help developing countries, like Kenya, to meet the needs of the knowledge economy, on condition that the abovementioned key policy issues are addressed.

Further, a number of these initiatives have manifested through a recent expansion of the higher education system. Currently, the country boasts 22 fully-fledged public universities from the original seven; 9 constituent colleges with an enrolment of 198, 000 students; 29 private universities; 17 chartered and 12 with Letters of Interim Authority, with enrolment of 37, 000 students (CUE, 2012). Despite the above-stated reforms, Kenya continues to struggle with difficulties arising from inadequate responses to existing challenges. Among others, these

include transition rates from secondary education to higher education that remain as low as 70 percent of the students who attain qualifications to join universities, but do not get admission; women are under-represented in university education, standing at 39 percent of the total student enrolment and most of them pursue programmes in Arts (MHEST, 2010). According to the World Bank (2007), report, "if developing countries hoped to prosper in the knowledge economy … STI capacity building is an absolute necessity", as STI is assumed to enable these countries to reap both economic and social benefits (p.1)**.** Therefore, African universities have to increase production of the required human capital and technological innovations needed for the global economy. Incentives for academics are thought to be important to motivate and encourage academics to engage in research, publish and supervise postgraduate students.

1.3 Problem Statement

As mentioned above, knowledge is increasingly perceived to be important for economic development. Kenya's Vision 2030, which "aims at making Kenya a globally competitive and prosperous country by 2030", identifies higher education and training as one of the key sectors that will drive Kenya into becoming a middle income country (Government of Kenya (GOK), 2008, p.1). Vision 2030 places great emphasis on knowledge production, through research in science, technology and innovation, and global competitiveness. Although, it has to be noted, the Kenyan government does not clearly indicate, in its developmental plan the roles of the universities in it attaining the goals of the Vision 2030.

However, despite the high expectations of the role of higher education and training in economic growth and development, knowledge production remains a challenge in Kenya. According to the UNESCO science report of (2010), the African continent only accounts for 2.0 two percent of the world's knowledge in terms of research publications and less than 0.1 percent of the world's innovations. Whereas most African countries could not produce 100 publications in the fields of natural sciences, Kenya's contribution comprised about 6.6% of all sub-Saharan African publications, third in position only after South Africa and Nigeria (UNESCO, 2010).

Similarly, Cloete et al., (2011), found that research output in terms of research publications and doctoral output in African Universities was very low. Permanent academics with doctorates in the eight African universities, including the University of Nairobi, where the study was located, were likely to publish only one research article in internationally peer-reviewed journals in 10 or more years.

A study on higher education and differentiation in South Africa established a highly significant correlation of 0.82 between the proportions of academics of a university holding a doctoral degree as their highest qualification and the research publications produced at the University (CHET, 2010). Also, the doctoral enrolment and output was very low and was not commensurate with the sharp increase in Master's enrolment. For instance, at the University of Nairobi, Master's enrolments between 2001 and 2007 grew at an annual rate of 7.7% while the doctoral enrolments declined. The key assumption was that the Master's graduates were to flow into the doctoral research programmes, which did not happen.

Following the importance of knowledge in national development, Cloete et al., (2011), suggest that incentives for knowledge production in African universities can encourage academics to publish and supervise postgraduate students. According to Milne (2009), incentives can motivate, attract and retain world-class researchers in higher education institutions who are key players in the production of knowledge. Similarly, focusing on the theoretical lenses that explain how incentives work, Bonner and Sprinkles (2002), noted that, incentives increase effort in employees hence increase results in performance. Consequently this study examined the incentives for publishing and supervision of both Master's and Doctoral students within the context of a Kenyan public University – the University of Nairobi, and was guided by the question: what are the incentives and dis-incentives at UoN for academics that engage in research and supervise postgraduate students? The next section provides the primary aim and sub-questions that guided the study.

1.4 Aim of the Study

Following the research problem stated above, the study seeks to understand the link between incentives and knowledge production at the University of Nairobi. That is, the incentives linked to research and successful postgraduate student supervision.

1.4.1 Research Question and Sub-questions:

Central Research Question: How do incentives and disincentives available at UoN influence knowledge production and productivity?

In addressing the above central research question, the following associated sub-questions were formulated:

1. How does UoN incentivize research and successful postgraduate supervision; and how do the incentives influence knowledge production and productivity?
2. How do academics at UoN perceive the incentives available for research and successful postgraduate supervision?
3. How do competing incentives available at UoN influence knowledge production and productivity?
4. How have the remuneration regimes of academics in Kenya shifted overtime?

1.5 Scope of the Study

This study focused on an empirical investigation of incentives and disincentives for academics to engage in knowledge production at the University of Nairobi. In a nutshell, this study focusing on the university policies and academic perceptions tried to unpack some of the components of a research environment that will encourage, attract and motivate academics to publish and supervise postgraduate students. This study also looked at academic salary structures and the implication for knowledge productivity.

However, despite the above-stated focus, this study was delimited in several ways. This study mainly focused on an institution with a brief reference to the research council. The study limited

its area of research to one Kenyan public University, the University of Nairobi, with the focus on two colleges, the College of Humanities and Social Sciences and the College of Agricultural and Veterinary Medicine (see section3.3 for a detailed discussion). The perceptions of academics and policies in other Kenyan public universities, private universities and other higher education institutions have not been included in this research. Additionally, this study did not research the research council, even though Kenyan higher education institutions are under a research council that could be argued to promote research/knowledge production, the brief reference to the council is a result of insights revealed by academics. Since the study was confined to examining the incentives and dis-incentives for knowledge production, the study's sample for the survey involved the academics that engage in research and supervise postgraduate students. Similarly, the academic administrators in charge of the faculties and schools were also interviewed to expound and clarify some policy issues, as well as the perceptions raised by the academics. Additionally, this study did not focus on the issue of status as an incentive amongst the academics. The study briefly looked at status in comparison to other civil servants and professions, but it did not focus on the rewards and status beyond promotion.

1.6 Rationale and Significance of the Study

A review of the existing literature on knowledge production shows that higher education institutions play an important role in the creation of new knowledge, and that knowledge is a prerequisite for economic growth and development. As the position of knowledge in economic growth and development becomes more vital, so is the need for universities to attract, reward, motivate and retain academics to produce it. This study mitigates an important knowledge gap considering that, whereas there is significant literature on challenges facing African higher education, including low knowledge production, the literature does not offer much on how this (low knowledge production) is linked to incentives in the way this study does. This study contributes important insights to the link between incentives and knowledge production in African higher education. Also, of key concern to this study, among others, are the academic salary structures and their implications for attracting and motivating academics to engage in knowledge production. Therefore, this study offers insights on the remuneration structures of academics in the Kenyan context, and particularly at UoN.

The study is significant in that it has premised its argument on the assumption - if knowledge is important for economic growth and development (Castells, 2001; Cloete et al., 2011), then governments and higher education institution have to put in place incentives for academics to engage in research, publish and supervise postgraduate students.

1.7 Structure of the Thesis

This thesis is divided into five chapters. Chapter One introduces the research problem as it discusses: the background to the study, the problem statement, the research aim and research questions, the scope of the study, the rationale and significance, and the structure of the thesis. The second chapter provides a comprehensive review of the relevant literature on incentives in the university context, and offers a theoretical framework to guide the study. The third chapter provides a detailed description of the methodological approach, research design, research methods, procedures and methodological limitations applied in this study. Chapter Four focuses on presentation, analysis and discussion of the data collected. Chapter Five presents the conclusion to the study and provides limitations of the study and makes recommendations for further research.

CHAPTER TWO

Literature Review and Theoretical Framework

2.0 Introduction

This chapter reviews the relevant literature on the question of incentives and knowledge production. It covers topics such as the distinctive role of higher education institutions in society and, especially in the context of the knowledge economy, knowledge production in the knowledge economy, the general understanding of incentives and dis-incentives in the university context. The chapter also discusses the theoretical framework of the study that is mainly informed by the principal-agent model.

2.1 The Role of Higher Education Institutions in Society

This section broadly discusses the critical role of higher education in society, and specifically in the broad context of the knowledge economy. Departing from the understanding that higher education has an important role to play in economic development, this section illustrates how universities are expected to execute this role through research, innovations and developing human capital needed for the economy. The section discusses how the key role has been defined in the international trends, the African context and the Kenyan context.

2.1.1 Higher Education Institutions in the Knowledge Economy

Following the transition to knowledge-based economies, both industrialized and economically developing countries have acknowledged that higher education, knowledge production and its exploitation play a predominant role in economic growth and development (Chen & Dahlman, 2005). Generally, knowledge economies refer to "economies, which are directly based on production, distribution, and use of knowledge and information" for enhancement of their growth and development processes (OECD, 1996, p.7). In this dynamic economy, knowledge replaces

the traditional factors of production i.e., land, labour, capital and entrepreneurship, as the key factors in the realm of economic production (Drucker, 1993). The creation, dissemination and use of knowledge have become critical for economic productivity and the nation's global competiveness (Chen & Dahlman, 2005). Essentially, economic productivity now relies heavily on the level of knowledge and information available in a country. Knowledge is claimed to be in different modes - tacit or codified - technical or societal. The different forms of knowledge contribute to economic and social development as a driver of global competitiveness and productivity, enables production of employable skills, facilitates welfare and environment and ensures democratic institutions and good governance (see Oketch et al., 2014).

Following the transformational shift to the knowledge economy phenomenon, education in general and higher education in particular, has a key role to play in the production of new knowledge and innovations as well as in terms of finding new ways of applying existing knowledge (Duderstadt, 2003). The knowledge economy requires high-level skilled human capital (Castells, 1994; Sorlin & Vessuri, 2007). Therefore, there is recognition of the fact that higher education has a central role to play in the production of graduates with skills, aptitudes, competencies and understandings that will ensure their contribution to economic development and meet the changing demands of the knowledge-based economy (Santiago et al., 2008). According to Dahlman, Yla-Anttila and Routti (2005), sufficient education as well as a trained workforce is a prerequisite for adoption of new technologies in production, as well as ensuring that technological development takes place.

Furthermore, Davenport (2002, p. 2), argues that, "growth in the knowledge economy is founded on discovery and innovation, in which research has a central role". Hence, through its core functions of teaching and research, higher education institutions make their key contribution to the society through offering education to the young, preservation of cultural heritage, and provision of both basic and applied research that is vital to the society (Etzkowitz et al., 2000; World Bank 2002; Altbach & Peterson, 2007). Emphasizing the role of higher education institutions in knowledge production and innovation in the knowledge economy, Davenport (2002, pp. 49-50) claims that although "… technology transfer and industrial collaboration are

important, if universities ever lose the focus on basic, fundamental research, the knowledge economy as a whole will suffer".

As signaled earlier, recognizing the importance of knowledge and technological innovations, both developed and developing countries have linked higher education to their developmental and industrialization policies (Maasen & Cloete, 2006; Evoh, Mugimu & Chavula, 2013). Emerging economies such as Malaysia, Singapore, South Korea and Taiwan underwent several trends to transform their economies from being Agricultural intensive to manufacturing service sectors (Pillay, 2010). Among other things, these Asian countries invested in initiatives such as increased student enrolment in higher education relative to other levels of schooling. Further, the governments of these Asian countries utilized incentives and systems in expansion of higher education in vital areas such as science, technology and engineering. Additionally, research and development was aligned to the countries' developmental goals and needs of the local industries (Tilak, 2003; Asian Development Bank, 2007; Pillay, 2010a; Salami & Soltanzaden, 2012). Similarly, in Europe, Finland moved from a depressed economy to one of the most competitive nations in the World at the end of 1990s, through embracing innovation, information and Technology and investment in higher education as the key factors of its developmental policy (Dahlman et al., 2005).

From the experience of the above emerging countries in the knowledge economy, there is growing recognition of the reality that African countries can only enhance their economic growth and global competitiveness through investment and use of technological knowledge (Pillay, 2010). However, despite awareness of the importance of knowledge, African countries have lagged behind in terms of knowledge production and promotion of innovations required for economic development and global competitiveness (Cloete et al., 2011; Evoh et al., 2013). It has also been argued, that this could be due to the fact that the continent has not been very attentive to the increased importance of knowledge in economic growth and development (see Sammoff & Carroll, 2004; Evoh et al., 2013). In the late 1980s and 1990s, following structural adjustment programmes by the World Bank, budget allocations to education, higher education in particular, research and development (R&D), subsidies for innovation and technological development, were either greatly reduced or eliminated from most African countries (World Bank, 1994).

Consequently, higher education institutions and other research institutions were expected to solicit their own funds, and were required to engage in more privatization activities in order to raise funds for the operations, followed by minimum government support (World Bank, 1994; Wangenge-Ouma, 2008). These decisions affected production of human capital and innovations required for the economy.

Recent analysis shows that, in many African countries, higher education lags behind the emerging economies, as well as other global regions, in terms of participation (World Bank, 2002). Bloom et al., (2006) and Cloete et al., (2011), noted the participation in higher education in countries in Sub-Sahara Africa was mostly below 5 percent in comparison to developed countries, standing at a rate of over 50 percent. Looking at the gross enrolment rates in 2011, education access in Sub-Saharan Africa stood at 101.6 percent, 34.1 percent and 6.1 percent for primary, secondary and tertiary education respectively (Nsapato, 2012). Similarly, UNESCO (2011) illustrated the budget allocation of the countries' GDP to education in Sub-Sahara African countries as follows: to primary education (2.3 percent), to secondary, (1.3percent), and to higher education only 1 percent. Arguably, the limited numbers in the participation of higher education negatively affects acquisition, adaptation, utilization, and production of technological knowledge that is vital for all countries' competitiveness in the knowledge economy (World Bank, 2002; Bloom et al., 2006). Hence, the recent calls for a balanced investment in all levels of schooling including higher education. Notably, like many African countries, the emerging economies, such as South Korea, pursued structural adjustment programmes in the 1970s, and through higher education they achieved production of sufficient numbers of human resources, whose skills and entrepreneurship enhanced the country's economy.

In the knowledge economy, countries are required to increase their innovative technological knowledge and skills that will allow conversion of R&D investments into technological outputs (Castells, 2010; Cloete et al., 2011). The technological outputs and capabilities are said to include patent applications, increased share in technological exports, as well as through scientific articles published in international journals. However statistics show, Sub-Sahara African countries have the lowest performance in terms of technological exports, declining to 3.8 percent in 2006-2009 from 4.1 percent in 2000-2005, (Evoh et al., 2013; also see Cloete et al., 2011).

UNESCO (2010), reports that in 2002 Sub-Sahara African countries produced 0.9 percent of the total scientific papers, which rose to 1.1 in 2008. The increase in scientific output has grown more slowly relative to the international growth rate. While the nations' innovative and research capacity in developed countries is over 69 per cent, in Sub-Sahara Africa it is only one per cent of the world share. The above statistics reflect how African countries, unlike their counterparts in the developed and emerging economies, are far below the norm in integrating STI, R&D, technological innovations and skills for the knowledge economy. Thus, Evoh et al., (2013, p. 299), recommend, there is more that needs to be done by governments and higher education institutions in Africa, "in the field of STI, especially in developing human capacity and technological skills in order to enable conversion of the continent's R&D investments and education capacity into competitive products and services", particularly by transforming the higher education systems (see also Cloete et al., 2011). Great emphasis is placed on increased production of knowledge for the knowledge economy.

2.1.2 Knowledge Production in the Context of the Knowledge Economy

Knowledge production is understood as the "creation of new and/or the use of the existing knowledge in a new and creative way for generation of new concepts and understandings" for the economy and society (Gibbons, Limoges, Nowotny, Schwartzman, Scott & Trow, 1994, p.5). Therefore, in the knowledge-based economy, where knowledge is increasingly becoming the driving force for economic growth and global competiveness, it requires inputs from higher education institutions through R&D, and investment in human capital. As signaled earlier, studies have shown a positive relationship between the levels of skills and the rate of innovation (Castells, 1994; Sorlin & Vessuri, 2007). Thus, Bloom et al., (2006) and Evoh et al., (2013) note that necessary support provided to universities, particularly those in Africa have the ability to foster innovations and economic growth by producing high-skilled labour required in the knowledge economy. According to Gibbons et al., (1994, p. 5), knowledge production in the knowledge economy needs to be "context driven, problem focused and interdisciplinary" in order to address the problems of the economy and society (Gibbons et al., 1994, p. 5). Thus society looks to higher education institutions for the creation of new knowledge and innovations and to find new uses of existing knowledge.

Additionally, there is an increasing call on universities, including those in Africa, to carry out research and disseminate the information to the society. Research conducted in higher education institutions will allow the much-required innovations in the private sector to happen, since universities play a central role in knowledge transfer (World Bank, 2002). According to Dahlman et al., (2005), excellent capabilities and skills are essential in technologically complex occupations and work places. Thus, the above authors further argue that even the individuals that do not engage in careers that require more advanced education in science and engineering, will need basic scientific and technological literacy as effective workers in the knowledge economy. However, as a result of the neo-liberalization policies, marketization drives universities to focus more on courses such as environmental science, ICT and computer science (Kiamba, 2004). To some extent, this impedes the production of technological and scientific skills needed for the knowledge-based economy.

Notably, a workforce with higher education and technological skills allows firms to be fast imitators, followed with capacity to adopt, use and improve new technologies in order to remain competitive in the knowledge economy (Castells, 1994; Pillay, 2010). This will become a possibility in countries and firms that are able to produce capacities that can acquire existing technological knowledge, create new knowledge, disseminate and use the new knowledge in their societies and economies (World Bank, 2002; Santiago et al., 2008). Higher education and research institutions have now become a huge resource for businesses, industry and society as they carry out R&D for industries, create spin-offs for firms, engage in capital formation projects, entrepreneurial training, and as they encourage postgraduate students to convert their research into products and enterprises (Gibbons et al., 1994; Etzkowitz et al., 2000; Dahlman et al., 2005; Castells, 2010; World Bank, 2012).

Based on the above discussions, several authors have argued that, technological learning and innovations require a supportive economic, industrial and S&T system (Stern et al., 2002; Asian Development Bank, 2007). Therefore, countries are required to develop and support their innovation systems. Also, in the use of technological innovations and research output for economic growth, collaborative research activities between the government, industry, and higher education institutions are emphasized, so as to provide solutions to the immediate needs of

society and industry (Etzkowitz & Leydesdorff, 2000). In addition, several authors have noted that not only would knowledge-based development occur with the presence of an educated and skilled labour force, but an information structure and an institutional regime will grow as well to provide incentives for production, dissemination and utilization of knowledge (Driouchi, El Mustapha, & Anders, 2006). Therefore, it is the responsibility of universities, including those in Africa, as both producers and consumers of knowledge to look into the challenges facing production of new knowledge both in terms of research output and human capital in the knowledge economy.

The emergence of the knowledge economy has resulted in diversification of knowledge production and the places where knowledge is produced. According to Gibbons et al., (1994, p.5), knowledge is not only produced in the universities anymore. Other institutions and locations have developed as sites of producing knowledge, including government and corporate laboratories, consultancy firms, industries and other think tanks. Gibbons and the colleagues further argue, in the new mode of knowledge production, "the universities, in particular, will comprise only a part, perhaps only a small part, of the knowledge producing sector" (Gibbons et al., 1994, p. 5). Therefore, following the above diversification, Kubler and DeLuca (2006), claim higher education institutions compete with many other knowledge producing institutions. Development of "new knowledge institutions'" outside academia, "competition for workers with specialized knowledge has intensified" including academics (p.4). Thus, Kubler and Deluca (2006), suggest use of incentives for academics would attract, motivate and retain them to engage in knowledge production in the higher education institutions. Furthermore, collaborative partnerships with other institutions and organizations beyond the disciplinary, regional, national, and global boundaries (Gibbons et al., 1994; Castells, 2009) have intensified staff competition and increased mobility of academics. Kubler & Deluca (2006), argue that staff competition and "mobility strengthen the role of market forces" in recruiting, attracting, motivating and retaining academics in the universities. These market forces may involve use of incentives (p. 4).

Moreover, as a result of the diversification process in the producers of knowledge, HEIs are required to find their niche research areas and increase production of useful knowledge. Hence universities have to ensure visibility of their graduate education and research activities globally,

as well as ensure provision of supporting infrastructures and resources that will attract and retain the best researchers, academics and academic leaders (Hazelkorn, 2008).

The above discussion has presented broader debates on the distinctive role of higher education/universities in society, especially in the new context of the knowledge economy. The key argument in the preceding analysis is that universities have a crucial role to play in society, primarily through knowledge production. Therefore, universities have to find ways to encourage academics to increase the productivity levels of knowledge. The next section focuses on African universities and their changing roles since the 1960s.

2.2 The Role of Higher Education Institutions in the African Context

This section discusses the role of higher education institutions in the African context over time. This analysis is presented across several periods of time to show the shifting emphasis of the role of higher education in Africa. The periodization is from the 1960s to date, given their distinctive socio-economic features that have had an influence on the role of universities in Africa.

2.2.1 The Role of Universities in the 1960s

In the 1960s, the key purpose of the newly established universities in the young independent nations was to produce sufficient trained and skilled human resources for the civil service and the public professions and other practitioners required to replace the departing expatriates, and for economic growth and development in the region (Ashby, 1964; Yesufu, 1973; Court, 1991; Lulat, 2005). Apart from training the professionals, African Universities were hailed as agents of economic modernization, social transformation, preserving national heritage and nation building (Yesufu, 1973; Mosha, 1986; Sherman, 1990; Ajayi, Goma & Johnson, 1996; Sawyer, 2004). It is because of this critical role expected of the newly established African universities that they became known as the "development universities" (Yesufu, 1973; Cloete et al., 2011).

The important expectations of the role of the new African Universities in development provided an economic basis for financial investment in education by both government and external funders (Court, 1991; Wangenge-Ouma, 2008a; Pillay, 2010). Lulat (2003) clearly states that:

> The kinds of bilateral support received by higher education in countries throughout the independent Africa reflected the complexity of that sector. That is, almost every aspect of higher education was targeted for support, including assistance with building construction, provision of student scholarship for staff development, payment of partial or whole salaries of local and externally recruited staff, assistance in with logistical purchases (including library materials, computers and lab equipment), and assistance with the establishment of programmes of study. (Lulat, 2003, p. 26)

From the above quotation, it can be deduced that the government offered incentives and organizational support for the academics to teach and carry out research. Also, during this period, there were staff development opportunities through scholarships to the academics and students to pursue PhDs abroad. There were also other benefits provided such as paid study leave (Mamdani, 2011).

However, critics had a dim view of the performance of the African universities in the 1960s. They asserted that the contribution of the universities' to meeting the needs of society in which they were established was inadequate (Court, 1991). According to Ashby (1964) and Yesufu (1973), the universities were engraved in the western universities model as institutions with a purpose to train a small elite group and produce knowledge for its own sake. Notably, though universities claimed to engage in knowledge production, in practice there was limited research conducted that could have contributed sufficiently to socio-economic development (Wangenge-Ouma & Fongwa, 2012). However, Ajayi et al., (1996, p.192), comment that with regard to the mission of African universities having to train sufficient human resources who were prepared to replace the departing colonial officials and professionals, the universities are recognized to have performed well as per the expectation. Ajayi and colleagues claim that during this period, the graduates of the national universities took charge of the science and technology infrastructure, hence being responsible for the research and development activities undertaken in the country.

2.2.2 Criticism on the Relevance of African Universities in the 1970s

In the 1970s, the relevance of the African University to development was increasingly being questioned (Court, 1980), after a notion that a different university was called for whose core activities were relevant to the needs of the African countries. Court (1980), notes the questioning was an attempt to transform African universities, seen as tools of change from the European universities mainly interested in continuity and conservation (p.334). Several issues were being criticized regarding the African University during this period, including the curriculum, the academic profession and its elitist nature (Yesufu, 1973; Court 1980; Ajayi, Goma & Johnson, 1996). The above authors argue the universities were not making a contribution to the wellbeing of the countries' population and socio-economic transformation.

The emphasis on this pursuit was outlined in the report of a conference "creating the African University" organized by the African Association of Universities (AAU) in 1973 (Yesufu, 1973; Court 1980). In this conference, there was a strong call on the redefinition of the role of the African University.

> What seemed to be required, therefore, was a new working definition of a university, which would signify its commitment, not just to knowledge for its own sake, but to the pursuit of knowledge for the sake of, and for the amelioration of the conditions of the common man and woman in Africa. The African University must in the 1970s not only wear a different cloak, but must also be differently motivated. It must be made of a different and distinctive substance from the traditions of Western universities, and must evolve a different attitude and a different approach to its task. The truly African university must be one that draws its inspiration from its environment, not a transplanted tree, but growing from a seed that is planted and nurtured in the African soil. (Yesufu, 1973, p. 40)

Following the key role of universities in development, the above quotation signals key aspects that were highlighted for the African universities in the 1970s, including producing knowledge that would meet the needs of the society; Universities were to play a key role in fulfilling the needs of African societies and its local contexts, which were different from the needs of the societies where their mode of operation originated. Following the above analysis, it is clear that

through knowledge production, universities were required to make a prominent contribution to the socio-economic development.

Despite the questioning of the relevance of the African university in the 1970s, as indicated earlier, in the 1960 these universities met their expectations by producing skilled manpower and research output required for the countries' socio-economic modernization. However, Court (1980), argues that some of the expectations and experiences of the Universities in 1970s failed, and through cost analysis universities were criticized for utilizing government resources, with less return in comparison to other levels of schooling. Consequently, this was followed by a decade full of challenges discussed below.

2.2.3 Re-assessment of the Role of Universities in the 1980s

Though the first two decades of higher education in Africa were followed with high expectations, concerns about and criticisms of the relevance of African universities to society in the 1980s seemed to portray a difficult moment for universities on the continent. This was as a result of several internal and external challenges imposed on higher education institutions during this period. Several authors contend that during this period African countries were faced with, inter alia, increase in population, national economic crises, high illiteracy, disease and low agricultural production, repression and curtailed academic freedom, which had an effect on African universities (Atteh, 1996; Ajayi et al., 1996; Samoff & Carroll, 2004). In relation to universities, these challenges meant decline in state support in provision of social services, including education, and reduction in resources available for African higher education during a period when knowledge was highly recognized for its role in socio-economic development (Samoff & Carroll, 2004).

Additionally, following the above-mentioned social and economic crises, the International Monetary Fund and the World Bank drove the introduction of Structural Adjustments Programmes (SAPs) in African countries as conditions to reduce public expenditure on social services, including higher education (World Bank, 1988; Lulat, 2003). The World Bank called for privatization measures and implementation of user fees to raise funds to meet the public

demand for expansion of university education and improve educational opportunities (Court, 1991; World Bank, 1994; Lulat, 2003). Further, given the claim, higher education had minimal or no rates of return on investment compared to the primary and secondary levels of schooling (Psacharopoulos & Woodhall, 1985), governments and other stakeholders reduced university funding in favour of primary education (World Bank, 1988; Sammoff & Carroll, 2003; Kiamba, 2004). For instance, the shift in investment saw external funding decline from US$ 103 million annually as late as 1994, decreasing to an average of US$ 30.8 million from 1995 to 1999. Public spending per capita fell from US$ 6 800 in 1980, to US$ 1 200 in 2002, and by 2009 it averaged US$ 981 in 33 low-income Sub- Saharan Africa countries (World Bank 2009, p. xxvii).

Marginalization of higher education affected not only the core functions of teaching and research but also research infrastructure, incentives and remuneration of academics. According to Ajayi et al., (1996), and Hayward (2012), reduced government funding curtailed expenditure on staff development, postgraduate studies, books, and subscription to journals, equipment, teaching materials and academics' salaries. Similarly, reduced funding resulted in a decline in seminars and lower volume of research. For instance, over the last 25 years the Sub-Saharan African publication in international journals declined by 31 percent (Evoh et al., 2013). This is in contrast, for example, to the case of India and China, which became competitive nations by investing in primary, secondary and University education simultaneously (Pillay, 2010a). Despite fiscal austerity, staff shortages, overcrowding, decline in the working conditions, and decrease in academic salaries in several universities, Hayward (2012), comments, there were academics in African Universities who were still dedicated to quality research and graduate training.

However, the decline in research activities was alarming as this compromised Africa's ability to take part in the global advances in science and technology, the capacity to adapt and use new knowledge and its requirement to develop indigenous graduate programmes in teaching and research that are key factors for Africa to develop its own scientific and intellectual capacity.

From the above analysis, it is evident that the 1980s was a period of despondency in terms of development of the African universities and their role in knowledge production. During this

period research and scholarship were the main losers. However, there was a shift in the 1990s and early 2000s that continues to be seen in the universities today, as the World Bank and other influential voices called on restoration of higher education. A detailed discussion is provided in the next section.

2.2.4 Revitalization of Higher Education in the 1990s and 2000s

Sawyer (2004), stresses that in the 1990s and the early 2000s some 'influential voices' such as the World Bank, the international development community and other commentators started calling for revitalization of higher education in African nations and its link to economic growth. Bloom et al., (2006), indicate that international institutions shifted their thinking on the higher education policies and increased presumptions that higher education in Sub-Saharan Africa is important for economic development and alleviation of poverty. Hence, they encouraged introduction of innovative policies to strengthen higher education systems. To expound, Bloom et al. (2006), state that:

> In (a) knowledge economy, tertiary education can help economies keep up or catch up with more technologically advanced societies. Higher education graduates are likely to be more aware of and better able to use new technologies. They are also more likely to develop new tools and skills themselves. Their knowledge can also improve the skills and understanding of non-graduate coworkers, while the greater confidence and know-how inculcated by advanced schooling may generate entrepreneurship, with positive effects on job creation. (Bloom et al., 2006, p. 15)

From the excerpt above, it is clear there was a re-emphasis on the critical role of higher education in national development through production of human resources and research, which are the key elements required in the knowledge economy.

The above views of Bloom and colleagues are also evident in the arguments made by numerous World Bank reports (World Bank, 2009). These reports emphasize, albeit belatedly, the importance of higher education in African countries, for them to be able to participate in the knowledge economy. Importantly, this emphasis on higher education entails investing in research and postgraduate training; offering attractive incentives to the academics such as good

remuneration. Also, African countries were encouraged to invest in education in mathematics, Science and engineering as these were important fields of expertise for improved economic growth. To reinforce the above views, the former UN Secretary, General Kofi Annan was one of the main "influential voices" that called on African Universities to respond to the demands of the 'knowledge economy'.

> The university must become a primary tool for Africa's development in the new century. Universities can help develop African expertise; they can enhance the analysis of African problems; strengthening domestic institutions; service as a model environment for the practice of good governance, conflict resolution and respect for human right, and enable African academic to play and active part in the global community of scholars. (Bloom et al, 2006, p. 2)

From the above quote, following the earlier signal on the contradictory positioning of higher education in Africa regarding development, it is evident there has been renewed acknowledgement that university education has a key role in economic growth and global competitiveness. Despite the above acknowledgement, higher education in Africa still faces key challenges, which could diminish the universities' contribution to economic development. World Bank (2002), and Evoh et al., (2013), outline six main challenges: (a) lack of skills, demonstrated by low rate of enrolment in secondary and tertiary education, followed with less enrolment in STI, agriculture, and engineering (b) low scientific and engineering research output, (c) lack of research funding (d) lack of links with the industry and other stakeholders in the economy (e) lack of ICT infrastructures and Internet connections and, (f) curriculum and relevance gap. These challenges have resulted in production of limited human capital and insufficient scientific output required for the knowledge economy.

Despite the shift towards the knowledge economy in the African context, Pillay (2010a) claims that it is far from clear that increased knowledge production and dissemination will result in competitiveness in the knowledge economy and socio-economic development. Further, another paradox is, as signaled earlier (see section 2.2.3) governments, particularly in developing countries tend to neglect investing in higher education as they pay more attention to primary education, in spite of the acclaimed role of universities in the knowledge economy (Maassen & Cloete, 2002). In the recent past governments have been continuously under pressure to cut down

their support of higher education.

In summary, the role of higher education in the society has been underpinned by the historical mandate of the universities. From the above analysis, it's evident that in the 1960s and 1970s, the emphasis on the relevance of the universities in production of knowledge required for the economy of the newly independent nations, foregrounded the idea of the "developmental" university. In the 1980s, the universities were seen as a burden following their smaller contribution to development than before. Lastly, since the 1990s and 2000s, the need for the universities to contribute to economic development by increasing research output and production of human capital has been revived.

Having looked at the role of higher education in society, with a particular focus on the Sub-Saharan African context, the next section delves into a detailed discussion of the notion of incentives. A general understanding of incentives as applied in different contexts and disciplines is provided, and later a discussion on the concept's application in the higher education context.

2.3 The Notion of Incentives

This section will first discuss the general understanding of incentives as applied in different contexts and disciplines, followed by an analysis of the concept's application in the higher education context. In addition, different theoretical approaches to incentives are discussed, with particular emphasis on the principal-agent model that forms the main theoretical framework for this study. Lastly, different concepts from the theoretical constructs are operationalized and empirical indicators, which are later applied in the analysis of the data, are teased out.

2.3.1 Conceptualizing and Discerning Incentives

The notion of incentives is conceptualized in various ways. The presence and emergence of several definitions argued by some authors could be as a result of the contextual nature of how the notion of 'incentives' is applied (Fenker, 1977; Adams & Hicks, 2000; Frey & Neckermann, 2008; Milne, 2009). Thus, based on the above observation, Adams and Hicks (2000), expound

that incentives infer different things to different people in different disciplines as they are guided by different theoretical approaches.

According to Hendricks and Sousa (2008, p. 361-362), the notion of incentives has certain antecedents that are key to its conceptualization. Generally, Gneezy et al., (2003), see incentives as items that will spur the desired behaviour in the organization, encouraged by the principal. Hendricks and Sousa (2008), maintain the notion of incentives involves a simple analogy of the question, "what is in it for me?" (p. 361). Basically this argument refers to that which workers receive after working or successfully completing tasks delegated to them. Fenker (1977), claims that an incentive structure "represents an empirical framework of an organization which characterizes the relationship between specific behaviours of employees and the probabilities of receiving various incentives" (p.454). Frey and Neckermann (2008), and Milne (2007), claim incentives could be used in organizations in improving performance or particular desirable behaviour (publishing), which the employers believe is necessary for the excellence of the organization.

Incentives in organizations are mainly categorized in two broad ways, i.e., on the basis of "whether the unit of analysis – and the recipient of the incentives – is the individual or the group (or the organization)" (Steers, 1984, p. 417). Meyer and Meyer (2009), contend that the effective way of motivating an employee is by attaching rewards to the individual's efforts and ability. Meyer and Meyer (2009), identify several individual incentive plans to include: merit-based compensation plans, piece rate plans, bonus plans and commissions. These incentive approaches entail tying compensation directly to the performance of individual employees. This type of approach is advantageous to the employees since in this case the employers understand that an individual's performance, effort and ambition are directly linked to the reward. Hence, individual workers view it as a fair mode of compensation unlike the group rewards.

Despite the argument that individual incentives result in improved performance, several studies have revealed contrasting views, for instance, individual incentives may result in competition amongst employees, hence undesired results (Meyer and Meyer, 2009). Inasmuch as the economic theory claims competition leads to efficiency and quality output, competition among

employees may be problematic as it crowds out teamwork in the organization. Teamwork allows employees to work together and meet the goals of the organization. Steers (1984, p. 418), also mentions some examples to illustrate misgivings about the individual incentives. First, providing individual achievement incentives to sales people, for instance, guarantees that the staff will not work together to achieve the required performance, because of the competition. Heckscher and Donnellon (1994), argue competitive individual distribution of incentives "correlates not only with lower self-esteem among participants, but also with lower satisfaction ratings and performance" (p. 74).

A study of performance-based rating systems in high technology firms, by Zenger (1992), cited in Heckscher and Donnellon (1994, p.74) found that the engineers who were likely to leave the firm were not just "the extremely low performers but also those moderately high-rated performers who might be disappointed at falling short of the highest ratings". Similarly, Lazear (2000), reveals that without the quality control aspect competition created by provision of individual incentives based on piece rates results in increased output, although of poor quality (also see Steers, 1984, p. 418; Stilwell, 2003; Meyer & Meyer, 2009).

Notably, when dealing with the above challenges of individual incentives, proponents of incentives advise organizations to opt for group or organizational incentive plans. Group incentives, involve a case where a group of employees, teams or a whole organization, get benefits of the improved performance, reduction of costs, or the increase in profits (Lavy, 2007; Meyer & Meyer, 2009). In addition, providing team incentives results in employees sharing the best methods and working together to achieve the desired productivity levels. This argument explains why some universities reward team efforts or acknowledge the organization on their research performance.

In support of rewarding team efforts Steers (1984) contends that individual incentive plans might face resistance from academic unions as university academic staff unions prefer that staff be compensated on the basis of seniority or job satisfaction. Steers (1984) concludes that many work organizations are faced with inequity in the provision of incentives since, "often there is little in correlation between those who perform well and those who receive the greatest rewards'

(p. 416). In contrast, Heckscher and Donnellon (1994) argue, "distribution of rewards based on hierarchy [positions] could act as a disincentive for most people to contribute their knowledge and ideas (p. 76). In support of rewarding individual performance Kanter (1987) argues that not rewarding performance encourage individuals to 'look out for themselves' even though it means improving on productivity. Hence, Kanter proposes, like the predictions of the principal-agent model, institutions should reward performance and motivate the employees (Kanter (1987). This dimension is similar to the predictions of the principal-agent model, as highlighted in the later sections (see sections 2.6.1.1 and 2.7)

From the above account it is clear that incentives are conceptualized in several ways, which vary across disciplines and contexts. The emphasis is on selecting incentive plans that are suitable for specific organizations and workforce (Meyer & Meyer, 2009.) A number of theories explain how incentives operate; different authors propose relevant guidelines for effective incentive programmes as are depicted in the next section. There are several typologies of incentives given at different levels of analysis. These include: (a) individual incentives (b) group incentives and, (c) organizational incentives. The use of each of these incentives may result in different consequences regarding quantity as well as quality of the products.

2.4 Incentives as Applied in the Higher Education Context

The concept of incentives is often seen as distasteful and unsuitable when applied to the academic profession in the university context (Fenker, 1977). Some authors argue in favour of commitment, academic ethos and self-selection as factors that influence the quality and quantity of academic work, rather than awarding extrinsic incentives (Ruegg, 1986). Similarly, Fenker (1977), claims that reducing the "complex motivations such as scholarly dedication or personal rewards" related to teaching and research, to a simple analogy of incentives is inappropriate and unproductive (p. 454). Hendricks and Sousa (2008) argue, in contrast, that the role of incentives in the higher education context requires attention since "pressures from outside and within the universities are said to have made university research less of a curiosity-driven activity and turned it more into ordinary work, with career opportunities and performance assessment attached to it" (p. 359). Hendricks and Sousa, further claim research in universities is not entirely

about producing knowledge, but it also involves pay "with reputation" involved (p. 359). Several empirical explanations/studies of incentives are discussed below (Fox, 1985; Blackburn & Lawrence, 1995; Fairweather & Rhoads, 1995; Tien & Blackburn, 1996; Chow and Harrison 1998; Bucheit, Collins, & Collins 2001).

2.4.1 Money as an Incentive

Proponents of incentives, such as economists, assume that, when there is an increase in the financial incentives as compensation for a task, the result would be increased productivity (Gneezy & Rustichini, 2000). This is based on the assumption of the economic theory that, "performance is positively related to effort; effort is unpleasant, and money is good" (Gneezy & Rustichini, 2000, p. 791). Similarly, Cloete and the colleagues suggest, African "governments and universities should explore incentive systems such as that in South Africa, where the government financially rewards institutions for PhD graduates and accredited publications" (Cloete et al., 2011, p. xx). The rationale for this argument is that, given an environment where academics are faced with very little research funding from the government, poor remuneration and several competing incentives, incentives for knowledge production would ensure academics focus on publishing and supervision of postgraduate students. More often than not attractive remuneration packages are offered to ensure performance at maximum efficacy in order to motivate, attract and retain the best talents within the institution (Kubler & De Luca, 2006).

At present, institutions provide monetary incentives in two broad ways, namely, direct monetary compensation and indirect monetary compensation. The main acknowledged direct monetary compensation includes salary and commission. Indirect monetary compensation is mainly referred to as employee benefits that may include housing allowance and paid (sabbatical) leave. Generally, money has been argued to have higher valence than no pay or than other non-contingent incentives (Bonner & Sprinkle, 2002, p. 308). Several scholars argue that the attractiveness of money is based on the several functions money serves in working contexts. These include: (i) money is a goal or incentive (ii) money is a source of satisfaction (iii) money is instrumental toward acquiring other desired outcomes, (iv) money has symbolic value due to its link to prestige, status and other factors (Vroom, 1964, also see Steers, 1984, p. 416; Zelizer,

1994**).** Hence, according to the expectancy theory, the overall motivation of an individual will be high when compensation is given on the basis of performance, because of the increased expectancy of the link between effort and outcome (monetary incentives) and increased valence of the rewards (Vroom, 1964). These notions of linking outcomes to tasks are also emphasized in the agency theory (principal-agent model) (Jensen & Meckling, 1976) as discussed below.

An experimental study by Lazear (2000) showed that performance-based monetary rewards for employees manifested in increase in productivity of employees. Lazear's (2000), view is that this could be as a result of either the average worker responding to the incentives; or, the ability of the firms to hire productive workers who are attracted to the organization because of rewards and which reduce quits amongst the productive workers.

In spite of money being argued to have great motivational effect, research shows that the effect of monetary incentives varies considerably. In some situations, studies have shown a direct relationship between receiving monetary incentives and increase in effort and performance; however, there are times where such a relationship is not established (Steers, 1984). In another study, Gneezy and Rustichini (2000, p. 791), conducted a controlled laboratory experiment, comparing two major situations - the total absence of, and conversely, presence of monetary rewards. Gneezy and Rustichini's hypothesis was based on an economic theory that monetary compensation would neither increase nor decrease the performance levels. From the above study it was established that "in the treatments in which money was offered, a larger amount yielded a higher performance". Further the study also illustrated, "offering money did not always produce an improvement: subjects who were offered monetary incentives performed more poorly than those who were offered no compensation" (Gneezy & Rustichini, 2000, p. 791). This affirms that use of monetary incentives can result in negative impact on performance (see also Pink, 2011). From the above study it can be seen that use of money in particular as incentive, or other incentives to enhance performance does not result in a linear relationship.

Some theories have predictions that use of monetary incentives may result in decreased effort and performance. For instance, Deci and Ryan (1985), through their work on the cognitive evaluation theory argue that use of monetary incentives, when attention is on the external reward

attached to the task, may decrease intrinsic motivation, and hence may decrease the effort and task performance. Gneezy et al., (2011), agree that with the use of monetary incentives, the desired effort and performance initially increases, however, with time the performance begins to decrease. Furthermore, a study by Amabile (1996, p. 30), illustrates that unlike intrinsic incentives that are conducive for creativity, use of extrinsic rewards is detrimental to the agents' creativity. Creativity is assumed to be the main ingredient of the knowledge production process.

Despite the influence of monetary incentives on the performance or productivity levels of workers, proponents of incentives argue that incentives should be adequate and fair.

> If someone's baseline rewards aren't adequate, or equitable, her focus will be on the unfairness of her situation and the anxiety of her circumstance. You'll get neither the predictability of extrinsic motivation nor the weirdness of intrinsic motivation. You'll get very little motivation at all. But once we're past that threshold, carrots and sticks can achieve precisely the opposite of their intended aims. (Pink, 2011, p. 35)

Drawing from the above excerpt, Pink further emphasizes that the main reason why adequate and fair pay is essential is that it takes the focus off the issue of money and allows the agents to focus on the main task itself.

From the above-mentioned opposing effects of monetary incentives, Meyer and Meyer (2009) argue that money should not be the main incentive. Even though most people appreciate money, it should be used together with other incentives such as promotion and provision of good working conditions. The authors further explain that, money has less storability value where it is spent and 'memory' of its value fades. Unlike other incentives, such as promotion, that have high storability value and can be remembered, hence a long-term influence on the long-term goals of the organization. Therefore, the next section discusses several other incentives provided to academics alongside money.

2.4.2 Institutional Incentives in the University Context.

This section provides empirical studies on incentives in different higher education contexts. Few researchers in the Kenyan context have conducted empirical studies to explore the relationship

between academic incentives and knowledge production. Some studies of American, Asian and other academics are helpful in providing preliminary insights. Many previous studies on incentives that motivate academic research productivity have focused on the external, organizational factors that are linked to the academic working conditions (Massy & Wilger, 1995; Smeby & Try, 2005; Bland et al., 2005; Hassan, Tymms & Ismael, 2008; Hendricks & Sousa, 2008; Tien, 2007). These are discussed in the subsequent paragraphs.

Studies about incentives that motivate academics to be productive, established three main domains of characteristics including, the individual academic researcher, the environment that the researcher works in and the leadership of the institution (Bland & Ruffin, 1992; Bland et al., 2006). Bland and the colleagues believe that, the above characteristics are integrated, and academics will be highly productive if all the stated motivational incentives are available. Bland and others provided a model of the different characteristics as illustrated in Figure 2.1. The figure illustrates the individual, environmental and the leadership factors that previous studies have demonstrated motivate academics, to research and publish, that is, resulting in high research productivity. However, Bland et al., (2002), emphasize that, to get optimal productivity requires that all the characteristics in the different components have to be present and accessible.

Several studies on factors that encourage academics to publish and supervise postgraduates revealed that standard research training influences both an individual's and departmental or institutional knowledge productivity. Smeby and Try's (2005), analysis among Norwegian academics established that the proportion of doctoral degree holders in a department was an influential factor on the departmental total research publications. Similarly, a research study among Kenyan academics indicated that, academics with doctoral training, compared with those without doctoral training, have a higher likelihood of engaging in research and publishing peer reviewed articles (Cloete et al., 2011; Migosi et al., 2012). Migosi et al., citing Hemming and Kay (2007), contend that doctoral training has an "indirect effect" on research output as it acts on "writing confidence" (p. 124). PhD training should also enable individuals to train other postgraduate students. For further information on individual, environmental and leadership factors that motivate academics see *Figure 2.1.*

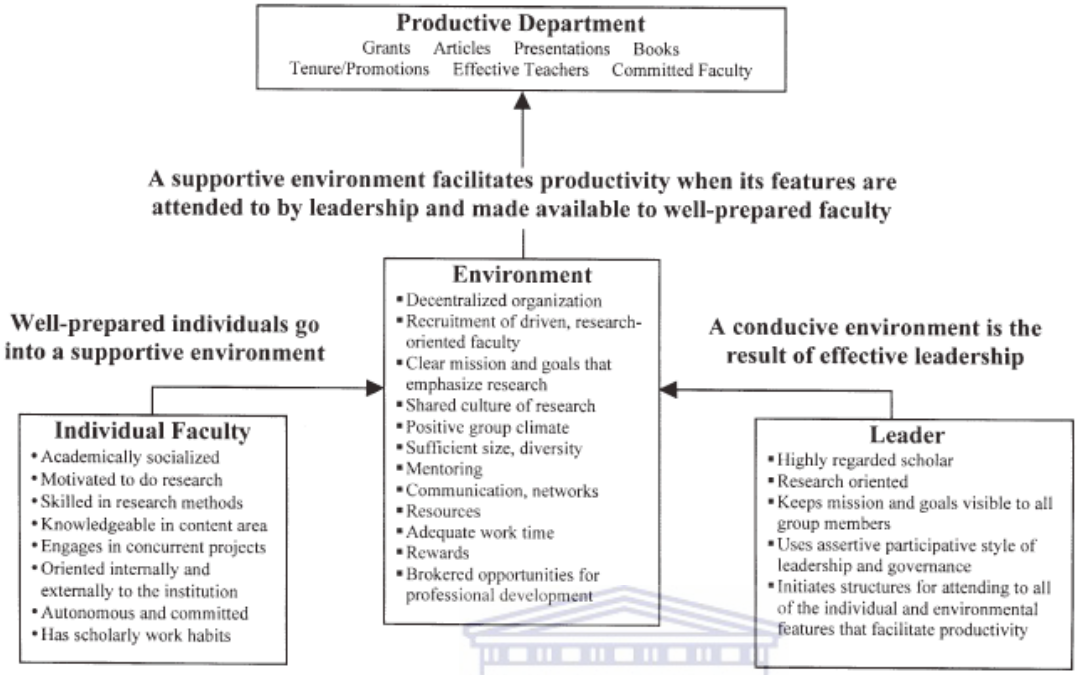


Figure 2.1 Individual, environmental and the leadership factors that motivate academics
Source: Extracted from Bland et al. (2006, p. 92).

Studies by Tien and Blackburn (1996), and Bland et al., (2005), found significant differences in research productivity by rank/seniority. The studies showed that research productivity was highest among professors and associate professors, in comparison to the other academic ranks. In contrast, some studies have established that junior academic staff members were more highly productive in terms of publications than their senior counterparts (Tien, 2007c; Cloete et al., 2011). To expound, Tien, (1994a), and Tien, (2007c), revealed that, after acquisition of promotion or tenure to the final career level or academic rank, academics tend to decrease their research productivity within three years of acquiring full professorship. The above observations are in tandem with the claims of Pink (2011), that "in environments where extrinsic rewards are most salient, many people work only to the point that triggers the award – and no further (…) meaningful achievement depends on lifting one's sights and pushing toward the horizon" (p. 58). Despite the opposing findings above, a study by Tien (2007c), illustrated that promotion to higher academic ranks is linked to research publications. Hence, Bland et al., (2005), argue that,

since research publications are mainly considered for promotion, there is an expectation of high research productivity from academics of higher rank.

Networking is vital for academics as they engage in production and dissemination of knowledge in the universities. Bland et al., (2005), describe networking as follows, when "members have a vibrant network of colleagues with whom they have frequent and substantive (not merely social) research communication, both impromptu and formal, in and outside of the institution" (p. 228). Bland and his colleagues further argue that networking with researchers may result in collaboration with other top researchers, therefore help the academic researchers to publish more easily than those academics that do not maintain professional or disciplinary networks.

Basing their study on the life-cycle development model, Tien (2007c), used various sources of data, including faculty lifetime publication data and a longitudinal mail survey, to examine the lifetime productivity changes among Taiwanese academics. Tien used the National Science Council (NSC) Research Outcome Awards and stipend money as measures of the Taiwanese academic research performance. The above measures differed with the traditional research publications counts, such as, books, articles, and citation. She argued, the NSC Research Outcome Award "serves as a quality indicator of research performance and has a spirit of performance" (Tien, 2007c, p. 15). The respondents to the longitudinal survey were full-time Taiwanese academics above the instructor level, working in three major fields and fourteen disciplines employed in nine institutions (Tien, 2007c). The study used the behavioural reinforcement theory as a theoretical framework, which argues that external incentives have an impact on human behaviour (Tien & Blackburn, 1996).

The above study by Tien (2007c), established that during the early stages of the career, the proportion of academics that published remained low. As the time of the anticipated promotion approached, the proportion gradually increased. Conversely, there wa s a decline in research productivity after promotion. According to Walker (2002), differences exist in the priorities of academics across their career trajectory. The above findings are similar to the predictions of a 'research productivity theory', Life-Cycle theory. (Hu & Gill, 2000), argue that, generally the research productivity of academics increases sharply in the early stages of the

career, reaches the peek around tenure review and later begins to decrease. Similarly, a survey conducted by Tien (2000b), found that academics who indicated to be highly motivated by promotion displayed higher research performance, compared to their colleagues who stated that they were not highly motivated by the prospect of promotion.

Several authors argue that a strong link exists between research output and incentives offered in the universities (Braxton, Luckey & Holland, 2002). A few studies provide a comprehensive picture of the kind of relationship that exists between the incentives and research output. For instance, promotion will be effective as an incentive for research productivity depending on the individual's value or need for promotion. Tien (2000b) indicates that, academics that attach more importance to promotion would publish more than their counterparts who don't value it. In another intervention, Tien's study demonstrated that, expectation of receiving particular incentives had a different motivational effect on the research publication. For instance, regression analysis illustrated that, academics that were highly motivated by promotion and the fulfillment of curiosity, had the tendency to publish research articles, while academics that were motivated by a show of mastery in the discipline, had a tendency to publish books. Lastly, academics that considered financial rewards as the major incentive sought and received the National Science council Research Outcome Grant or Award (Tien, 2007c).

Notably, research has established that academics respond to the promotion and tenure criteria, hence, these are important incentives that reinforce academic research behaviour and research productivity (Massy & Widgren, 1995; Tien, 2000b). Interviews conducted by Ruscio (1987), (cited in Tien, 2007c), showed that, when an academic respondent was asked to comment on research publication he stated that "Half to three quarters of what I read, if I asked myself why this was written, the answer normally is promotion". Consequently, scholars emphasize that higher education institutions could have critical impact on academic research behaviour through manipulating the reward structure of promotion (Fox, 1992). Nevertheless, little of the research keenly examines the said criteria of promotion and tenure.

In her study Tien (2007c), suggested that higher education institutions need to establish more flexible systems of sabbaticals that are important for revitalizing academics' research energy.

Citing the example of several universities in Taiwan, the policy requires that professors apply for sabbatical leave after seven years in the senior positions, or apply for a period of six months, once every three years. In the context of the study, the University of Nairobi policy indicates that academics are entitled to apply for sabbatical leave only after seven years (UoN, 2006b). Based on the findings, the author proposes an aggressive policy that would allow professors to enjoy sabbaticals after three years of service after the promotion to full professorship. Additionally, Tien (2000b) suggests that an additional academic rank on the career level would enhance research performance particularly for the academic careers of those academics that are motivated by promotion.

In the context of South Africa, Inglesi-Lotz and Pouris, (2011), investigated the influence of the National Research Foundation's (NRF) rating system on the research productivity of the South African social science researchers in the period 1981 to 2006. Inglesi-Lotz and Pouris (2011), state that combined incentives are provided for highly rated academic researchers with international recognition and constant research productivity. For instance, A-rated researchers receive research funding of R100 000; B-rated researchers, R80 000 and the C-rank receive R40 000 per annum whenever the ratings are maintained (Inglesi-Lotz & Pouris, 2011).

Inglesi-Lotz & Pouris, (2011), indicate that several universities in South Africa are seen to have integrated the NRF rating system in their institutional promotion and remuneration policies to blend in as an added incentive for the academic researchers. Citing the University of Pretoria as an example, salary increases of R100 000 (Approx. US$13, 000) are offered to A-rated researchers for the period that the rating is maintained. On the other hand, the B-rated researchers, or equivalent, are rewarded annual performance awards. Basing the study on the behavioural reinforcement theory, scholars claim that linking the NRF rating system to the academic promotion and remuneration policies is intended to have motivational effect on the academics' productivity (see Cooper, Heron, & Heward, 2007).

In their empirical analysis and evaluation, Inglesi-Lotz and Pouris (2011) used scientometric information, experimental and quasi-experimental methods to examine the influence of the NRF's evaluation and rating system on the publication of the social science researchers in South

Africa. The findings showed that monetary incentives influenced research quantity in the first five years after the implementation of the programme. The analysis demonstrated an increase in the quantity of research output of social science researchers by an average of 24.5% in relation to the intended number of publications in the absence of the programme. The investigation on the quality of research revealed that the "relative impact" of the social science researchers' publications significantly increased to 1.2 in 2002. The study concluded that evaluating and rating researchers revealed that incentives positively influenced research productivity; thus recommended incorporating incentives into the university policy (Inglesi-Lotz and Pouris, p. 757), indicating that rewards such as monetary and promotion incentives can increase productivity.

According to the study by Bland et al., (2006), there was general consensus that the kind of appointment influences the scope and type of research activities, research productivity and commitment to research in universities. The tenure-track appointments in higher education institutions are arguably believed to play an important role. Further, Bland and the colleagues contended that, tenure is vital to the health of the academic freedom by supporting academic interests. Tenure appointments warrant academic integrity, thus, providing the needed compensation for engaging in teaching, research and service activities of the university.

Nevertheless, a survey study by Chen, Gupta and Hoshower (2006), in a business school established that the influence of extrinsic and intrinsic incentives varied between the tenured and non-tenured academics. The untenured academics tended to be influenced by extrinsic factors such as promotion, increase in pay and tenure. On the other hand, the tenured academics were influenced by intrinsic factors such as personal desires and interests and need for peer recognition (Chen, et al., 2006). Further, the regression results established a significant positive relationship between tenured appointments and research productivity. Chen and his colleagues argued that the positive correlations between tenure and research productivity could be explained by three main factors namely: the amount of time the tenured academics spent on research; their intrinsic motivation to contribute to their discipline, and the number of years of employment in academia (Chen et al., 2006, p. 185).

Some studies have focused on factors that motivate academics to be research active in particular disciplines (Chen et al., 2006). Chen and colleagues used "Vroom's expectancy theory" (Vroom, 1964), to establish key factors that motivate business academics to engage in research. The survey findings, based on feedback from 320 academics, at 10 business schools indicated that the academics who indicated high value ratings on both intrinsic and extrinsic rewards demonstrated higher levels of research productivity. Primarily, the academic discipline has long been argued to be the source of "academic identities" with a distinctive culture that has allowed its members to develop strong "self-identities" (Becher, 1989; see also Henkel, 2010, p. 8). Clark (1983), argues, the academic discipline, "rather than the institution tends to become the dominant force in the working lives of academics" (p. 30). Thus, besides the rules in the institution, within the discipline there are specific guidelines that ascertain the research, teaching and service commitments that academics would value and recognize above others. Consequently, Hardre and Cox (2009), argue that "standards of values and rewards" have to be assessed at the institutional level, but also at the departmental and disciplinary level to provide a broad understanding of their influences (p. 387).

From the preceding discussions, it can be seen that use of incentive items such as monetary rewards, promotion, tenure, good pay and paid sabbatical leave may enhance research productivity when used in university contexts. However, unexpected results may be attained in some instances. For instance, presence of monetary incentives may as well lead to poor productivity levels in relation to situations where other rewards are totally absent. Another key issue is that the use of incentives may result in the desired behaviour or effects in the short term, but at later stages result in undesired effects. Similarly, when incentives are removed agents might perform the tasks with less eagerness. From the above discussions, it has to be concluded that the link between incentives and research publications is still not very clear, though a number of studies have tried to elucidate the varied views.

2.4.3 Allocation of Funds and Time Resources for Research

Several studies have shown that, time is an important input factor, and that time devoted to research is one of the best predictors of research productivity (Smeby & Try, 2005).

Additionally, Hemmings et al., (2007), contend that academics need sufficient time together with other benefits to be research productive. Sufficient time enables academics to plan and engage in research activities and supervise post-graduate students. Sufficient work time is when "members have significant periods of uninterrupted time to devote to scholarly activities" (Bland et al., 2005, p. 228).

An empirical study by Hassan, Tymms and Ismael (2008), showed that academics that devote most of their time to teaching and service related activities have minimum research output. Similarly, Ramsden (1994) conducted a survey with 890 academics in 18 Australian higher education institutions. Ramsden found that academics that were actively involved in research activities were five times more productive, than their less research active counterparts. Being actively involved in research entails spending more time on research projects hence the study justified the claims that sufficient time on research activities influences research productivity.

Conversely, despite the importance of time on research output, in most previous studies on academic research productivity, time is stated as a constraint for the academics to engage in research activities. Studies illustrated that academics face difficulties in finding time to engage in publishing because of competing demands of the work time available (Smeby & Try, 2005; Hemming et al., 2007). From the analysis several studies indicated a negative relationship between academic research productivity and teaching load (Buchheit, Collins & Collins, 2001; Chen et al., 2006; Hardré et al, 2011). Buchheit et al., (2001), argue, that time as a limited resource may result in tension between teaching and research so that academics with heavy teaching loads are argued to be less productive in research. Despite the overwhelming time constraints Chen et al., (2006), and Hemming et al., (2007), suggest academics need to be effective time managers to find sufficient time to strike a balance between teaching, research, administration and service as the core activities in the university to ensure productivity.

In relation to provision of funds and resources, Allison and Long (1990), conducted a study to find out the effects of 179 job changes on chemists, biologists, physicists and mathematicians and reported on their experiences in order to establish whether departmental factors in the institutions had an influence on academic productivity. The study showed that academics that

moved to research productive universities increased "their rate of publication and the rate of citation of the publications" between the five years before the move and the five years after the move. Conversely, the academics that moved downwardly indicated a decline in productivity. This study indicated clearly that the influence of the departmental factors on research productivity is more critical than the effect of the productivity to the department. This is because the environmental factors in the department have critical impact on engaging in research, publishing and producing graduates (Allison & Long, 1990, p. 469). The above study is consistent with observations of Bland et al., (2006, p. 26) who argue that individuals who come to productive environments produce more output compared to their previous performance before arriving. Therefore, resources provided to academics correlate to their research productivity.

Despite the provision of stated incentives, what is fundamental in academics' career is academic freedom. According to Mclnniss (2010), academic freedom is a common value transcending disciplines, institutions and higher education. Along with the mandates in the fields of study and personal autonomy, "this is for many, the major attraction of an academic career over more favourable salaries and conditions in other walks of life" (Mclnniss, 2010, p.152). The academic staff will engage in research activities because they have the autonomy granted to them.

2.4.4 Developing a Research Culture

This section discusses the relationship between use of incentives and developing a research culture. Several studies on the development of a research culture focus on the "complex inter-relationship between attitudes and behaviour, which is reinforced through the organizational culture" (Hazelkorn & Moynihan, 2010, p. 11). According to William et al., (1993, p. 14; cited in, Pratt et al., 1999), "culture is the commonly held and relatively stable beliefs, attitudes, and values that exist within the organization" (p. 14). These beliefs influence their attitudes and behaviours in an organization since they are shared and widely accepted. To foster a new culture in an organization, Pratt et al., (1999, p. 46) argue that it is not "sufficient for a dean or department chair to try to change people's attitudes towards research…rather, whole sets of beliefs must be changed". Success in developing a research culture needs alignment and shared beliefs across the organization, relating to academic work, requirements for performance and

success, rewards on productivity, time resources for study, which allow provision of an environment that supports high research productivity.

Several studies in the UK, New Zealand and Australia reveal how research cultures have been created successfully both at the macro, meso and micro levels using incentives and provision of resources. On a macro-level the UK focused on developing a research culture in education and social sciences (Munn, 2008). Munn (2008), and Christie and Menter (2009), documented such a change in the UK educational research that was highly criticized for its quality and quantity. In particular the, study revealed that research lacked the ability to address rigour, failed to produce aggregate findings and lacked theoretical coherence (Christie & Menter, 2009). To improve on the quality and quantity of educational research output, university funding bodies and the UK research council, the Economic and Social Research Council (ESRC), increased research funding and provided pedagogical research resources in educational research within the Applied Educational Research Scheme (AERS) (Munn, 2008; Christie & Menter, 2009).

Munn (2008) found that an inclusive and collaborative approach was encouraged in research capacity building in the AERS networks. The collaborative research allowed the inexperienced researcher to learn various skills from the senior scholars, moving on across the stages of research from being an apprentice, to co-researcher and finally, to being the lead researcher. Additionally, participants received research training and mentoring, entailing formulation of the theoretically informed research questions; reviewing related literature; designing the research instruments; collecting data; analyzing data; reporting; publishing and disseminating findings (Christie & Menter, 2009, p. 346). The above initiatives show that financial allocations and infrastructure were strong incentives to encourage the institution in improving on the quality.

At departmental level, a study by Pratt et al., (1999, pp. 47-51), shows that a dominantly undergraduate teaching department in a university in New Zealand increased the research output and graduate students by use of incentives. These included creating research assistant positions; linking appointment and promotion criteria to research publications and producing graduate students; availing conference funding and research funding; providing other fringe benefits and awards for research output; offering 'competitive incentives' (payment on extra teaching of the

programmes) restricted to academics with high research output; providing research infrastructure and time resources.

Pratt et al., (1999, p. 49) found that management used research productivity as a measure of performance, which included a number of doctoral students, a number of master's students, a number of research projects and research publications. Similarly, a research director was appointed in the department to offer administrative support that included: encouraging and facilitating research; ensuring implementation and development of the research programme; proposing research initiatives; drawing departmental research annual plan; and offering advisory services (Pratt et al., 1999).

A qualitative study by Grbich (1998), in a health context in an Australian university, demonstrated that a supportive research environment that includes: providing research funding, research skills training by mentoring and collaborative research, provision of study leave and conference opportunities, and tenure, contributed to the fostering of a rich research culture. However, the author emphasized the importance of considering both individual characteristics and institutional research environment in ensuring knowledge productivity. Though universities are called upon to develop an active research culture, Hazelkorn (2008), emphasizes institutions have to find a balance when motivating, training and facilitating the research-active academics, so that the predominant teaching academics do not have the feeling of being marginalized.

From the above analysis, it is clear that there is a link between culture and incentives. The reviews have illustrated a link between research culture and incentive systems, indicating that the two can complement each other. Largely, if organizations want to change culture, in this case research culture, they must change or re-consider their incentive regime. This will ensure that the organization rewards the goals and interests it wants to meet.

2.5 Summary of the Literature Review

The literature review above has provided a number of interesting insights that are useful for understanding the influence of incentives on research productivity. The key arguments gathered

from the reviewed literature are that the productivity of academics, in as far as knowledge production is concerned, is a function of various factors. These include money and other institution incentives, such as promotion, salary increase, adequate remuneration, other fringe benefits, research facilities and equipment, funds and time resources. Other factors that seem to influence research productivity are individual characteristics, such as doctoral degree training and mentoring; and leadership factors. The studies reviewed show that optimal research productivity requires the simultaneous application of the various incentives. From the studies reviewed, the major incentive attached to research productivity is promotion, which comes with salary increase and increase in status. The reviewed studies also showed contested findings, for example, on seniority Vis-a-Vis research productivity. Some studies have found that senior academics have a higher research productivity compared to their junior counterparts. Other studies contradicted this finding, claiming that junior academics out-publish professors.

Similarly, several studies showed contested findings regarding the influence of money on research productivity. Various studies claimed that provision of money may lead to increase as well as decrease in productivity. In some studies, no significant results were reported following use of money. Several theoretical lenses have been utilized in the reviewed studies to explain that use of incentives leads to increase in effort hence resulting in increased performance. Some of the theories included present behavioural reinforcement theory, principal-agent theory, Vroom's expectancy theory, Bandura's SCT, goal-setting theory and self-determination theory. However, the main theory adopted in this study is the principal-agent theory, arguing that in an environment where academics have flexible contracts and are faced with several incentives, they will tend to make rational choices. A comprehensive discussion of the theoretical framework is provided below (see sections 2.6.1 & 2.6.1.1).

2.6 Understanding the Link between Incentives and Knowledge Production: A Theoretical Framework

This section tries to describe a theoretical framework that the study utilises to explain how incentives work. My point of departure is to provide an overview of various theoretical approaches on incentives since they have important contributions to make to this study. The

latter discussion will be on the principal-agent model. Whereas the principal-agent model is my primary conceptual compass, the study also benefits from the arguments in the other theories that are discussed. These theories are all characterized by an attempt to steer behaviour in a certain direction, which is the fundamental premise of incentives.

2.6.1 An Overview of Various Theoretical Approaches on Incentives

This section provides general theoretical explanations of how incentives work. The hypothesis in regard to the effect of incentives on effort performance and/or productivity is that incentives result in increased effort, hence increase in performance, unlike in the case where incentives are absent (Bonner & Sprinkles, 2002). Thus**,** this section reflects on the several theories that disciplines such as economics, sociology and psychology have used in explaining how incentives work. Some core concepts of the theories have been adopted for this study. The main theories established from the relevant literature reviewed include: the expectancy theory, agency theory (principal-agent model), goal-setting theory, self-determination theory and social-cognitive (self-efficacy) theory (Bonner & Sprinkle, 2002; Hendricks & Sousa, 2008).

The first theory is the expectancy theory (see Vroom, 1964). It proposes that individuals believe there is a link between the effort they put in performing a task, the performance achieved from the effort and the desired rewards or outcomes received from the effort and performance. The core concept focuses on the individuals and organisation desired or expected outcomes of the tasks performed. The predictions of Vroom's expectancy theory claim that individuals are motivated when they believe that (i) certain effort will result in acceptable performance ("expectancy") (ii) certain performance will lead to desired outcomes ("instrumentality") (iii) the value of the rewards is highly attractive ("valence") (Lunenburg, 2011, p. 2). Therefore, the motivational effects built on the above notions impel individuals to make choices on the level of effort they put forth on tasks that will result in the desired outcomes. The desired outcomes could be financial incentives. Generally, as discussed earlier money as an incentive is said to have higher valence than most of the other incentives. In addition, the importance of linking expected outcomes to tasks is also emphasized by several theories such as the goal-setting theory and the social-cognitive theory as are discussed in the succeeding sections.

Secondly, the Goal-setting theory (Locke & Latham, 1990) assumes that higher performance is as a result of achieving specific goals. The underlying concept is that task performance involves goals that have to be embraced by individuals. Bonner and Sprinkle (2002, p. 308) argue that in the goal-setting concepts, it is not precisely how incentives affect effort. However, Locke and Latham (1990), identify ways in which incentives can influence performance and effort through goal-setting, including: (i) incentives make people set goals they would not have set (ii) incentives make people set more challenging goals that might lead to more effort (iii) incentives may lead to goal commitment unlike the case where there are no performance-based incentives or no incentives. Drawn from the above is that there are roles to be played by the actors in task performance, these include setting specific goals and outlining the performance rules. Despite goal-setting and its importance, Pink (2011) argues, goals that people design for themselves, and if they are committed to attain them, they are usually more achievable than goals imposed by organizations. In situations where goals are imposed upon agents - such as research output levels, graduate output levels – can sometimes lead to "unethical behaviour"- implying, "the problem with making an extrinsic reward the [only destination that matters is that some people [agents] will choose the quickest route there, even if it means taking the low road" (Pink, 2011, pp. 50 & 51). These observations relate to the earlier observation by Lazear (2000), that incentives might increase desired output but negatively affect the quality.

The third theory is the social-cognitive (self-efficacy) theory (SCT) or Bandura's SCT (Bandura, 1991) based on the key premise that individuals are likely to engage in certain work behaviours when they believe they have the ability to execute the desired behaviours effectively. The SCT theory features the concept of "self-efficacy" that relates to the expected outcomes that are in having the ability to perform a particular task (Bandura, 1991). Importantly, the core concept focuses on the skills and competencies of individuals in relation to the task and performance recognition, and the chance of achieving success.

The fourth theory is the Deci and Ryan's (1985) self-determination theory that provides a distinction of the popular aspect in motivation of intrinsic and extrinsic motivation. The above notions are related to what Herzberg (1968, pp. 46-57) refers to as "motivators and hygienic factors" in the two factor theory. Intrinsic motivation works through a situation where

individuals perform certain tasks for inbuilt satisfaction. Individuals are intrinsically motivated to engage in certain behaviours because it is personally rewarding, essentially performing an activity for the sake of its own objectives. On the other hand, extrinsic motivation is based on the indirect need of satisfaction, for instance through monetary compensation or recognition. Hendricks and Sousa, (2008), observe that from the above motivation the individual actors of the tasks set their performance rules as is the case in goal setting theory.

In discussing incentives, several authors have suggested, the broad work context variables combined with the commonly used monetary incentives will affect effort hence increase performance (Bonner & Sprinkles, 2002; Hendricks & Sousa, 2008). In explaining academic incentives and academic research behaviour such as publishing, and supervising postgraduate students, Tien and Blackburn (1996) provide a theoretical framework based on the tenets of the behavioural reinforcement theory to explore that relationship. Based on the tenets of the behavioural adjustment theory, Tien and Blackburn (1996) argue that external rewards have motivational effects on individual academic behaviour. Hence, based on the themes of the behavioural reinforcement theory, incentives such as promotion, monetary rewards and other non-monetary incentives such as research facilities and equipment can be argued to be schedules of reinforcement that are offered to individuals over time. However, Tien (2007c) argues that the desired behaviour such as publishing, and supervising postgraduate students, whenever it is achieved, is not always reinforced by use of scheduled reinforcements.

As aforementioned, monetary incentives are part of the environmental factors, together with time resources, the assigned goals performance appraisals and others that are discussed further. Because this study focuses on "performance-contingent incentives", the environmental factors are examined.

2.6.1.1 The principal-agent (model) Theory

The use of incentives for academics to increase research productivity in higher education can be explained by the predictions of the principal-agent model. The principal-agent model was first formulated in the economics literature in the early 1970s (Ross, 1973; Jensen & Meckling, 1976;

Eisenhardt, 1989). The principal- agent model focuses on the principal with the mission and organizational resources to delegate tasks to an agent who has the specialized skills to help him achieve certain goals (Jensen & Meckling, 1976; Sappington, 1991; Laffort & Martimort, 2002). Dominant to this theory is the "conflict of interests" between the principal and the agent(s). The "agency problems" may rise because each individual actor in the principal-agent relationship acts in his/her own "self-interest" (Laffort & Martimort, 2002, p. 2). For example, the principal is interested in achieving the goals of the organization, which may include income for a firm (Baker, 1992), and research productivity for higher education institutions (Heinrich & Marschke, 2010). The fundamental assumption of the principal-agent model is that, "individuals are rational and self-interested utility maximizers prone to opportunism" (Shapiro, 2005, p, 266). In this case, agents will be motivated primarily by 'self-interest', to increase their wealth and leisure (Bonner & Sprinkles, 2002; Shapiro, 2005). Notable, increase in leisure is seen as exertion of less effort in performing the tasks. Mainly, the conflict of interest that exists between the principal and the agent defines the principal-agent problem, seen to be a key aspect of the principal-agent model (Laffort & Martimort, 2002; Shapiro, 2005).

The principal agent model predicts that, based on the notion of conflicting goals and expectations in a principal-agent relationship, the individual agents will shirk (i.e. put no effort) into a task, if it makes no contribution to their economic value or well-being (Sappington, 1991). The principal-agent model dictates that the principal will try to reduce the shirking by: (i) monitoring the actions of the agents, (ii) the principal(s) will offer the agents incentives in an effort to align the agent's interests with the principal(s)' objectives. A case that Sappington refers to as "incentive alignment"; where the principal(s) compensate(s) the agent(s), not on the basis of agreeing to perform the tasks for them or the time they put in performing the tasks, but rather it is performance-based (Shapiro, 2005, p. 265). Hence, emphasis on the incentive that is contingent to performance is to be offered to the agents. According to the Principal-Agent theory performance related pay is more desirable than plain fixed pay, since it offers incentives and attracts workers whose productivity is higher than average, thus they believe they can earn more within a performance related scheme. Thus, as observed by some authors and articulated by the predictions of this theory, incentives play a vital role in motivation and alignment to performance, given that individuals make rational choices to increase their wealth. Furthermore,

the higher sum of monetary compensation causes higher effort (if impossible to shirk) (See Bonner & Sprinkles, 2002).

Essentially, the principal-agent model suggests that incentives influence the utility of various outcomes, and effort has an effect on the possibility of attaining the outcomes. These notions are similar to the predictions of the expectancy theory as earlier discussed, that individuals will improve their effort to increase their effort if they expect outcomes (incentives). Bonner and Sprinkles (2002), emphasize, "incentives, such as monetary [rewards], increase an individual's desire to increase performance and concomitant pay" (p. 308). Bonner and Sprinkles further observe that, the individuals' desire make them put more effort into the task because more effort is likely to result in increase in performance, and the increase in performance could result to more of the desired incentives. The above influence turns out to be a rotational process. However, the findings in the preceding analysis show contradictory outcomes from use of monetary incentives. As observed earlier, the influence of money is not as linear and predictable as suggested by Bonner and others.

The principal-agent model (agency theory) provides a good structure for explaining incentives and contracts in the economics literature, political science, business schools, management literature and the law literature (Ross, 1973; Jensen & Meckling, 1976; Shapiro, 2005). Therefore this theory can be used in the higher education context, based on the fundamental assumptions of the theory as discussed earlier. This theory has mainly been used in higher education governance/funding studies. These studies, among others, include resource allocation based on performance (Massy, 2004), and regulation of higher education through funding in South Africa (Ntshoe & De Villiers, 2004). Given the context of higher education, several limitations have been identified in the application of this theory in this context.

2.6.1.2 Limitations of the Principal-agent Model

One of the main limitations of the principal-agent theory is that it does not consider the possibility of multiple principals. Ntshoe and De Villiers (2004), observe that, in higher education "the identity of the principal is indistinguishable" (p. 19). Who is the principal? Is it

the ministry of higher education? Is it the Council on Higher Education? The principal-agent theory assumes a single relationship. Hence, Shapiro (2005), argues that theories will be interesting if they allow "collections or teams of principals (agents) to compete or disagree over interests and goals" (p. 267). Similarly, in higher education institutions, Frey and Neckermann (2008, p. 3) maintain that, "there is more than one single clear-cut principal-agent relationship relevant for setting incentives". For instance, a "close principal-agent relationship", can exist between a university (principal) and academics (agents) as the employees. Also, a less close relationship can exist between other principals such as universities, the commission(s) of University Education, foundations, research councils, professional societies, staff unions and the scholars in their respective disciplines (p.3). In the Kenyan context, where the CUE, the university, the faculty deans and HODs are principal(s) conflicting interests exist among these principals. For example, the CUE may indicate the need for research and training graduates; while on the other end HODs question how knowledge will be produced given the challenges academics are facing with such heavy teaching loads, poor pay and limited research funding. Thus, Shapiro's key question "how do agents understand and reconcile duties delegated to them when they are receiving mixed messages and conflicting instructions, as well as incentives from multiple principals?" (p. 267).

One has to take note of the fact that actors in the relationship are not just the principals and the agents; often they are both at the same time. For instance, in the universities, the academics can be agents to the Commission of University Education but can also be principals to the research assistants who they wish would help them with research projects.

Ntshoe and De Villiers (2004) summarize the limitations of the principal- agent relationship as: employees' "performance cannot be measured or monitored accurately; there are not enough resources available for incentives that would change behaviour; and a moral hazard exists" since employees can still be remunerated even when they shirk their efforts (p. 19).

Importantly, I will be aware of the above-mentioned weaknesses as I apply the theory to this study. Similarly, some of the aspects discussed in the other theories will help mitigate these limitations. For instance, from the goal-setting theory, following multiple principals and agents

in a principal-agent relationship, the CUE, the university or ministry of higher education have the authority to design the goals to the agents if they provide funding. Similarly, the agents also design their own goals with the expectation of rewards from the outcome.

2.7 Operationalizing the Theoretical Framework

In this section I operationalize the principal-agent theory as applied in this study. That is, I identify empirical concepts that I eventually utilize in the study. Some key concepts from the other theories are also used in this study. From the key concepts, a hypothetical model is also developed (see Appendix 9).

2.7.1 Measuring of Knowledge Production

In principal-agent relationships, the principal has to design the goals that the agents have to embrace, to design the individual outcomes that are expected of the agents and define them. In the context of this study, academics have to engage in research, publish and supervise graduate students. In this study, indicators that are of central focus in terms of knowledge production include research publications in internationally reviewed journals, Master's and PhD students. The success of the research policy at the University of Nairobi is determined by the changes in the levels of knowledge productivity of academics (UoN, 2011).

2.7.2 Developing a Reward System

According to the principal-agent theory, if the principal has a clear mission and objectives, then the reward incentives have to be linked to the tasks performed and to the performance of the individuals. The achievement of the mission ultimately depends on both the principal and the agents in the organization. The key ingredients to effective alignment of the two parties' basic goals and expectations are providing incentives such as reward incentives for the productivity of the individuals. According to Cameron and Pierce (1997), aligning rewards such as pay, promotion, bonuses, salary increases, fringe benefits, recognition, and other organizational rewards to the objectives of the institutions will encourage high levels of productivity. When

principals attach rewards to the tasks to be performed by the agents, they support the achievement of the long-term objectives and goals of the organisation.

Bland et al., (2002), suggest that measures of a reward system both monetary and non-monetary that are attached to knowledge productivity should be systematic, consistent, adequate and fair (pp. 233-235). The explicit measure of the reward systems includes promotion, remuneration, paid sabbatical leave, bonuses and allowances and public acknowledgement.

2.7.3 Allocation of Funds and Resources

In the UK, following the beginning of mass higher education and faced with reduced budget allocations from the state, the University Grants Committee resorted to new ways to fund and allocate resources for research (Herbst, 2007). According to Herbst (2007, p. 74, citing Adams, 2002), in the late 1980s performance funding and Research Assessment Exercise (RAE), were "designed to drive core funding" by rewarding high achievers in a system with a spread of performance, so academics worked even harder to achieve excellence because higher grades [research productivity] led to better resourcing. Herbst commented that during this period, there was improvement in research performance in the UK, drawn on the lines of efficiency, i.e., "doing more with less" (Massy & Wilger, 1995, p. 9). Research output improved with the predictions that it might be as a result of "improved research and office infrastructures [that] are responsible for an increased output" (Herbst, 2007, p. 75). Generally, research funding focused on: (i) "funding research that will reflect the quality and volume of research at institutions [by academics] in different research fields or subject matters", (ii) "funding the supervision of postgraduate research students", and (iii) "supplementing the departments [academics] which achieved the highest rating in the RAE" (Herbst, 2007, p. 192). Explicitly, the indicator here is performance funding, based on productivity in terms of research and graduate output.

2.7.4 Time Resources

Generally higher education institutions in Africa are faced with scarce resources for research (Cloete et al., 2011). One of the important resources is time. However, Kyvik (2009), discussing

allocation of time resources for research argues that institutions that aim at improving research productivity have to develop a research strategy that will define allocation of these time resources among academic staff members and ensure implementation of the strategy (Kyvik, 2009, p. 111). Conducting a study among Norwegian University Colleges, Kyvik argues it is often not clear which criteria have been used in the distribution of time resources among teaching staff and research staff, even in cases where criteria are explicitly given in formal strategy documents. Thus, Kyvik contends that allocation of time resources for research among individual academic staff is largely a function of different allocation principles, allocation criteria and allocation procedure and a compromise that can only be clearly defined in accordance with the historical and social context of each institution. Kyvik suggests an allocation that satisfies strategic reasons as well as practical and fairness principles because of the likelihood of these principles being used as a criterion based on only one of these considerations (see Kyvik, 2009, pp. 111-120).

Kyvik (2009) reports on examples of dilemmas institutions could be faced with in allocating resources. For instance, an institution with low research productivity would want to allocate more time to research, which would consequently lead to reduced resources for teaching. Thus, the institutions have to consider if the allocation of more resources to research than to teaching is appropriate in the light of the mission of the universities (also see Kyvik & Lepori, 2009, p. 18). The empirical constructs on time allocation in this study include staff-student ratio, availability of sabbaticals and travel allowance to conferences.

2.7.5 The Institutional Set up

Notably, "Institutional morphology" or institutional set-up is a concept premised on the works of *Pierre Bourdieu* (Bourdieu, 1984; 1988). Herbst (2007) shows that, previous investigations focused on the links of the "institutional morphology" and research productivity, while, operationalizing its indicators such as student-staff ratios or staff-faculty ratios. Looking at the "morphological set up" of institutions and research productivity, Herbst (2007, pp. 35-36), discusses some of the indicators that can be looked at. They include student-staff ratios and staff to faculty ratios; class sizes; dominance of seminars, and workshops; teaching load of academic

staff; time attached to administrative duties; dropout rates of students; graduation rates and developed advising and mentorship programmes (also see Cloete et al., 2011). Notably, some of these indicators, particularly student-staff ratios, dominance of seminars and workshops and teaching load of academics are discussed in this study.

2.7.6 Mission and Policies

There are several factors that motivate academics, not just the money, as proposed by the principal–agent model. The behavioural theory could compliment these since it argues that academics react to external factors. The use of incentives could also result in efficiency as the academics focus their efforts on knowledge production as the tasks valued by the higher education institutions. Similarly, Tien and Blackburn (1996) claim that desirable behaviour, such as publishing and supervising, could be reinforced by use of incentives such as promotion. The authors emphasize that environment determines human behaviour.

In the above discussion, various indicators for the key concepts from the main theory of the study, the principal-agent model and the other theories are described. In summary, these indicators include, specific goals attached to the tasks such as research and graduate output; measures of a reward system such as promotion; remuneration; paid sabbatical leave; public acknowledgement; performance funding, that is, funds or allowances attached research publications and graduate output; empirical constructs of time resources such as staff-student ratios and availability of sabbatical leave. These indicators are to be utilized in the analysis.

2.8 Conclusion to Chapter Two

In this chapter, the researcher focused on literature pertaining use of incentives in higher education institutions. Departing from the understanding that higher education institutions have an important role in development, the review starts off by looking at the distinctive role of higher education institutions in society and particularly in the knowledge economy context. From this section it emerged that higher education institutions through their core functions of teaching and research, have a crucial role in production of knowledge in terms of research output, technological innovation and human capital that is key for the knowledge economy. With the

increasing demand on universities to contribute to economic development through knowledge production, this chapter illustrated that incentives can steer academics to increase productivity in knowledge production. The chapter later conceptualized and discerned the notion of incentives and also provided information on the different approaches of incentives and how they apply in the higher education context. The researcher outlined a comprehensive debate on the use of monetary incentives in work environments, as well as a discussion on other research-related incentives. From this discussion, it has been argued that higher sums of monetary incentives trigger higher effort, hence high productivity. Similarly, the latter discussion shows that the research-related incentives may shape the research behaviour of the academics consequently improving the research culture of the universities. The reviewed literature led to a discussion of the theoretical framework for the study, based on an overview of several theories that explain how incentives work, as well as the main theory applied in the study, the principal-agent model.
From researching this chapter several knowledge gaps have emerged, regarding application of incentives in higher education context. These include among other (i) the exact link between incentives and knowledge production in the universities (ii) the explanation as to why academics will increase productivity before receiving a reward, and later reduce their productivity after having received the incentive (iii) explanation of how the multiple-principal relationship in the university works in relation to provision of incentives (iv) there are a number of important questions such as what is the purpose of incentives for academics in the universities to be discussed (v) largely, apart from the challenges of knowledge production in African Universities, little attention is paid to the use of incentives to enhance the productivity levels.

In the context of the above-mentioned gaps, this study focuses on the incentives available for academics to engage in research, publish and supervise postgraduate students. The succeeding section discusses the methodological approaches utilized in this study.

CHAPTER THREE

Research Design and Methodology

3.1 Introduction

This chapter provides a discussion of data sources and analyses used in this study. Also, a description of the research approach and the research process is provided. The chapter focuses mainly on the following issues: (i) research approach (ii) sampling approaches (iii) methods of data collection (iv) the research process (v) addressing issues of rigour (vi) data analysis, and (vii) ethical considerations.

3.2 Research Approach

This study mainly utilizes the qualitative research approach but also incorporates some elements of the quantitative approach as it seeks to explore the link between incentives and knowledge production at the University of Nairobi. Qualitative research is argued to be important in highlighting individual narrations, ideas and concepts with some detail (Merriam, 2002; Silverman, 2013). This study focuses on discussion and how academics share their ideas and experiences on incentives as the central research question for the study is: "*How do the incentives and dis-incentives available at UoN influence knowledge production and productivity?"*

The qualitative approach is deemed suitable to provide answers to the central question being asked in this study. Creswell (2008) maintains, the "how" and "what" questions are apt for qualitative research, thus the choice of the qualitative approach has been rendered significant by the exploratory nature of the above-stated research question. Similarly, Miles and Huberman (1994) notes, starting the research question with "how" or "what" conveys an open and emerging design, which is one of the stances qualitative research. The research question addresses the research problem that seeks to explore incentives and dis-incentives for academics to research, publish and supervise postgraduate students. Inasmuch as the above question can be answered entirely through quantitative approaches that mainly entail statistical data analysis, a detailed description and accounting with adequate details and precision has been much more appropriate

for understanding the above question. Barbie and Mouton (2001) claim, the primary goal of qualitative approach is to describe and understand rather than explain the behaviour of the respondents. The approach would therefore use qualitative methods of accessing the participants such as purposive sampling, qualitative methods of data collection and analysis. The qualitative approach is suited to this study as the information needed is based on the opinions, perceptions and experiences of individual academics on the question of incentives available for knowledge production. Silverman (2013) proposes the use of qualitative approach arguing that, it captures the feelings and actions of the research participants in great depth and understands the social world from the participants' own perspectives, context and beliefs. Finally, the qualitative approach meets the requirements for this research, since the main aim of the study is to explore and provide an in-depth understanding of incentives and dis-incentives of knowledge production in the context of UoN.

3.3 Case study and Sub-unit Selection

The purpose of this study and the contextual nature in the application of incentives linked to knowledge production in higher education allowed the selection and choice of a single case study. Stake (2000), argues that the main criterion for selection of a case is that it should be able to provide an "opportunity to learn". For the researcher the main trigger of the choice should be to choose a case from which they think he/she "can learn the most" (p. 451). Thus, this study focuses on Stake's key criterion for selection of a case study. To ensure this, it was vital to look at the arguments of Yin (2009) argues, who maintains that to achieve greater understanding of the critical phenomena being studied relies on "choosing the case well". Furthermore, case selection is not only important in showing where the study was conducted, but also largely to be able to provide "thick" descriptions, test theories and also develop a theory.

The case study was the method of choice for the research approach following the exploratory nature of the central question being asked. Yin (2009) argues that, the 'how' and 'why' questions are very distinctive of a case study; hence participants could also answer the question being asked in this study. In this case the exploratory question in the study is, "*how do the incentives and dis-incentives available at UoN influence knowledge production and productivity?"* As

signaled above, the main aim here is 'what can be learnt' about incentives and dis-incentives for knowledge production. One of the main knowledge gaps that emerged in the current research regarding application of incentives in higher education context is the exact link between incentives and knowledge production in the universities, in particular the University of Nairobi. The lack of research data in answering the research question is a justifiable rationale for conducting these exploratory studies, hence the choice of this case study.

According to the Commission of University Education, there are 22 public universities in Kenya. The University of Nairobi was purposefully selected as the site of this study. Purposeful selection is a common strategy in qualitative research. Patton (2002), argues, purposeful selection "leads to selecting information rich cases . . . those from which one can learn a great deal about issues of central importance to the purpose of the research . . ." (p.46). UoN was selected based on the following reasons. The university claims that through its core functions of teaching, research and consultancy, it has to produce knowledge and high-level manpower that is a key for economic growth and development of the nation. Therefore, based on the above claims we could expect, given an environment where academics are faced with several competing incentives to choose from, that UoN should provide incentives for academics to focus their energies on knowledge production. Consequently, UoN provides the ideal site for a study on incentives and knowledge production in Kenya. Secondly, UoN is the oldest institution of higher education in Kenya, and for a long time it has been responding to the needs of the nation through knowledge production. Therefore, it is best suited to provide a trend analysis for this study on how academics have received incentives, particularly with regard to the remuneration aspect.

In collecting suitable data to address the research question being posed, a number of units and participants (see table 3.1) were selected to participate in providing the information needed for the case study. This study mainly selected permanent academic staff members at UoN. Given that research and supervision of graduate students are de facto responsibilities of academics, the researcher assumed that academics selected would provide information that would address the question of incentives and knowledge production. The selection of the units within the case study was based on the productivity levels of each unit in terms of research publications, Master's and PhD graduates. The table below (See table 3.1) provides information on the sub-units selected

and the individual academics drawn from each unit.

Table 3.1

Number of Selected Units and Participants within the Units

Unit and sub-unit (College, Faculty, School, Institute)	Participants (Academics)
(I) College of Humanities and social sciences – Faculty of Arts a) Political Science and Public Administration b) Literature c) Sociology and Social Work d) Geography and Environmental Studies	21
– School of Economics	6
– School of Business	4
– Institute of Development Studies	2
(II) College of Agriculture and Veterinary Medicine – Faculty of Agriculture a) Agricultural Economics b) Food Science Nutrition and Technology c) Land Resource Management and Technology (LARMAT)	12
– Faculty of Veterinary Medicine a) Clinical Studies b) Public Health and Pharmacology	10
Total of Participants selected	**55 academics**

As signaled earlier, table 3.1 illustrates figures of participants that were selected from each unit. From the selected colleges of social sciences and Agriculture, the researcher focused mainly on the faculties and/or schools of Arts, Economics, Business, Institute of Development Studies, Agriculture and Veterinary Medicine consecutively. Some of the faculties mentioned above had various departments under them, hence the researcher selected a few based on the selection criterion as will be discussed below (see sub-section 3.3.1).

3.3.1 Participants' Selection within the Case and Individual Units

The participants in the study were selected by purposeful and snowball sampling strategies. First, in some departments, the Head of Department identified academics that supervise Master's and

PhD students, as well as engage in research. Hatch (2002, p.98), states that "snowball or chain samples are created when one informant identifies the next as someone who would be good to interview". For instance, in the College of Agriculture and Veterinary Medicine (CAV), the head of department identified ten potential participants. At this stage, the key criterion for selection was based on the availability of academics that had doctoral degrees, and were involved in supervision of Master's and PhD students, and conducted research. After the potential participants were identified, the researcher booked appointments with the academics through the respective departments or in person to be able to interview them. Importantly, the academic rank, academic qualifications (doctoral degree holders), and research output were the key factors considered in selecting interview participants. These factors were considered in order to accommodate a diversity of academics' experiences and opinions. The other selection criterion was based on the number of years the academics had worked at the university. This was important to capture the changes that may have occurred over time, particularly the shifts in the remuneration regimes in the Kenyan universities. Given the above criterion, of the 55 participants selected only 9 professors (17 percent) met the selection criteria, since they had worked at the university for at least over 20 years. In examining the remuneration regimes in Kenya, participants who had worked at UoN for longer periods, were able to provide information on historical aspects and their effect on the incentives. These aspects included the influence of the policies that have resulted because of increase in participation rates, privatization and marketization - the current challenges in the universities. The participants mentioned how the different changes influenced knowledge production and incentives, particularly remuneration over a period of time.

Another selection criterion was the participants' administrative positions at the university. Individuals in administrative positions were identified through the two colleges in the study. These participants were mainly selected as they were well positioned to expound on the issues of incentives, knowledge production and issues of research funding. The administrators form part of the university policy design committees; they sit on the appointment and promotion review committees; are part of the dean committee research funds committee at the institution levels, therefore, they have the ability to share information on the above issues. Similarly, the administrators engage in supervision and research as a result they also highlighted their

experiences as academics. The different perspectives gained from the academics and the administrators such as the deans and the directors elicited the institutional level policies, procedures, programmes and revealed the structural restraints.

3.4 Data Collection Tools

This section discusses the different techniques used in this study to collect data. In line with the purpose of this research, and in order to achieve the main aim of this study, data was collected using both primary and secondary data sources. Many proponents of case study research design argue that the main strength of a case study research project is the use of several data collection tools to gather evidence (Stake, 2005; Yin, 2009). This is an important strategy since it allows the different sources of data to act as complements and to reinforce one another to obtain a complete picture of the case being studied. Similarly, the combination of the different sources of data can be used for triangulation purposes in the study. Triangulation is argued to have various advantages in the data collection process. Triangulation reduces the possibility of misinterpretation, allows clarification of meaning by outlining ways the problems are being viewed and verifies the repeatability of an observation and interpretation. Therefore, in this study primary data was collected using two instruments: (i) a structured interview schedule that was administered involving the heads of the faculties, schools and institute, (ii) a structured questionnaire (see Appendix 3) for the academic staff members in the selected colleges. The secondary sources included document reviews and use of archival records. The secondary data was used to contribute towards completing the background information needed to constructively build the research project and build on the outcomes of the study. A detailed discussion on the different sources of data follows below.

3.4.1 Primary Sources of Data

This section discusses the primary sources utilized in this study to collect data. These techniques include (i) structured interviews; (ii) observations and research journal

(i) Structured interviews

A structured interview guide was used to obtain information that cannot be obtained from mission statements, strategic plans, policy documents, and other on-line documents. The basic purpose of using structured interviews was to allow the researcher to examine the level of understanding participants had of incentives for knowledge production at much greater depth than when using the postal questionnaires for instance. Moreover, use of structured questionnaires allows minimization of interview effects and bias since the same question is asked to each participant in the same manner and subsequently the same information will be obtained from all people covering the same material. This makes it easy to replicate the discussion. Also, structured questionnaires make processing data analysis easier because it is possible to trace each participant's response to the same question rather fast and arrange questions and answers that are similar in categories (Patton, 1990, p. 285).

The first group of interviewees consisted of individual academics that were engaged in research and postgraduate student supervision. The reason for interviewing the academics was to get in-depth information on the incentives and dis-incentives for knowledge production at UoN. Thus, the interviews sought information on, among other things, incentives available at the institutional and national level, research support and resources, trends of the remuneration regimes and perceptions of academics on the incentives.

Also interviewed were the deans of faculties and the directors of the schools in the two selected colleges namely the Dean of the Faculty of Arts, the Dean of the Faculty of Agriculture, the Director of the School of Business and the Director of the School of Economics. The deans and directors were purposefully selected since they often form part of the committees that formulate and implement policies at the university. Therefore, the aim of interviewing these academic administrators was to give them an opportunity to expound information on what was raised by the individual academics, particularly on research funding, teaching load, different incentives available and in general on policies on research and supervision. This helped ascertain the importance attached to research and training by the university, and how the university acknowledges the academics for their contribution in knowledge production through the general policy and practice

rewards.

The researcher also had conversations with the heads of departments from the selected units. The conversations were based on discussions about ways in which the department rewards research and supervision. However, the Heads of department (HODs) mostly referred the researcher to the deans and directors claiming that, based on the institutional structures of the UoN, the heads of the faculties and schools were better placed to provide appropriate information. As signaled earlier, most of this information was gathered from the interviews with the deans and directors as well as institutional documents.

The information collected at the interviews was tape-recorded and transcribed. Similarly, comments about the observations were embedded in the transcribed texts during the review of the data. The researcher wrote down informal conversations as soon as possible and when possible to the extent that the participants felt comfortable with the note taking.

(ii) Observations and research journal

The researcher made several observations and visits to the campuses at UoN, before administering the structured interviews. During this period, academics were engaged in a staff industrial action. Coincidentally, I visited the campuses during their rallies at the University. Hence, through their chants, I got a chance to take note of their key concerns and grievances against the government. The concerns included: poor working conditions and the need for a salary increase. Thus, even before the study, I had an idea that academics were not satisfied with the state of remuneration as the basic incentive at the University. The interpretation of the observations, probed the need for deeper understanding of the aspect of remuneration of academics at UoN. Similarly, it searched for a deeper examination of the previous collective bargaining agreements regarding academic staff salaries. This information helped to reveal trends in the salaries of academics. These observations were made as an ongoing activity during the study.

Furthermore, the researcher employed journal entries to document research experience and interpret different highlights in the study. It was important to record some intuitions,

interpretations and side notes immediately after the interviews. Hatch (2002), argues that "research journals provide a record of the affective experience of doing a study". These entries provided a place where researchers can openly reflect on what was happening during the research experience and how they feel about it (pp. 87-88).

The study also incorporated informal conversations via email and phone calls to the contact person(s) at UoN, which were also important data sources. Similarly, this information formed the background to the study, and this was conducted before the researcher travelled to the University of Nairobi for data collection in the summer of 2012. The data gathered from all the sources was used as evidence to support the statistical information, as well as the themes that emerged from the interviews and the responses to the open-ended questions.

3.4.2 Secondary Sources

This section discusses the secondary sources that were used in this study. These resources include (i) document reviews and archival records.

(i) Document reviews

Document analysis has been argued to be "a systematic procedure for reviewing or evaluating documents" (Bowen, 2009, p.28). According to several scholars document reviews enable the researcher to gain understanding, develop empirical knowledge, and discover information, insights and meanings about the research purpose (Merriam, 1998). Also, documents enable the researcher to capture information that cannot be obtained by interviewing and tape- recording (Stake, 2005). Additionally, Bowen, 2009, support the combination of documents and other methods such as interviews to ensure sufficient data collection and detailed description and reporting events with sufficient details and precision. This procedure allows judgment and transferability. The use of documents in the study was intended to collect information on incentives both at the institutional and national level that are attached to research and supervision. The documents were collected to provide information on trends in the remuneration regime, the importance attached to research and supervision, and incentives for academic research support in

terms of resources and infrastructure. The documents were used to provide important background information for the study that was clarified by the interviews with the academics and academic administrators.

The documents that provided information on the incentives for knowledge production were analysed. Table 3.2 shows the different documents and the particular information obtained from the documents.

Table 3.2

List of Policy Documents Reviewed

Document Reviewed	**Information Gathered**
The UoN Research policy, June 2008.	Key mission of university in relation to research; Policies linked to incentives for research at UoN.
The report on training, promotion and establishment, May 2006	The basis, policies, criteria, practice and procedures on appointments, promotion and training at UoN.
Documents on the Collective Bargaining Agreement (CBA) between the Inter Public University Councils Consultative Forum (IPUCCF) of Federation of Kenya Employers (FKE) and the Universities Academic Staff Union (UASU), for 2008-2010; June 18, 2009; Salary tables, for 2008 -2013, Council Chamber 16 Nov 2012	Determination of pay in the public universities; the current levels of academic salaries and allowances (house).
Memorandum of Agreement between UoN, UASU, UoN chapter in the matters of Basic Salaries and House Allowance for the Academic Staff of UoN.	Determination of other allowances such as transport, entertainment and practice on determination of pay within UoN.
KIPPRA report 2013- Report on Wage differential in the public-private sector	Remuneration of different professionals, including academics, in the civil service, as well as the private sector.

Note: The review from the documents gathered information focusing on incentives at UoN

Similarly, the researcher reviewed publicly available government documents; databases and archival records on remuneration of the academics over time, since (1980s – 2013). The archival

records identified the historical trends of academic salaries in relation to the country's real GDP over the years. The next section discusses the data collection process.

3.5 Data Collection Process

The research process which entailed document reviews structured interviews and observations was undertaken between October 2012 and January 2013. However, before commencement of the study, permission was obtained from both the participants on the case study and the government of the country, Kenya where the case was situated. The initial stages involved an ethical clearance from the Senate research Committee at the University of the Western Cape (UWC) for approval of the research proposal. Thereafter, the researcher obtained a research permit to conduct research in Kenya through the National Council of Science Technology and Innovation (NCSTI). Approval of the research permit in Kenya required an affiliation letter attached from the University of Nairobi. The research permit was submitted to the office of the Deputy Vice Chancellor (Research, Production and Extension) for permission to collect data at UoN. Together with the research permit were the letter from the supervisor and a copy of the research proposal clearly indicating the aims and research questions, the data required, participants, units to be selected and ethical considerations (see Appendices 4 and 5). After a few weeks UoN granted research permission to start the process, (see Appendix 6 for the authorization letter). The contact person at UoN even before the research process began continuously helped in terms of identifying the different locations where data was to be gathered and the key informants.

As signaled earlier, the research process entailed document reviews, structured interviews and observations. The documents to be reviewed were requested from the University research, production and Extension offices and the Human Resource and management offices. Thereafter, the structured interview guides were piloted before being administered to the academics and the academic administrators. Details of the pilot study are provided in section 3.6. The revised version of the interview guides was administered to sixty participants distributed as follows: 35 participants from the College of Humanities and Social Sciences (CHSS) and 25 participants from the College of Agriculture and Veterinary Medicine (CAV). One of the key characteristics

of structured interviews demands the researcher's presence at each of the structured interview sessions. Being present for the interviews presented the researcher with several advantages. The researcher was able to attain a high response rate in the midst of the tight schedules of academics. Additionally, the researcher was able to take notes of the remarks made by the participants and taped the responses, since all the participants consented to use the taped interview process. Tape recordings allowed the researcher to gather reliable and detailed data. Similarly, the participants were asked to expound on some of their claims. This was important as it provided an in-depth understanding of the research problem from the participants' perspectives. The interview sessions were conducted in the participants' offices depending on their availability for the interviews. See Appendices 7 and 8 for the interview guide for the academics and academic administrators respectively.

The data collection process was delayed for a month following a one-month closure of the Kenyan public universities (September, 2012 to October, 2012) caused by lecturers' strike, protesting against poor salaries. The research process resumed after the re-opening of universities and lasted for two months though I had to contend with disruptions resulting from preparations of the University's 48th graduation ceremony and exams. This was followed by the closure of the university for the Christmas holidays (December, 2012 to January, 2013). I resumed data collection after the Christmas break, which was completed within two months. January, 2013 and February 2013). During this data collection phase I also faced a number of interruptions caused by the institutional quality audits for re-accreditation of UoN. Most of the academic administrators took part in the audit process, making it difficult to meet them for interviews.

3.6 Addressing Rigour

Morse, Barrett, Olsen and Spiers (2008, p. 13), describe rigour as researchers' initiative to adopt "verification strategies and self-correcting" mechanisms, at every stage of the research process to ensure reliability and validity in the analysis of data, particularly qualitative data. Further, Bell (2006) claims, the procedures selected for data collection should be examined so as to assess to what extent they will be reliable and valid. Bell describes reliability as the "the extent to which a

test or procedure produces similar results under constant conditions on all occasions" (Bell, 2006, p. 117). While Babbie & Mouton (2001), ascribe validity as a research design truly measuring what it was intended to measure or whether the evidence collected can bear the interpretations attached to it. In this study, the reliability of the collected data was ensured by use of multiple sources of data, (mainly triangulating the data collection tools). This involved a thorough review and evaluation of the institutional documents pertaining research and incentives at UoN. Thereafter, the researcher conducted structured interviews with selected academics and Faculty Deans or School Directors. The interviews with the academics and academic administrators were important as they were key players in complementing the information collected from the documents, thus ensuring reliability of the information collected on incentives for knowledge production.

The issue of validity was ensured in the study through a pilot study of the structured interview guides with eight participants, two weeks prior to the main study. The eight respondents were selected from the Department of Literature at the CHSS and the Department of Plant Science at CAV. The responses by six participants in the pilot study were included in the main analysis of the study. Creswell (2008), argues, that apart from ensuring validity, conducting a pilot study helps in the wording of the questions, the research design procedures and also checks on the validity and reliability of the research instrument. Since I was present for the interviews I was able to determine the duration of completing the interview guide, which was between 30-45 minutes. The issues raised in the pilot study included wording of some questions. For example, the pre-pilot formulation of that question was: "On average how many classes do you teach per semester?" The post-pilot formulation of the question was stated as: "On average how many classes do you teach per semester in the following; (a) Module I; (b) Module II; (c) Module III. "The different programmes available at UoN mainly motivated this procedure. See Appendix 8 for the guiding questions. Another issue raised pertained long complex questions and ambiguities in the guide. A pre-piloted question was stated as: "In your opinion what measures need to be put in place to support scholars like yourself to engage in research and publish?" After rectification of the ambiguities in the guide the post-pilot formulation of the question was stated as: "In your opinion what resources or institutional support need to be put in place to support academics to engage in research and publish" (see Appendix 3).

3.7 Data Analysis

This section discusses the process and procedures of both qualitative and quantitative approaches to data analysis in this study. Neuman (1997) describes data analysis as a search for patterns in data or a body of existing knowledge. Furthermore, Babbie and Mouton (2001), argue that the main aim of data analysis is to understand various "constitutive elements" of the data collected through an assessment of relationship between concepts, constructs or variables. Mainly, this process enables the researcher to see whether any patterns or trends exist that can be identified or isolated, or establish themes in the data.

3.7.1 Qualitative Data Analysis

Qualitative analysis entails working with data that is mainly in the form of texts, written words or symbols that describe or represent people, actions and events in the social world (Taylor-Powell & Renner, 2003). The same authors acknowledge that the text data may be drawn from brief responses to open-ended questions on a survey or structured interviews, transcripts from interviews or focus groups, notes from a log or diary, field notes or the text of published reports or policy documents. In this study, prior to the data analysis process, the tape recorded data was transcribed into texts. The following major steps were utilized in analysing the data (a) a close reading of the data (b) coding the data by identifying themes or patterns, (c), categorizing the data, (d) identifying patterns and connections within and between the patterns and, (e) interpretation, where the information is brought together. The discussion below shows how these procedures were accomplished in this study. This process was followed by analysing the data, which involved an iterative process (see Miles & Huberman, 1994; Taylor-Powell & Renner, 2003).

(a) A close reading of the data**:** After transcription of the data the researcher read and re-read through the texts, to ensure understanding fragments of the data in context. Also reading the texts allowed the researcher to note any initial impressions arising from the data. Miles and Huberman (1994, p. 58) suggests that transcripts be read "for regularly occuring phrases, and with an eye to

surprising or countertuitive material". For instance in this study, initial reading started to signal that participants has a lot to say about incentives, such as 'incentives being available, but not being sufficient'. Since the structured interview guides mostly consited open-ended questions, the researcher focused the analysis using the question or topic approach, by looking at how individual participants responded to each question or topic. Taylor-Powell & Renner (2003) argues that organizing the data by question or topic to look at all participants and their answers allows the researcher identify consistencies and differences.

(b) Coding of the Data: After close reading of the data the researcher proceeded to code the data. Miles and Huberman (1994) noted that coding entails assigning unique labels to texts that consists of reference to particular categories of information. Therefore, the researcher began to pick out ideas, recurrent concepts, interactions, terminologies or phrases used by the participants. Words, phrases and concepts that resulted to the same meaning were organized and given codes. Miles and Huberman (1994) argue that coding helps the researcher organize, manage, interpret and retrieve meaningful segments of data. In this study, coding was a continuous process from the formulation of the research question, review of the relevant literture, development of the theoretical framework and the data collection proces.

(c) Category formation: In this study, following Miles and Huberman (1994, p. 58) categories were formulated from central research question and paying attention to the emergent categories in the data. In this case, the researcher started with a list of themes or categories formulated in advance; then followed reading through the texts to find the themes or issues that recur in the data. Some of the pre-set categories included 'monetary incentives', non-monetary incentives, 'organizational support' 'competing incentives'. While some emergent sub-categories included 'status. Examples showing codes, themes and categories that were identified to sort responses to the questions: *What are the incentives and rewards attached on research publications?*

Question	Codes/Labels	Themes	Categories
1. What are the incentives and rewards attached on research?	Standard of Promotion (Pro), Nominated for particular tasks (Rec) Earn research money (M)	Research publications result to incentives and rewards	Monetary and non-monetary incentives attached on research publications

(d) Identifying relationships, patterns, connections and possible explanations within and between the categories: As the data was organized into categories, possible patterns and connections both within and between the categories started to emerge. The above categories were correlated to form common themes. Largely, the researcher was interested in summarizing the information pertaining to the themes, or capturing the similarities and differences in participants responses within a category, in order to provide answers to the research questions. According to Miles and Huberman (1994, pp. 51-54), summaries reduce data and convert it to easily retrievable form. Therefore, following Miles and Huberman (1994) the summaries include evidence in the form of quatations from the data, which may be weighted based on the number of occurrences across the responses and patterns of repetition among the respondents when adressing a particular topic. The themes and connections developed are keys to explaining the findings.

(e) Interpretation of the anaysed data was essential, that is, attaching meaning and significance to the analysis. The data analysed was presented through diagrams, texts and quatations.

The next section discusses how the quantitative data collected was analysed.

3.7.2 Quantitative Data Analysis

The quantitative data was summarized by means of descriptive statistics, which included frequency distribution, measures of central tendency (were used to describe the data collected. After measurement of the relevant variables on the questionnaire, the data collected was coded into numerical format to ease analysis as this allows the frequency distribution to be selected. Data was entered in a statistical format. Lastly the data was cleaned to check and correct errors (Durrheim, 1999). The collected data was analyzed using the statistical software programme Advanced Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to analyze the data. Frequencies were mainly used to describe the data from the academics in relation to incentives and knowledge production. Durrheim (1999), indicates that, descriptive analysis aims for a description of the data by investigating how the scores are distributed on each variable. Further, the descriptive statistics determine whether the scores on different variables are related to each other. The analysis was done in reference to the main research question, aimed at, understanding the link between incentives and knowledge production. Data analysed quantitatively from time to time is expounded on through the interview information.

3.8 Research Ethics

Ethical guidelines were given attention in this study since human subjects were involved in the study. According to Denscombe (2010), it has become increasingly common for researchers who need to gain formal approval from a research ethics committee before they embark on research. Importantly, the research ethics committees are keen on research involving human subjects to ensure that "no badly designed or harmful research" is granted permission to proceed before the relevant issues are considered (Bell, 2006, p. 46). Following the above, the study was approved by the University of the Western Cape's Senate Research Committee. In Kenya, which is the context of the study, the university offered an affiliation letter approving the study to be conducted within its premises; thereafter, the National Council for Science and Technology used the same letter to approve the study by offering a research permit (see Appendix 5). Participants were provided with written consent for participation by signing after review of the information

sheet. Before conducting the structured interviews, consent forms (see Appendices 2 and 3) clarifying the research problem and the aims of the study were presented to the selected participants for review. In the letter, the information to be collected from the participants and the way in which the participants were to participate were clearly indicated.

With the exception of the University units such as faculties and schools, voluntary participation, anonymity and confidentiality of the participants selected for this study, were highlighted on the information sheet; and this was to be ensured during and after the study as well as in the research report (Denscombe, 2010). The researcher obtained a signed written consent form from the Research, Production and Extension office that allowed me to collect data from the selected colleges. While this study was keen to consider the ethics guidelines pertaining to the participant's confidentiality (Merriam, 1998; Denscombe, 2010), it was impossible to conceal the name of the university. The researcher ensured that the information and data collected were used for the intended purpose. This study has been under supervision of academics in higher education that ensured the stated ethical guidelines and procedures were addressed.

3.9 Conclusion to Chapter Three

This chapter presented the research approach and discussed in detail the qualitative nature adopted for the present study. The chapter provided methodological issues and procedures utilized in this study including: the case study section, participant selection, data collection methods, the research process, and issues of rigour and data analysis. Following the contextual nature of the application of incentives for research in higher education, it is claimed that the policies, procedures and practices can be well understood and described within the context of the university chosen. Use of multiple sources in collecting evidence, ensured validity and reliability requirements were met in this study. Looking at the data collection process, the main challenges encountered were linked to the accessibility of the data of academic salaries over the periods from the 1960s to date. This has made the analysis a challenge as the initial intentions could not be met in order to conduct a trend analysis. Ethical considerations for this study were also discussed in detail. This study was conducted after all the ethical requirements were met at the two universities, UWC and UoN, and in the country of the study.

The next section presents and analyses the data related to the main research question. The analysis starts by macro-contextualizing the study to allow understanding of the key debates and arguments that will be made in the analysis, followed by an analysis of the shifts in the remuneration regime of academics, the current levels, and finally a discussion of the different policies and practices linking incentives for knowledge production at UoN.

CHAPTER FOUR

Data Presentation and Analysis

4.1 Introduction

As indicated in Chapter One, the main aim of this study is to explore the link between incentives and knowledge production at the University Of Nairobi (UoN). This chapter presents and analyzes the collected data in an attempt to respond to the central research question. This chapter consists of three main sections. Section one provides brief contextual information on the key features of higher education in Kenya, as well as the knowledge production context in Kenyan higher education institutions. Section two analyses the trends in the remuneration regimes of academic salaries in Kenyan public universities over time. Section three examines the incentives linked to research and successful postgraduate supervision at UoN, as indicated in the policies; and how they influence knowledge production. It also discusses the perceptions of academics on the available incentives. Section three further provides an analysis of the existence of the 'competing incentives', which requires mutually exclusive responses and how they impact the engendering of research culture. Inasmuch as the focus of this study was on knowledge producing incentives, the competing incentives detract academics from knowledge production, hence the need for a detailed analysis.

4.2 Context of the study: Key Features of Higher Education in Kenya

This section places the study in context to allow understanding of the key debates and arguments conducted in the study. Higher education in Kenya has witnessed a number of important developments since 1970 when the country's oldest university, UoN (the site of the case study), became a fully-fledged university. Currently, the country has 22 public universities and 36 private Universities. Similarly, total student enrolment has increased significantly. In 2012, the total student enrolment in public universities stood at 240,551, a significant increase from 571 students in 1963 (Nganga, 2013).

Kenya's public universities are centrally governed and receive part of their funding from the government. Although over the years Kenya's public universities have reduced salaries, basic salaries are determined at the national level, with the academic unions mobilizing the lower and upper limits of the salaries through the collective bargaining agreement. (The shifts in the remuneration regime of academics since the 1960s to date are analysed in section 4.3). Key features in higher education such as funding are discussed in particular, also how changes have impacted academic salaries. Kenya's higher education has been faced with declining state funding over the years. Wangenge-Ouma (2008b), states that during the period of 1996 to 2000, government funding to Kenya's university education was about 0.94 percent of the GDP and declined to 0.74 percent during the period of 2000 to 2005. The decline in state funding has been demonstrated by the Kenya government's inability to meet the public universities' financial requirements (Wangenge-Ouma, 2010). The decline in the State financial allocation to the universities, has also negatively affected the expenditure on the academics' salaries.

Following the decline in State funding of public higher education, module II programmes are the mainstream of university funding strategy (Kiamba, 2004; Wangenge-Ouma, 2012). Kenyan public universities were encouraged to adopt privatization in their effort of generating income for university operations. This has resulted in introduction of 'Module II' students who pay their full tuition fees at 'market rates' (Kiamba, 2005). For example, at UoN, Module II students pay about Kshs, 173, 000 (approximately $2000) on average per annum, relative to the government sponsored students (Module I) who pay a highly subsidized tuition fee of Kshs, 16, 000 (Approx. $185); hence higher rates of return on parallel programmes (See UoN website; also see Wangenge-Ouma, 2008). The UoN was the first institution to introduce the academic programmes for Module II students. Currently all Kenyan public universities have established 'Module II' programmes and there are campuses all over the country (Wangenge-Ouma, 2012).
Monies generated from these programmes are utilized differently; some of the income is allocated to remuneration of the academics that teach on these programmes, as well as to research funding. Academics who teach on the Module II programmes receive additional payments over and above their regular salaries (Wangenge-Ouma, 2012). The universities have agreed with the academics to offer them additional payment over and above their regular salaries, a percentage of the fees paid by students on Module II programmes. The additional

payment percentage varies across the public universities as follows: At the University of Nairobi - 30 percent, at Jomo Kenyatta University of Science and Technology - 35 percent, and at Kenyatta University -20 percent.

In the above section, the key features of higher education such as expansion of the higher education system, increase in the student enrolment, governance and funding have been introduced. The Kenyan government' in ability to fund Higher Education institutions adequately has had a detrimental influence on academic remuneration. The next section discusses the shifts in the remuneration regime of academics over the years.

4.3 The Shifts in the Remuneration Regimes of Academics

This section provides an analysis of the trends in the remuneration regime of academics in the Kenyan public universities over time. The analysis is presented across several time periods to show the shifts in the remuneration of academics in the Kenyan public universities. Essentially, pay satisfaction is reported as an important incentive for motivating, attracting and retaining productive academics at the university. Inasmuch as the reviewed literature shows that good working conditions and infrastructure influence knowledge production, more often than not, attractive remuneration packages are offered to attract, retain and enhance performance of the best talents in the universities (Kubler & De Luca, 2006). Thus, the need to get a clear sense of the remuneration of academics is essential. Also, there is the issue of context, as it is argued financial remuneration is a 'social thing', hence when the remuneration regimes shift, they change within particular conditions, as it will be discussed later (see section 4.3.1). Therefore, it is important to look at how the remuneration regimes have shifted over time in the Kenyan context, with particular reference to UoN. This discussion is located in three distinct periods, namely, the 1960s to the 1970s, the 1980s to the 1990s and the 2000s to date. The assumption for the above periodization is that the global demands and local socio-economic and political conditions in Kenya, during this period could be argued to have influenced the remuneration of academics.

4.3.1 1960-1970s: The Period of Competitive Remuneration in the Universities

Academics in the Kenyan public universities earned 'competitive' salaries like their counterparts in the civil service during that decade. This period immediately after independence was characterized with 'hope and optimism', accompanied with increasing budget allocations for higher education, responding to the demand for education and the thought of increased rates of returns on investments in human capital (Wangenge-Ouma, 2012). As discussed in Chapters One and Two, during this period universities had vital need of social and economic development as one of the new independent nations. Wangenge-Ouma (2008a) argues that this major role of universities provided a milieu for large-scale funding of higher education by the State. In this phase, university education was highly subsidized, as the State generously funded universities to cover tuition and student living allowance, research infrastructure, educational facilities and the staff costs such as salaries (Mwiria et al., 2007; Pillay, 2010b). This is an era characterized by competitive remuneration in the universities, where the salaries were not initially performance driven. Salaries were allocated on the basis of the key role of the academics during this period. These salaries were competitive relative to those of other civil servants, following the relevance placed on university education for development. Also, during this decade between 1960 and 1979, the value of inflation averaged 3 percent with minimum values of -0.17 at 1969, with fixed exchange rates (Durevall & Ndung'u, 2001). Therefore, the low values of inflation implied high purchasing power for the academics. This period contrasts sharply with the next periods, though, inflation was not a policy problem during the 60s period.

This period was regularly reminisced about, particularly by the senior academics that had worked at the UoN for over 30 years, as a 'golden past'. From the interview data with the academics, general claims emerged that in the 1960s and the 1970s academics were offered a good salary that was commensurate with their work and earned them status in relation to their counterparts in the civil service. A professor who had worked at the University for over 30 years noted that:

> *This University [UoN] in the 1960s -1970s ... was considered to be one of the best employers, then, because of the benefits that were associated with it on top of the salaries, which by those times, the rates of inflation t were low ... the benefits were things like housing and medical cover which were then the best in the country...That changed when I think it was becoming expensive for the university and government ...also looking at the financial crises of the mid- 1970s to 1980*

it was no longer possible for the University to provide these allowances … So earlier on in the 1970s and the early 1980s the terms were better and that could have been an incentive to come and work at the University. (Personal Interview, November 2012)

Another senior academic added:

During Kenyatta's time [1963-1978] a professor used to earn more than a Permanent Secretary (PS) and that is when a professor used to enjoy being a professor … being a professor that time was worth it. (Personal Interview, November 2012)

From the above extract, it can be seen that the respondent reflected on a 'golden past' claiming a good paycheck like other civil servants such as the PS. The general perception is that, soon after independence, the salary of a professor was higher than that of a judge, Member of Parliament or Permanent Secretary, but now the Member of Parliament or Permanent Secretary earns more than ten times what a professor earns (See table 4.1 for clarifications). However, the evidence collected is in contrast to the claims displayed in Table 4.1, as it shows that in 1963 the pay ratio of the average monthly basic salary of the permanent secretaries versus the university professor was 1.2:1, which increased to 2.1:1 in 1973. The pay ratio has varied over time, averaging 1.3:1, with the permanent secretary earning more across these periods. Therefore, the above perception is misplaced. Though, the perception of good pay could be linked to high purchasing power during this period, which can largely be attributed to the low inflation rates during the era of the 1960s.

Table 4.1:
The Average Basic Salaries of Academics and Permanent Secretaries

Years	Professor		Permanent secretary		Paid ratio
	Kshs.	US$	Kshs	US$	
1963	2, 250	35	3, 625	42	1.2:1
1973	3, 050	40	6, 600	88	2.1:1
1980	10, 500	140	12, 600	168	1.2:1
1990	18, 788	250	24, 725	329	1.3:1
2004	53, 550	714	96,000	1, 280	1.7:1
2014	162, 064	2, 187	200, 000	2, 667	1.2:1

Note: Source: UASU salary table, government statistical extracts and SRC 2010.

From the table above (Table 4.1), it is clear that there are not much significant difference between the paid ratios of the average monthly basic salaries of the PS and the Professor over the years, from 1963 to 2014. The claims of the permanent secretaries receiving high salaries is the result of a slate of allowances (house, transport, car purchases and entertainment), and other entitlements that are offered to the permanent secretaries in comparison to the professors. Therefore, the current wage gap between the monthly gross salaries of professors and permanent secretaries stands at 7:1. Hence, the regular claims of poor pay in the universities compared to salaries of other civil servants.

Unlike the 1960s, a period described with hope and optimism, the mid 1970s were followed by declines, which later became pronounced in the 1980s. In the 1970s, problems such as the first oil shocks and the balance of payment problems led to an increase in the rate of inflation, followed by the economic crisis of the mid 1970s (Durevall & Ndung'u, 2001). The above conditions resulted in a decline in government funding to higher education. For instance, within higher education the public recurrent expenditure per University student declined from $6461 in 1975 to $2365 in 1983 (Mutula, 2002). The decline in funding led to a decline in allocations to university operations, including allocations to cover the remuneration of academics. Several authors commented, contrary to the political and financial support that higher education received immediately after independence, the late 1970s to the 1980s period was characterized by stagnation or a decline in the staff salaries in many African states, including Kenya (Ajayi et al, 1996; Ngome, 2003). The increase in inflation rates during this period implied that the purchasing power of academics was eroded. Later on in the 1970s, an increase in the rate of inflation caused the decline in large scale funding to universities, which resulted in the decline in remuneration of academics. The signaled declines are discussed further in the next sections.

The next section provides a discussion on the remuneration regimes within the 1980s to the 1990s period together with the prevailing conditions in this period that influenced remuneration.

4.3.2 1980s to 1990s: The period of Declining Academic Remuneration in the Universities

As signaled earlier, during this era, declines were largely experienced in several components of higher education, which resulted in the decline of academic salaries. Contrary to the 1960s, during the early 1980s, the economic conditions in Kenya made it unfavorable for the State to continue providing large scale funding for higher education (Wangenge-Ouma, 2010). For instance, in the period between 1980 and 1985, the country experienced low economic growth rates, at an average GDP of about 2.5 percent per year, with several years recording negative economic growth rates. Despite the slow economic growth, in the first half of the 1980s, the average inflation rates were fairly stable, though the economy experienced large fluctuations between the different quarters. Thus, the fluctuations could have resulted in a decline in the purchasing power of the academics' income. In addition, the structural adjustment programmes imposed by the World Bank from 1986 to 1989, followed this period. The programme started operating in 1988 and was more pronounced in the 1990s. Structural adjustment programmes mainly entailed emphasis on a significant decline in the government expenditure on several social services, including higher education, and privatization of the government owned industries (Wangenge-Ouma, 2008a). This saw diversion of more resources to primary education following claims of high social rates of return at this level and intensified cost-recovery measures at the university level (Psacharopoulos & Woodhall, 1985). Wangenge-Ouma (2008a) states that, the public expenditure per student was seen to be 30 percent more at the university level relative to the primary level in the early 1980s to the early 1990s. However, the above de-emphasis on higher education meant decline of the university education.

From the above discussions, it can be concluded that slow economic growth, increase in inflation rates, devaluation of exchange rates, large external debts, and increased growth in the higher education sector, were the main factors that led to the decline in state funding (Durevall & Ndung'u, 2001; Wangenge-Ouma, 2008b). Arguably, decline in state funding meant, among other things, decline in academic remuneration. Therefore, contrary to the 1960s-1970s, where academics relied on their competitive salaries, in the 1980s academics were faced with declining remuneration. In addition, the increase in the inflation rates also meant decline in or stagnated purchasing power.

All through the 1980s period the academic salaries were constant. Therefore, as much as salaries remained constant in nominal terms, the rise in the values of inflation meant that academics had a decline in purchasing power. To reinforce the above observation, a senior professor in the faculty of Agriculture, who had worked at the university for over 20 years, claimed:

> *But now, things have turned around. Moi's time [1978-2002] was impossible, nothing was coming or moving, and there was much fighting to get salaries in the University to be increased. We were getting to be so poor. I don't think I want to criticize Moi's time only with nothing good in the University; even civil service salaries were so poor until the later part of Moi's regime (late 1990s) they increased the salaries of the permanent secretary (PS) and the PS started earning more than the professor. And education was not of much consequence as far as I am concerned. That time when he increased the salary of the PS, again for the professor there was a minimal raise, very little, or poor salaries. (Lightly edited Personal Interview, November 2012)*

The above extracts show that the respondents reflected on how difficult it was for both university professors, and staff in the civil service at large to get salary increases in the 1980s. As a result, what followed were mainly constant or declining academic salaries. Although it's not explicitly spelt out by the participants in the interviews data, the above-mentioned conditions, slow economic growth, increase in inflation rates, devaluation of currency, 'introduction' of structural adjustments programmes could be argued to have had an influence on the decline or stagnation in the academic salaries.

Furthermore, in the 1990s, Kenya had its worst economic performance since independence. The economy was characterized by stagnated growth in the GDP and the country witnessed very high inflation rates. Durevall and Ndung'u (2001) indicate, that inflation averaged over 30 percent per annum during 1992, and later reached a maximum of 45.98 percent in 1993. The government's deficit budget was over 10 percent of the GDP. Faced with these adverse economic conditions, the Kenyan government found it difficult to continue with the huge funding of higher education. Also, the bilateral and multilateral institutions suspended donor funding to Kenya, including that for higher education. Thus, these combined problems negatively impacted the block grants of remuneration in the university, as well as other benefits and allowances to the academics. The very high inflation rates also signaled the eroded purchasing power of the academics during that period.

These conditions justify the claims of the respondents in this study who indicated that during this period, the salaries were too low to allow them high standards of living. As a result they were forced to 'moonlight' in order to supplement their income. However, as discussed below, apart from the low salaries there have been several reasons why academics 'moonlighted', including growth in the higher education system, presence of private institutions, nature of the academic work where academics are claimed to have a lot of time on their hands and flexible contracts (Altbach et al., 2009).

Following the decline in the universities' support, Kiamba (2004) and Pillay (2010b), reveal that the Kenyan government urged public universities to generate income from market sources to supplement the limited public funds. Similarly, the private sector was encouraged to participate in the development of higher education. The above discussion shows a period dominant with declining state funding, high inflation rates and stagnated or declined economic growth, as well as the introduction and influence of the structural adjustment programmes. The next section provides a discussion on how the policies on income generation and increased privatization in the Kenyan higher education system, impacted the academic salaries.

4.3.3 2000s to date: The Period of Multiple Incentives in the Universities

From the above sections, it has become evident that prior to 2000, universities were encouraged by the government to find alternative innovative ways to expand enrolment while generating income to supplement the declining State funding. In an attempt to generate income, the major way initiated by the Kenyan public universities was to implement "dual track tuition fee programmes" (Wangenge-Ouma, 2010, p. 105). These programmes introduced an element of private-public university students demonstrated by admission of the privately sponsored students, that is, full tuition fee-paying students enrolled on 'parallel programmes', alongside the government's highly subsidized students. The parallel programme students pay high tuition fees They have to pay their full tuition fee of about $US 2000 per annum in comparison to the government sponsored students (Module I) who pay a highly subsidized tuition fee of about $US 400 (Munene, 2013). The University of Nairobi was the first to institute the parallel programmes

in 1998 (Kiamba, 2004). Currently all Kenya's public universities have introduced parallel programmes. Kiamba (2004) argues the introduction of the parallel programmes was mainly instigated by the financial problems UoN was experiencing, with the decline in state funding of higher education. Apart from the financial needs, Wangenge-Ouma (2012) argues that parallel programmes were encouraged to meet the increased demands for higher education.

Although universities implemented parallel programmes with a major aim of generating revenue for their operation costs, evidence collected shows that these programmes have impacted academic salaries. The university gives incentives for teaching on the full fee paying stream by providing additional payment, whereby over and above their regular salaries, academics who teach on these programmes are remunerated a percentage of the fees paid by the private students. The percentages paid to the academics, as indicated by Wangenge-Ouma and based on the data collected in this study, comprise 30% for the University of Nairobi and 35% for Jomo Kenyatta University of Science and Technology (See Wangenge-Ouma, 2012; Personal Interview, November 2012). The university mainly determines the payment on the parallel programmes. However, there is a challenge in the implementation of extra pay for teaching on parallel programmes. Payment is not consistent and systematic in the different universities, nor among the different colleges/faculties/schools/departments at the UoN.

In respect of the extra payment received from teaching on the parallel programmes, one of the participants pointed out how the parallel programmes at UoN tend to be attractive to the academics, their influence on academic salaries and academics' preferences. One senior academic commented as follows:

> *There are some academics that may opt to teach and not do any research. And then there is an attraction there because when I teach I am assured of that money. When I decide not to teach and I go out looking for either research money or consultancy it's risky, because I am not sure (...) since this money from extra teaching is assured the academics will want to teach. There is also the argument of making money, how you make the money and what you get from the money. For example, if you try and teach in the department of sociology you will make some money because the classes are large [payments are dependent on number of students]. Module II pays well and sociology attracts many students (...) So I might just say I want to teach, the University would want these academics to teach to make money. (Personal Interview, Transcript, November 2012)*

From the above extract, we can see how parallel programmes in the university have influenced the salaries of academics, since they get additional income from teaching. Academics are more attracted by the money they earn from extra teaching than in engaging in academic research or even doing consultancies.

As signaled earlier, apart from 'parallel' programmes, this period saw an increase in the number of private universities in the country. With one private University in 1979, currently Kenya has 29 private Universities. Most of these private Universities do not have their own staff; consequently, they appoint the academic staff from the public universities who teach in these universities (see Mwiria et al., 2007). Evidence collected in this study shows that academics receive extra payment for teaching in the private universities, which also affects their income.

From the above analysis, it is evident that the university award incentives to those teaching on the full fee paying stream by providing additional payments over and above regular salaries, to academics that teach on these programmes. There is also extra payment for teaching in the private higher education institutions. In addition, academics at the University of Nairobi seem to respond more favorably to the incentive awarded for extra teaching. This is because of three reasons: (a) the size of these incentives is claimed to be greater than that for research (b) the incentive for extra teaching is more accessible, than that for research, and (c) the unfavorable social-economic condition of an academic in Kenya, which reinforces the attraction to the greater magnitude and availability of the incentives (personal interview, November 2012). However, the incentive to teach is claimed to have negative effects on research and successful supervision of postgraduate students.

In conclusion, the above section discusses the shifts in the remuneration regime of academics. During the period of 1960s and 1970s, we see a period thought of as a period of "hope and optimism" when academics earned competitive salaries which were not performance driven. This is also exhibited as a period of economic prosperity and low values of inflation that saw large scale funding of higher education, and hence high percentage of government expenditure on the wages and salaries of academics. Contrary to the 1960s to the mid- 1970s, the period of 1980 to the 1990s, reflected decline in the remuneration of academics. Similarly, during this period, there

was decline in state funding to higher education, introduction of the structural adjustment programmes and decline in the economic growth rate. The above factors are argued to have also contributed to the decline in the percentage of government expenditure on the wages and salaries of academics, which resulted in decline or stagnation of remuneration during this period. Also, in the 1980s, there were high inflation rates, which meant that with the decline or stagnation of the academics' salaries, the purchasing power of academics also stagnated or declined. After the period linked with decline in the academic salaries, what follows is the period from the beginning of the 21st century to date that is seen to be an era of multiple incentives for the academics. During this current period, over and above their salaries, academics earn additional payments for teaching on the parallel programmes; mainly, a percentage of the fees paid by the private students. Academics also earn extra pay when they teach in the private universities as part-time lecturers. This period is considered to be an era with high growth rate in the private universities.

The next section provides a detailed discussion on the current remuneration levels of academics in Kenyan public universities. The determinations of salaries are discussed in general, as well as the compensation of the academics.

4.4 Current Remuneration Levels of Academics in Kenyan Public Universities

This section discusses the current levels of salaries and remuneration of academics at UoN. The sections above have outlined the shifts in the remuneration regime of academics over the years, since 1960s to date. This section outlines the current salary levels of academics and shows some policy issues linked to the salaries both at the national and institutional levels. While interview respondents over-emphasize the provision of research resources in the university, they are of the view that good pay and remuneration are a key incentive to attract, motivate and retain talented academics in the universities.

As shown in the literature review chapter, a few studies have attempted to examine how academics are compensated around the world. Altbach, Reisberg and Pacheco are of the view that, "salaries … are central to the well- being of the academic profession and its contribution to

the university" (Altbach, Reisberg & Pacheco, 2012, p. 2). Also, consistent with the predictions of the principal-agent model, employees who receive good compensation for their performance, effort, capabilities and contribution to the institution's outputs, tend to be effective and efficient in their productivity and are committed to their jobs in comparison to their counterparts who are underpaid (Benabou & Tirole, 2003; also see Hearn, 1999; Lazear, 2000; Chant, 2005). In addition, as mentioned in Chapter Two, the Kenyan government recognises that good pay and other incentives would attract the researchers who were affected by the 'brain-drain" both to the private sector and to other countries. This section covers the following: (a) how are academics' salaries determined? (b) What constitutes the total paycheck and other allowances of academics at UoN? (c) How do academic salaries and other benefits compare with other selected professionals in the public sector?

Altbach (2012) emphasizes, academics need not be remunerated according to the highest international standards, but the local levels should be sufficient to allow academics have a middle-class lifestyle. Nonetheless, previous studies revealed that in the developing and middle-income countries academic salaries are inadequate to provide a decent living, with the exception of South Africa, which is reported to have higher entry-level to top-level salaries. The possibility exists that academic salaries may increase over 100 percent in the course of the career of the academic. In case salaries are insufficient, Altbach, Reisberg and Pacheco argue that, "the "best and brightest" will not be attracted to academe", and academics may be forced to supplement their inadequate income from alternative sources, hence "diverting their attention and attention from their academic work" (Altbach et al., 2012, p. 2; also see Pacheco & Rumbley, 2008; Altbach, 2012). The salary level and "fringe benefits" provided to academics at UoN are discussed below.

4.4.1 Determination of Pay

The review of the relevant documents shows that, in Kenya, the basic salaries are centrally determined, through a collective bargaining agreement (CBA). The CBA is between the Universities Academic Staff Union (UASU) – representing academics - and the Inter Public University Council of University Councils Consultative Forum (IPUCCF) of the Federation of

Kenya Employers (FKE), acting on behalf of the universities as the employers with direct intervention of the government (UASU constitution 2006; UASU, 2012). The UASU Chapter in the university negotiates with other role players about other allowances and benefits such as commuter allowances, medical allowance, package allowance, last expense, hardship, etc. The negotiations are done with individual university Councils who are the employers (UASU constitution, 2006; also see Lagat et al., 2014). From the above, it is evident that the staff unions play a key role in setting the lower and upper limits of the academic salaries. As signaled earlier, robust academic unions agitated for better pay and improved working conditions in the last decade; thus leading to an increase in the academic salaries (Personal Interview, November 2012). Based on the interview data, participants commented that in 2003 there was a very steep increase in the academic salaries. However, there was no available data to validate these claims. Similarly, the negotiated 33 percent basic salary and 17 percent housing allowance increase in 2014 between IPUCCF representing the public universities and the unions – UASU (representing the academics) and the Kenya University Staff Union (KUSU) (representing the professional staff) illustrates that the unions protect their members against the effects of inflation (Oduor & Otieno, 2014; Munene, 2014). Following this agreement, a full professor at the top level earns a consolidated monthly pay of about US$ 3, 300 and the tutorial fellow and the assistant lecturers at the entry level make around US$ 1,757 (see Oduor & Otieno, 2014). Despite the 33 percent salary increase, the rise is happening at a low base. Given an average inflation rate varying between 12-13 percent, it reduces the effect of the salary increase, thus the purchasing power of the academics may just stagnate. Therefore, as signaled earlier these salaries may barely be enough for academic staff to afford a middle-class lifestyle. However, during this period we can see that there will still be positive net growth.

Furthermore, even with the salary increase, the interview data revealed that the interviewed participants believed the academic salaries lag behind their counterparts in the civil service, particularly the judiciary and the legislature holding the same working experience and academic qualifications. As one respondent emphasized:

University lecturers are poorly paid and remunerated. (Personal Interview, November 2012)

As indicated in the above section, immediately after independence the paid ratio of a university professor, a member of parliament, a permanent secretary and a judge stood at 1.2:1. This could imply that the pay and benefits were almost the same. Currently, the permanent secretary at the top level earns US$ 12, 200; a member of parliament takes home US$ 9, 800, while the judges make US$ 7, 000 per month (KIPPRA, 2013).

In interviews with academics their views were that the high inequalities in the salaries in the civil service have resulted in

> *"(L)ow morale" in the universities, which has affected the key mission of the universities, that is, research and training and the overall contribution to economic development. Consequently, the large salary differences have resulted in increased industrial strife as the academics agitate for higher pay, illustrated by high number of strikes between 2011 and 2014. (Lightly edited Personal Interview, November2012*)

Increasingly, large gaps in the salaries have seen more academics move out of the university into the public service or the private sector. From the interviews with the academics, it is evident that in 2012, a massive number of professors at the law faculty moved to the judiciary to become judges and commissioners (Personal Interview, November 2012; also see Magoha 2012). Thus, a situation termed "disturbing" followed the efforts of the university to enhance the knowledge production levels.

From the above analysis, it has been revealed that the basic salaries are centrally determined, with the academic unions playing a vital role in setting the minimum and maximum limits of the academic salaries through the collective bargaining agreement. The academic unions have University Chapters, which ensure that other allowances such as transport are determined. The next section discusses the link of salaries to performance.

4.4.2 Performance-based Pay

Inasmuch as the academic unions have made efforts to try and get spurts in the academic salaries, evidence from the data shows that government does not recognize performance-based pay systems in the Kenyan universities. Following the strong emphasis on Collective Bargaining

Agreements in determination of academic salaries, lecturers and professors in the same grades earn the same salaries, in spite of the differing levels of productivity or performance in the university. In Kenyan public universities, the distribution of academic salaries is mainly done on the basis of longevity in rank, administrative position, and seniority (see Table 4.2). Steers (1984), argues that individual incentive plans face resistance from academic unions, as the unions prefer compensation of their members to be on the basis of seniority or job satisfaction. Further, Steers notes, "often there is little in correlation between those who perform well and those who receive the greatest rewards" (1984, p. 416). In a nutshell, performance-based pay is not viable in the Kenyan public universities. Hence, Kanter (1987) warns that, distribution of rewards based on hierarchy or seniority could act as dis-incentives, which encourage employees to 'look out for themselves' albeit improving on the productivity.

In the absence of a performance-based compensation system in the Kenyan public universities, a professor who is productive, in terms of research publications or postgraduate students output, earns similar amounts as his/her less productive colleagues. According to the principal-agent model performance related pay is more desirable than plain fixed pay, as it offers incentives and attracts employees whose productivity is above average, thus they believe they can be paid more within a performance related scheme. Based on the indications above, this contradicts the practice in Kenyan public universities, which may turn out to be a dis-incentive. Relevant evidence supports the notion that longevity in the academic rank is the main determinant of the academic salaries. The major ranks considered for incentives are entry level (assistant lecturer/tutorial fellow and lecturer), medium level (senior lecturer and associate professor) and top level (full professors).

For the basic salaries, salary differentiation within the same academic ranks exists, based on the 12 different pay scales attached to the position, which denote seniority (see Appendix 5). For example, full professors, at salary scale 12 with high seniority earned a monthly basic pay of approximately US$ 2, 490 in 2013/2014; while full professors at salary scale 1, with lower seniority earned approximately US$ 1, 745). Seniority is based on the number of years one has been in a position. Table 4.2 shows the salaries of the different ranks from the entry level – tutorial fellow to the highest position at the professorial level.

Table 4.2

Academic Average Monthly Basic Salaries from 2013/2014 in Kenyan Public Universities (exchange rate as at January 2014)

Grade	SALARY SCALES IN US$ PER MONTH		
	Minimum	Medium	Maximum
Professor (15)	1,700	2,031	2,490
Associate Professor (14)	1,446	1,700	2,034
Senior lecturer (13)	1,109	1,396	1,591
Lecturer (12)	982	1,170	1, 398
Assistant lecturer/Tutorial fellow (11)	745	900	1,174

Note: Source: UASU salary tables for 2014

The professors, led by the academic union –UASU- have continuously pushed for a salary increase, which might put them at the same level or higher than their counterparts in the region. For instance, on average, the monthly salary of a professor and allowances in a public university is equivalent to US$ 3,200 in Tanzania; US$ 4,900 in Rwanda compared to the average salary of US$ 2, 200 in Kenya (Kisero, 2012). This finding reinforces the above argument that salaries of academics have increased over time, though at a low base, as an initiative of UASU.

Additionally, there has been a series of academic strikes over the government failure to implement the 2012 CBA, which would have resulted in setting a professor's base monthly salary approximately between US$ 3,840 and US$ 5,760. Though, part of the 2012 CBA has been realized, academics continuously threaten to strike, claiming the university management misappropriated the funds meant for them and discriminative payments of the allowances in the local CBAs (UASU, 2012). There are continuous claims that the university management diverted part of the funds meant for payment of the academic salary increases towards debt offsetting and maintenance of facilities, hence resulting in the increase in latest number of academic strikes (Kiplang'at, 2014; also see Munene, 2014). The mentioned industrial strife often paralyses learning in the universities and other tasks of academics, including research and supervision of students, which may also affect the completion rates of graduate students.

Inasmuch as there is an increase in the academic salaries data from the interviews suggested that academics "receive poor pay, which is not commensurate with their efforts and academic qualifications" (Personal Interview, November 2012). According to respondents, "salaries have

been the least of the incentives as they are extremely low". This information supports the claims of Altbach (2012) that academic salary levels in most countries have not kept up with inflation. Over the decades, this has forced many academics to look for other sources to supplement their income, so as to maintain appropriate standards of living. To reiterate, Altbach et al., (2012) claim "in many countries salaries are too low to support a middle-class lifestyle locally" (p.2).

In conclusion, this section shows that academic remuneration is not based on salary, but rather mainly on academic rank and seniority. The academic unions resist the individual incentives, giving preference to seniority, which may turn to be a dis-incentive to more productive academics. However, it has to be noted that the spurts in the academic salaries over time have occurred as the result of efforts of the academic unions. The next section provides an analysis of the incentives linked to research at the University of Nairobi.

4.5 Incentives Linked to Knowledge Production at the University of Nairobi

This section provides an analysis of the incentives linked to research and successful postgraduate supervision at UoN; and how they influence knowledge production. The subsequent analysis will present various elements that have been derived from the theoretical framework – the principal-agent model, which enables understanding of the notion of incentives. The following factors include some of the key elements that are discussed in this section: Time resources, promotion opportunities, financial allowances, non-monetary rewards, benefits and allowances, research funding and research infrastructure and lastly, workload allocation**.** Looking at these items, the section provides a description of how UoN rewards research and successful postgraduate supervision; and whether and how these notions are articulated in the relevant policy documents.

4.5.1 Promotion Opportunities

UoN policy shows that the university attempts to develop a research reward for academics. From the reviewed documents, under the human resource management policy areas, it is evident that, the university considers including research and supervision in the job description of academic staff, and ensures that each member of academic staff is evaluated and rewarded for his/her

research output and successful postgraduate supervision. Arguably, the university recognizes that use of rewards will attract, motivate and encourage academics to research, publish and supervise postgraduate students. Therefore, the University emphasizes the need to develop a research incentives budget that will be used to reward staff who publish papers in internationally recognized journals. The documents reviewed show some of the incentives mainly attached to research and supervision to include promotion opportunities.

Among the policy items discussed above, promotion appears to be one of the incentive opportunities attached to research and successful postgraduate student supervision at UoN. Apart from the policy documents, participants were interviewed to provide their views on incentives at UoN. A review of the promotion policy document of UoN and the interview responses show that promotion largely dependent upon the academic's research productivity and "wide experience in postgraduate student supervision", which is evaluated regularly (UoN, 2006a; personal interview, November 2012). This finding resonates with the results of the research of Bland et al., (2005), which established that research output is a key determinant of promotion. Documents show that, other key criteria emphasized on for promotion may include: "seniority", that is longevity in the academic ranks, "possession of advanced degrees", particularly PhD, in the relevant fields, and, teaching experience. From the documents, UoN has five ranks for academic appointment, that is, tutorial fellow/assistant lecturer, lecturer, senior lecturer, associate professor, and professor, the tutorial fellow level being the entry level (UoN, 2006a, pp. 58-59). Often, the different academic levels have different salary steps discussed further below.

The document analysis shows that, there are claims that the university "has clear criteria for promoting staff", that is, it is basically based on particular job qualifications (UoN, 2006a, p.8). Other than part-time lecturers, UoN has the rest of its academics working on a full-time basis. The permanent/tenure track based academics generally begins at this level. For promotion to a professorial position, PhD training is a key requirement. Teaching is also an important criterion, which may involve, teaching at undergraduate and postgraduate levels, research training and mentoring. Similarly, emphasis is on postgraduate student supervision, where the candidates need to have successfully supervised to completion a minimum of 3 PhDs and 5 Master's

students. Research publishing is also a key factor, since the academic has to have produced a minimum of six publications in refereed journals; or three publications in refereed journals and three chapters in scholarly books since the previous promotion. Lastly, evidence of scholarly activities or contribution, such as innovations, is rewarded at the university (UoN, 2006a, pp. 58-59;). Nevertheless, looking at the different requirements in the policy document, the academics interviewed stated that much emphasis during promotion is on peer-reviewed articles in internationally recognized journals (Personal Interview, November 2012). The emphasis on evidence of research productivity and graduate supervision at the different levels is consistent with the findings of previous studies in different contexts (Tien, 2007; Bayissa & Zewdie, 2011; Inglesi-Lotz & Pouris, 2011; Altbach et al., 2012).

Significantly, respondents reported that co-authorship with postgraduate students is strongly emphasized for promotion. To reinforce the above requirement, an academic staff member in the Faculty of Arts recalled that:

> *I would say that one of the challenges that I had during the interviews is that I had not published any publications with my students. So the committee highly regards co-authorships and we are being encouraged to do that. (Personal Interview, November 2012)*

Despite, the emphasis on co-authorship as a criterion for promotion, survey data shows that, only 5 .1 percent of the respondents had co-authored with the Master's or PhD student they had supervised to completion.

The emphasis on publications and successful supervision of Master's and doctoral students for promotion purposes seems to have encouraged academics at UoN to pay more attention to these outputs. This is evidenced in the interview excerpts below:

> *In the recent past I have put effort to engage in research to publish now that I know it's a requirement for promotion. (Personal Interview, November 2012)*
> *There are those academics that are just satisfied by that position, one who says that I must become a professor and they do whatever they are required to earn the professorship. (Personal Interview, November 2012)*

A dean in one of the faculties expressed his view as follows:

> *Just to mention, since when promotion was attached to student supervision recently, just three years ago, it has led to academics scrambling for students in my department and be available for consultations on the research projects. (Personal interview, November 2012)*

A consistent trend emerges when viewing outcomes of studies examining research behaviour and the expected incentive such as promotion. Ruscio (1987), states more than half of the respondents would undertake research and publish entirely for promotion. The above can be linked to the predictions of "Vroom's expectancy theory" (Vroom, 1964), that individuals are motivated when they believe that certain effort or performance will result in desired rewards (Lunenburg, 2011, p. 2). Therefore, as discussed in Chapter Two, universities can influence research behaviour through manipulating the reward structure of promotion (Fox, 1992).

Furthermore, as promotion is heavily dependent upon research productivity, academics face problems in publishing and research funding. To reinforce the above issue one dean's view was:

> *The research funding is a major problem, but it's also a dilemma because, in our promotion we are required to have published, if you look at the criteria for promotion, the Kagiko rules, its specifies clearly what is expected of you to move to the next level. You must have supervised you must have published and yet the research funds are a major problem. (Personal Interview, November 2012)*

From the above statements, it can be seen that universities have to support academics to publish and advance their careers through making research funds available. Generally, academics in African Universities, including Kenya, are faced with difficulties in publishing research works (Zeleza & Olukoshi, 2004). Reduced government funding, increase in student enrolment and increased student strikes have influenced research and graduate productivity negatively (Zeleza & Olukoshi, 2004; Tefferra & Altbach, 2004; Kiberenge, 2012).

Inasmuch as promotions are considered to be an important driver for performance, about half of the participants interviewed felt that the promotion system was not transparent, consistent and fair, and that it takes too long for one to be promoted despite having achieved high performance rating and met the promotion criteria. A senior academic in the Faculty of Veterinary Medicine complained thus:

I have gone through promotion [processes] twice since I had my PhD and I had a lot of pushing even after meeting the required criteria and the same applied to my colleagues in this department. (Personal interview, November 2012)

Literature suggests ensuring employees do not complain to have taken long to attain their career advancement promotion procedures for different levels need to be fair, objective and clear (Bland et al., 2002).

To conclude on the promotion opportunities at UoN, note must be taken that, based on the above analysis, there is compelling evidence that an incentive opportunity is reliant to a great extent on research productivity. Notwithstanding the weaknesses mentioned in connection with promotion opportunities at the university it was important to highlight the key requirements needed for promotion to the next academic rank. The next section discusses the monetary and non-monetary incentives attached to research and successful postgraduate student supervision.

4.5.2 Financial Allowances for Publications and Successful Supervision

Inasmuch as the review of policy documents shows that the university will set aside a budget of incentives for research and supervision, it is not explicit in the documents if financial allowances are directly attached to publications and successful supervision of postgraduate students. However, from the interview data, discussed below, it can be concluded that in some instances financial allowances are attached to research publications and supervision.

The incentives literature reviewed in Chapter Two established that, among other things, the use of financial rewards has, in some circumstances resulted in an increase in productivity (Lazear, 2000). Similarly, the principal-agent model predicts that, since workers are utility maximizers they will be highly motivated by the availability of financial rewards.

Generally, respondents interviewed believed that supervision at the University is seen as a de facto responsibility of academics; therefore no rewards need to be attached to it. To support this claim, a senior lecturer at the Faculty of Agriculture noted:

Supervision at the University of Nairobi is treated as a normal responsibility. (Personal Interview, November 2012)

However, further scrutiny of the interview data from the administrators and academics shows that apart from the promotion opportunities attached to supervision, financial allowances were attached to successful supervision of Master's and PhD students, particularly students in Module II programmes, where the students are 'tuition fee paying students. One of the deans interviewed stated that:

The staff are rewarded when they are supervising module II students who are tuition fee paying. This faculty has not developed a PhD programme that is self-sponsored we are still on the old programme [module I], but for the Masters we have developed parallel programmes. Various departments have developed Master's programmes that are self-sponsored, where students pay for supervision and the lecturer gets 30% of the total of the supervision fees. (Personal Interview, November 2012)

This type of rewarding of successful supervision of students in Module II programmes did not seem to be a university-wide practice, but one that was specific to particular Faculties and departments. This shows that some departments have more students on Module II programmes; as a result more income can be generated to support supervision. The provision of financial rewards for successful supervision of postgraduate students was also practiced in cases where student funding (by external sources) provided for a financial allowance for supervision. A lecturer in the School of Economics stated that:

(...) depending on who is funding the students there is some supervision allowance. (Personal Interview 2012)

Examples cited in the data where this kind of reward was given were the School of Economics and the Faculty of Agriculture (particularly the Department of Agricultural Economics). The respondents from these two entities mentioned that they received "supervision allowances" for the students who were on collaborative Master's programmes, mainly funded by the African Economic Research Consortium (AERC). Considering that this reward does not apply in all cases of successful postgraduate supervision, it is not unlikely that it may have a negative effect on non-beneficiaries, since it may turn out to be a dis-incentive. The reviewed literature

illustrates that for a reward structure to be attractive it has to be fair and systematically applied in the institution (Bland et al., (2005).

Besides the interviews, academics expressed the view that where there was a monetary reward attached to postgraduate student supervision, the amounts were minimal and therefore did not have a useful impact on productivity levels. Respondents generally regarded the amount as a "token". A lecturer in the Faculty of Arts expressed his dissatisfaction as follows:

> *The amount is too low to motivate anybody; it is miserable and has an insignificant impact. (Personal Interview, November 2012.*

As discussed in Chapter Two, monetary incentives for employees can be a dis-incentive and strictly result in decline in performance if they are not sufficient enough (Gneezy & Rustichini, 2000).

Following multiple principals in the university context, the National Commission for Science, Technology and Innovation (NACSTI, previously, National Science Council of Technology) has established a financial reward, ranging from $US 50 to $US 200 for academic researchers who publish their research in peer-reviewed internationally recognized journals. This reward is only attached to full peer-reviewed journal articles; while other scholarly publications such as books, book chapters, editorials, comments and editors' notes are not recognized. Essentially, the monetary reward has been put in place to encourage researchers, including academics, to contribute to knowledge production that is important for making Kenya a globally competitive and prosperous nation as envisaged by Vision 2030. Generally, from the data collected, the NCSTI was strongly commended for their recent strong support of research at UoN.

The above analysis shows that there are financial allowances linked to research publication and postgraduate supervision at UoN. Nonetheless, the financial allowances are said to be insufficient and the supervision allowance on module II is not widely applied across the departments. The next sub-section discusses the non-monetary rewards attached to knowledge production.

4.5.3 Recognition for Successful Supervision and Publications

The other incentives linked to research include non-monetary rewards such as recognition. Recognition may entail (a) recognition through "an outstanding researcher" award at a departmental level (b) recognition through appointment to the professor Emeritus position (c) pronouncement of names in public, such as during graduation ceremonies. These are discussed further below.

From the interviews with the academics, respondents indicated that the university recognized their performance in research publication outputs and successful supervision through, inter alia, public acknowledgement. A lecturer in the School of Business noted that recognition is through *"pronouncement of the names of the supervisors and particularly of PhD graduates by the Vice Chancellor during the graduation ceremonies"*. (Personal Interview, November 2012. Similarly, one dean indicated that in the Faculty of Agriculture "the people [academics] who have the largest grants are acknowledged by the Vice Chancellor during his speeches". Further, one respondent stated, "your name is known from the works you have done". Therefore, following the recognition in public, their scholarly works similarly earn them recognition amongst their peers and students as well, which also comes with improved status and respect. A professor in the Faculty of Agriculture acknowledged this enhanced status following the public recognition of his research productivity thus: *"there are changes in the way the students see me as a professor. For instance, you see students and my colleagues being more receptive with my suggestions and criticisms than when I was a lecturer"*. (Personal Interview, November 2012)

The academics noted that, through their research works, they have been nominated for particular tasks in the university, other governmental departments or in NGOs. These tasks may include heading committees or boards or other leadership tasks. Some respondents indicated that, they had been recognized for their outstanding research works, by being offered presidential awards. Following the above discussion, it is clear that the UoN offers non-monetary incentives for research. The next section discusses the benefits and allowances for academics.

4.5.4 Benefits and Allowances Available for Academics

Analyzed data shows that benefits and other allowances are also attached to research at UoN. The UoN research policy proposes the provision of opportunities to increase the human capital needed to conduct research and supervise postgraduate students in the university and in the country (UoN, 2008, p. 7). It recognises the critical role played by research and human capital in accelerating economic development in the country. According to the research policy, the university recognises that the above objective will be attained through opportunities and support for post-graduate and post-doctoral training programmes for both staff members and postgraduate students. Therefore, the policy documents reviewed showed that these efforts will be met through provision of benefits to academics, such as: (i) paid leave (ii) developmental conference, workshops and seminars (iii) provisions of study leave and sabbatical leave to conduct research at leading national/international institutions. These benefits are discussed below in detail, followed by the academic perceptions.

The theoretical framework of this study argues that benefits and allowances for good performance in teaching and research are key to the long-term objectives of the organization (Cameron and Pierce, 1997). Further, Jongbloed (2012), contends that academic compensation should be measured broadly to include the allowances and fringe benefits that academics receive above their basic salary. This study reveals that academics receive allowances and other benefits. However, only a few of the academics interviewed reported they received such bonuses. This finding is concurrent with the findings of Altbach, (2012), that provision of allowances and benefits to academics vary from country to country, and they are limited to a few individuals.

As mentioned above the documents reviewed show that allowances provided to academics include: housing allowances, transport allowance, and medical benefits. Except for the benefits stated above, allowances such as housing and transport allowances are entitled to each and every academic. Housing allowances, like academic basic salaries, are centrally determined through collective bargaining agreement. Like basic salaries housing allowances are awarded on the basis of the different academic ranks, status and seniority in the university. Evidence collected revealed that housing allowances entail provision for residence, housing subsidies and lower

interest rates on mortgages (Personal Interview, November 2012). The amounts attached to the allowances, particularly medical allowances are not systematically applied in the Kenyan universities, and even within UoN it varies from one college to the other. As it was signaled earlier, the differences in the allowances can be explained by income generated from the colleges, especially from Module II programmes. For instance, the college of Humanities and Social Sciences, was claimed to be the second or third richest in the university, following the large student enrolments on module II programmes. A senior academic who had been at the university for over 30 year noted:

> *These days if you were looking for such an allowances (service) they would assist but now it intensely varies on a college-to-college basis. It varies; also on how rich your college is. Some colleges are richer than others, that is, its pegged on Module II revenues…those colleges that are not richer have their disadvantage because in Module II the emphasis is on the number of students. (Personal interview, November 2012)*

The above respondent reported how income generation in the universities influenced, both allowances and benefits to the academics in the university.

The table below shows the housing allowance provided for the different academic ranks at the university, as per the 2012/2013 UASU salary tables.

Table 4.3

House Allowances of Academics as per the Academic Ranks in 2013/2014

Academic Rank	Amount (Kshs.)	Amount (US$)
Professor	70, 889	833
Associate Professor	63, 800	750
Senior Lecturer	56, 711	667
Lecturer	53, 167	625
Tutorial Fellow	49, 623	583

Note: Source: UASU salary tables

Particularly, in the Kenyan context, allowances and other fringe benefits are seen to successfully attract, retain and motivate the individuals with higher educational qualifications in the public sector including the public universities (KIPPRA, 2013, p. 73).

According to the interview data, academics believed that, in the 1960-1980s era, academics

could access many and high amounts of allowances and fringe benefits, which were unavailable to employees in other professions. Also, they enjoyed a high social status, with a substantial middle-class lifestyle, entailing houses in the "leafy suburbs of Nairobi and medical treatment abroad". To emphasize a senior academic in the School of Economics, who had worked at the University for over 30 years, explained:

> *In the early years of 1980s and 1990s, UoN, was considered to be one of the best employers then because of the fringe benefits that were associated with it above the salaries those times. (Personal Interview, November 2012)*

However, despite the shifts in the allowances over time, academics claimed, the medical allowances "have remained amongst the best in the country as they provide 100 percent cover and there are no limits". Document reviews show that, UoN "runs a non-contributory medical scheme for members of staff and their immediate families" (UoN, 2006b, p. 19).

The findings above resonate with the arguments in Chapter Two, that, in the early 1960s and 1970s, most governments in developing countries including the Kenyan government, were set to fully fund higher education, thus providing good wages and benefits to the academics, largely in support of the creation of human resources (Banya & Elu, 2001). Currently, reduced government funding has also negatively affected the amounts allocated to remuneration, allowances and benefits (see Wangenge-Ouma, 2008b). Currently, respondents were of the view that the 'terms of service' offered to the university academics would be unattractive to the young academics. Androushchak and Yudkevich (2012, p. 4) refer to this situation as having an "adverse selection effect" where the young academics opt for non-academic careers out of the university or seek for jobs in other universities abroad. Although, the allowances are argued not to be on par with the inflation rates, they account for the highest percentage of the gross salary.

Additionally, as shown in the policy reviews above, following the aim to increase human resources and research capacity, the university recognises the need to support academics, especially those on staff development to conduct research and publish their findings. This support, that denotes incentives for academics include: (i) paid study or research leave commonly known as "sabbatical leave". (ii) Grants for travel both within Kenya and overseas for

conferences. A number of the interviewed academics seemed to be satisfied with the sabbatical leave policies. From the document reviews, academics are liable to go on sabbatical leave after every seven years. However, the benefits of the study leave vary according to the duration of the intended studies (UoN, 2006; Personal Interview, November 2012). The above findings resonate with observation by Tien, (2007), who contended that policies for several universities in Taiwan, require professors to apply for sabbatical leave after seven years or for a period of six months, every three years.

Some participants noted that, although they had not been on sabbatical leave, they had confidence of accessing leave again in case they lodged their applications. However, it was important to note that, following the sampling bias in this study, most of the respondents in this study were senior academics that qualified for sabbatical leave. Consequently, about 59 percent of the participants indicated to be satisfied with the availability of sabbatical leave. The proportion of academics seemed to be satisfied with the policy on sabbatical leave was high compared to findings by Bennett et al., (2013), in an Australian context that revealed only 32 percent of the academics in the survey sample indicated they could access sabbatical leave. Bennett and colleagues thought their results were surprising following the high numbers of tenure-track staff in the sample.

However, responses from the structured interviews showed that, in the recent past, a small number of academics had taken sabbatical leave. To explain the above observation, one of the respondents felt that some of the reasons that have hindered academics to go on sabbatical included (i) perpetual overload of teaching and administrative work and understaffing in the university (ii) reduced numbers of collaborative links with other universities or research bodies (iii) reduced funding of research especially the research visits (Personal Interview, November, 2012).

From the policies linked to incentives at UoN, it is clear that support to attend conferences is one of the incentives for academics at UoN. The university recognises the need to support both academics and students through conferences, workshops and seminars. Therefore, the university acknowledges the need to ‘organize, co-ordinate and support regional or international

conferences within given intervals' (UoN, 2008). Given the above policy items, respondents were asked to rate the availability of conference funds. Like, research funding, availability of conference funds were very poorly rated in its availability, with over 91 percent of the participants. In general, travel funds to conferences were seen as inadequate in the university. Despite the policy items indicating support for conferences, participants' perceptions showed that, the university lacked "appropriate procedures in place to facilitate attendance/participation in conferences". Further, the written responses, to some extent showed unavailability of the travel funds in the university. One of the senior lecturers noted that,

> *I have been to US conferences on my own … most of the time the university will not give you the resources" despite the claims of a vault for conference funds. (Personal Interview, November 2012)*

The evidence collected from the structured interviews revealed that, among other factors, decline in funding to the universities, could as well as have decreased the allocations made to the conference vault, thus prioritizing other university operations (see Mutula, 2002; World Bank, 2010).

Lastly, apart from the renowned allowances and benefits, academics at UoN can access retirement benefits. Retirement benefits are eligible to senior academics that are mainly on permanent and pensionable terms of service (UoN, 2006b). Unfortunately, views of respondents' were never collected in regard to the retirement benefit.

From the above section, it can be seen that academics are eligible to several benefits and allowances at the university, including, housing and medical allowances, paid study/sabbatical leave, travel funds to conferences and retirement, to mention but a few. However, despite the variety of the benefits, the major perceptions of the academics were about the inadequacy and inconsistency in availability of these funds. The next section provides a discussion on the allocation of funds and resources for research and postgraduate supervision.

4.5.5 Provision of Research Funds and Research Infrastructure

This section discusses the ways in which the university, through the university grants committee, has resorted to funding and allocating resources for research. Therefore, it provides a discussion on the availability of research infrastructure and facilities at the university, as well as the internal research-funding scheme, and if any, other sources of funds for research.

4.5.5.1 Availability of Research Infrastructure

In terms of support of research, the policy documents reviewed showed that the university recognises to improve staff qualifications, and to ensure participation in research and increase the enrolment of Master's and PhD students, necessarily requires strengthening of the university's research infrastructure. Some of the infrastructure and facilities singled out in particular in the university policies, that needed to be provided and strengthened included: Website, ICT (computers, networks, communications, research software), Library, Laboratories and laboratory equipment, Houses (animal-, green- etc.), Vehicles, Research farms. These efforts may also include academics recommending and submitting requests for relevant research journals and books through their departments/faculty/ college (UoN, 2008).

Looking at the above policies linked to incentives for knowledge production, research infrastructure and facilities are seen as a key support factor for research and postgraduate supervision. The question of provision of facilities and resources to enhance research productivity continues to dominate the literature (Blackburn & Tien, 1996; Tien, 2007). According to the literature reviewed, availability of state-of-the-art equipment would result in academics engaging in cutting edge research, present papers at international conferences, publish refereed articles in international journals, gain research patents, and look for research grants and supervise students (Hazelkorn, 2008). Also, Jongbloed (2012, p.6), agrees there is need to balance good pay, "with a package of non-financial rewards—such as facilities for personal development and a reasonable degree of independence in carrying out teaching and research tasks" for countries/universities to attract and retain talented people. Similarly, according to the theoretical framework of this study, the principal-agent model predicts that in order for the

Universities to accomplish their mission of knowledge production, there should be research resources provided to the academics to support them in the research tasks (Sappington, 1991). Notably, several previous studies tend to indicate that there is correlation between research facilities and resources and knowledge production (Blackburn & Tien, 1996; Bland et al., 2006; Jongbloed, 2012).

Respondents were asked to express their perceptions on the availability of these resources for research and postgraduate student supervision at UoN. The general impression based on the data was that there are facilities and resources available to support research and postgraduate supervision. The majority of the participants rated the availability of some resources for research highly. The participants were satisfied with the existing library resources, with Internet connectivity and with the paid sabbatical leave/leave study. The satisfaction with library resources was particularly interesting because "*the University has introduced some electronic books and journals and nowadays they ask academics to recommend some of the books they need*" (Personal Interview November, 2012). However academics highlighted some of the issues that limit the resources provided at the university. Many of the respondents described the available resources and facilities for research as inadequate, obsolete and poorly maintained. Some of the resources said to be available but proved to have several insufficiencies included equipment, infrastructure and limited office space, travel assistance to conferences, start-up research funds. At closer scrutiny the data revealed that respondents in the college of Agriculture and Veterinary medicine mostly raised the complaint about lack of research infrastructure and facilities. Altbach and Boyer (1994), explain that pure science oriented departments might need equipment and laboratories more than their counterparts in the humanities and social sciences. The complaint about lack of office space was apparent more in the college of humanities and social sciences, where academics mostly share offices or have no offices at all. According to Bland et al., (2002), ample office space is important for academics to prepare their research and consult with the students. In the structured interviews, participants stated that administrative support was inadequate, as well as inadequate numbers of research and teaching assistants. Generally, a substantial portion of the respondents in the sample thought they received a poor level of administrative support. Following the above insufficiencies raised in relation to research infrastructure at UoN, it can be agreed that such situations manifest in other African Universities

as well (see Ajayi et al. 1996). It has been argued that, inadequate funding has limited most African universities to invest in research infrastructure, research facilities and equipment, hence negatively impacting the research output. Therefore, this aspect could also explain the minimal contribution of Sub- Sahara African universities to the international research output (see Cloete et al., 2011).

Following inadequate research infrastructure and facilities, academics make their own arrangements to purchase the facilities using the monies from their research grants or the consultancies. As expounded by a senior academic staff at the faculty of Veterinary Medicine –

> *The University has never bought anything. All that we do is that we buy the equipment and facilities mainly from the research grants, or money from consultancy, we call it income generation. The grant comes through the University and you buy all this equipment through the University system, and not that the University as an institution purchases the equipment. For instance I have bought equipment from a research grant so that is how it works. For our postgraduate students the equipment was donated by NORAD in the 1970s, the University has not bought any since then. (Personal Interview, November 2012)*

In the above quotation, the influence of donor funding and other income generating efforts on research referred to earlier research grants. The respondent reported that equipment was bought through provision of research infrastructure and research facilities.

Furthermore, participants were asked to express their views on how the necessary resources impacted their research and supervision, and the excerpt below illustrates their aggregate view:

> *In terms of e-journals we have good links in the department […] I can easily access the articles on my computer since the university subscribes to the articles so, on that I actually give the university credit. Our library is fairly stocked; the process of restocking is there where we are asked of the books that we as a department/academics see that need to buy those of us who do that have helped the library stock what we need and the students are able to access e-journals, I think we are not doing badly. (Personal Interview, Transcript, November 2012.*

Notwithstanding the above-mentioned observations on the positive research support by the UoN, it was also mentioned that dis-incentives existed that discouraged academics from engaging in research and publishing. Some of these dis-incentives are discussed in the sections below. The next section provides a discussion on funding of research and PhD training.

4.5.5.2 Availability of Research Funding

From the reviews of the policies, research funding was found to be one of the incentives linked to research and postgraduate supervision at UoN. Globally, universities have established research funds to support research and postgraduate training. UoN, like other universities, recognises the need to establish a university research fund to promote research activities, thus, it has also established and manages a 'dean's committee research grant'. In part, the UoN's research policy takes note of establishing a university research fund, "to financially support research on a competitive basis by the provision of short and long-term fellowships and competitive grants for research (UoN, 2008, p. 7). The main purpose of the research grant is to support research and capacity building in priority areas in relation to the National Development targets –mainly the Vision 2030- and the University of Nairobi Strategic Plan. The university intends to reinforce a vibrant research culture through the funds.

According to one dean who was interviewed, the university invests between Kshs. 500-800 million per annum for research purposes. The way this research grant works is as follows: the research grant funds projects to a maximum of Ksh.250, 000 (Approx. US$ 2941) per year for a maximum period of three (3) years. The structured interviews and documents showed that some of the individuals eligible to get the grants include: (i) employees of UoN, in particular early career researchers/junior researchers (ii) UoN academics on staff development undertaking postgraduate studies at the university, and (iii) fulltime postgraduate students registered at UoN, if their applications are lodged by their supervisor. As noted earlier, the research grant is allocated through a competitive process and funding for continuing projects is subject to the satisfactory progress of the project and regular financial reporting. In relation to the allocation of the fund, project funds are disbursed annually in two installments of 60 percent and later 40 percent on satisfactory progress. Some of the items that the grants can cater for include: (i) consumables/expendable supplies of equipment (ii) documentation (iii) local travel for field trips and conferences (iv) extra personnel such as research assistants, and (v) other costs.

As was indicated in the literature review chapter, there is strong correlation between the availability of research funding, research productivity and publishing (Bland et al., 2006).

Participants were asked to give their views on the sources of research funding in the university, and varied responses were received. Despite the policy initiatives signaling the efforts by the university to provide funding for research, one of the participants felt that the funds available were too negligible and had little or no significance especially for the senior academics. One of the deans noted that:

> *The dean's committee research fund is meant to support the junior academic staff on staff development. The amount is usually very small, It's just a token fund, where the academics are given Kshs. 250, 000 in a year and when they progress on well with their research projects they are allocated the remaining amounts…These amounts might not interest the senior researchers because we are talking of an amount so little, just for junior scholars like people who are doing their PhD on staff development and they are academic staff here, those are funded. So it's for the junior academics and the amount is just a token. (Personal Interview, November 2012)*

In the respondent's view research funding at the university is prioritized for the junior academics while, senior researchers are required to write proposals and acquire research grants from donors, at times from consultancies. With the above respondent acknowledging limited funding offered for research, such observations seem to manifest not only at UoN, but also in other Sub-Sahara African countries. For instance, the World Bank (2008b) notes that funding for research has decreased in the recent past following shifts in priorities to basic education, health and infrastructure development. The World Bank (2010) concludes that the soaring student enrolment and decline in the expenditures per student, also contribute to the limited funding, with higher allocations being made to teaching instead of research and undergraduate study instead of postgraduate training. Inasmuch as the university does and is expected to generate income and fund research, the money from module II programmes is said not to be sufficient to pay the academics, run the university operations and fund research (Personal Interview, November 2012).

Furthermore, according to one respondent, the funds lacked consistency in its allocation, since it took long for consequent disbursements of installments. A dean in one of the Faculties commented:

> *The research fund is a token and those ones with substantive appointments who get that fund maybe got those funds in past but recently very few. I haven't even seen since I assumed this*

office [three years ago] any of our substantive staff get that [fund]. (Personal interview, November 2012)

In the structured interviews it was reported that, for the researchers who receive funding from the university, variance exists across the colleges/faculties/schools and departments. As signaled earlier the above differences can be explained by variances in the income generated on Module II programmes in the different colleges. A senior academic also pointed out that funding for research comes from other external sources such as the government, particularly, the National Commission for Science, Technology and Innovation (NCSTI). To explain the above views, one of the deans expounded:

But apart from funding from the university, which is minimal, lecturers also access funds from outside. The NCST also gives research grants, so our lecturers also have access to government funding. Lecturers also write proposals to various donors and get funding. Some lecturers are even innovative; they can do library research and publish. It also depends with the profession, for example if you are in literature you need to be more creative to come up with a book or with some publishable document. And if you are in sociology you might do library research although many reputable journals may not accept an article based on secondary data. (Personal Interview, November 2012)

From the above extract it can be seen that sources of funding of research at UoN, like in other universities, are varied. Apart from the government and university as key sources of funding for research, donors are also acknowledged for their role in funding. However, despite the recognition by the government to fund research, particularly social research, it is argued that in the recent past the government had not released up to 1 percent of its GDP to research, compared to its counterpart in the developed countries at 10 percent. This explains why most of the discoveries are from the developed countries.

The sources of funding also vary within and between the colleges at UoN. The responses from the structured interviews showed that academics in the faculties of Agriculture and Veterinary Medicine were the main recipients (about 58 percent) of research funds from the government bodies such as the NCST. This differs with the academics in Faculty of Arts, School of Economics and the School of Business of whom at least 40 percent did not receive research funding from the government. The research themes/focus areas of the different research projects could explain the variance in the funding of research in the Faculties. According to the

university's research policy, reference is made to conducting "research in areas where new developments promise to offer and address the salient problems constraining development initiatives in Kenya and Africa" and to "major priority areas within the university research framework [and] global agenda" (UoN, 2008, p. 5). Therefore, as shown in the above extract, academics in the Faculty of Arts, for instance have to be 'creative' and find ways of conducting research and publish. Additionally, it has been revealed that the main sources of research funding to the university are from external donors. From the statistical data, the majority of the academics, around 67 percent, reported they received funding for research from foundations such as the Ford Foundation, Rockefeller foundation and the Carnegie Corporation. The majority of academics receiving such funds came from the humanities and social sciences. Some academics (21 percent) stated that they obtained funding for their research from 'other' sources such as business firms, industries, and other international organizations, such as the European Union. The collected data revealed that the challenge that academics faced with donors/external funding is that, donors often have their own interests, thus the academics might not come up with publishable data with negative results that affect the research output in the university.

Furthermore, academics viewed the fellowship and scholarship for research available to them ambivalently, with over half of the participants (58 percent) not satisfied with its availability. Academics felt that, inasmuch as the university provides some funds for PhD training, the amount of money is too small to be of great significance to the research projects. As signaled in the literature review, and according to the World Bank (2010) poor funding reduces the incentive to attract and retain academics in the universities who are required to research and supervise postgraduate students so as to produce knowledge for national development. Another key aspect raised by academics funded on staff development, was that they were faced with limited time to conduct and complete their research projects in time.

The above analysis shows that the UoN has made attempts to establish research funding for academics. This funding involves a competitive internal research-funding scheme provided mainly for the junior scholars and the academics doing PhDs in the university. The issues on time resources in terms of policy and academic perceptions are discussed in the next section.

4.5.6 Allocation of Time Resources for Research and Supervision

Looking at the policies linked to incentives for research and student supervision, time resources are indicated as one of the key incentives at UoN. The documents reviewed showed that the university advocates a "balanced work load" for the academics (UoN, 2008, p.15). In order to achieve the mission and vision of the university, the university expects its academic staff to "balance their time resources between activities that contribute towards each mission area of the university" (UoN, 2008, p. 15). To achieve this aim, the university suggested that a "capacity matrix" would guide academics to allocate their time appropriately. The allocations of time resources for the different activities that contribute to the mission areas of the university were outlined as follows: Teaching and learning (25 percent); Research (30 percent); Research and development (20 percent); Consultancy (10 percent); Administration (10 percent); and Extension (5 percent). From the above allocation, it can be seen that the percentage of time allocated to research is considerably higher, relative to the other activities. The above allocations of time may be 'tailored' for different departments, since some departments are argued to have little or no research and development function (see UoN, 2008). The capacity matrix for time allocations to some extent relates to the research and teaching load allocated to academic researchers in the university.

According to the university policy above, it is evident that the university envisages there will be a balance in the time allocations between the different functions of the university that are teaching, research, service and consultancy, in order to attain the mission of the university. However, from the analysis of the interview data, the views of the participants were not in line with the above policy items. The interviewed respondents felt that insufficient time allocation for research and supervision was a major constraint that curtailed productivity. Similarly, heavy teaching loads were closely related to insufficient time resources available. A senior academic remarked that, the university does not provide blocks of time for research, therefore, "academics have to create time in the midst of heavy teaching loads to engage in sensible research".

Kyviik (2009) argues, the availability and proper distribution of limited resources, such as; time is key to achieving the desired productivity. From the structured interviews with the academics,

both teaching and administrative work appeared to be conflicting with research and student consultation time. Similar to the above observations, are major debates in higher education on whether teaching and research are complimentary or competitive to each other. Some authors argue teaching is more competitive than complimentary to research (Altbach & Boyer, 1994). The Respondents noted that time, as a resource was limited in the university. The following quote illustrates this point:

> *Considering that I am doing other administrative activities apart from classwork [teaching], such as chairing committees –environmental, ICT- member of curriculum review programmes, assisting the chair [man] in timetabling, member of task forces – tree planning, committee of examination of thesis – board of external examination of thesis and internal examination of thesis…. in other words this is why I am talking of heavy workload even without research work and travelling to the fields to supervise the students. (Senior academic, Personal Interview, November 2012)*

The above quote illustrates that both administrative work and teaching consume much time of the academics. Depending on the department and the position in the academic hierarchy some academics teach many courses, which consume a large portion of their time. A senior academic and former head of department indicated that this situation can be a dis-incentive for academics to engage in research, consult with students and publish. He stated that:

> *There are some people [academics] who teach evenings from Monday to Saturday so time is a challenge because there are some people who may opt to teach and not do any research … But you see younger people who are also not attracted to the consultancy world … if you are young then you may want to just teach … so time is a constraint for some people especially the young scholars. (Personal Interview, November 2012)*

The above quotation denotes the earlier argument made on many programmes to teach at both Module I and Module II. Teaching as a function was deemed to be demanding. With particular reference to student assessment, academics noted that it is not only time consuming but it is also a continuous process that is rigorous and can take a long time. A senior academic in the Faculty of Arts commented:

> *Teaching is really engaging, you teach - you mark … and I would say and I am now also talking as a former chair of the department, which is very busy. If you try and teach in sociology you will make some money because the classes are large but you will not do anything else … Of course the size of classes and the frequency of examining is too high … we examine after every three*

months and you mark, and the modules are too many … I am talking of Module I, II and III. (Personal Interview, November 2012)

Time is a very important resource in research. Academics that are active in research need time to read, write and re-write, to collect and analyze data, to conduct fieldwork, establish networks with other researchers nationally or internationally through the use of technologies or by attending conferences, seminars and workshops. Several activities that could be argued to explain the research dimension are described in relation to time. A senior academic staff member in the Faculty of Arts stated that:

If I have to engage in research in this university I have to apply for research grants … it requires time to collect data analyze and get to write a report, to create and develop research networks…you need to have time to attend seminars and workshops I need that time. But where do I get that time given the kind of teaching that we to do in this university. (Personal Interview, November 2012)

Nevertheless, the interviewed respondents who conduct research indicated that they enjoy research. It is time consuming but at the same time it is satisfying. Academics noted that they find pleasure in producing knowledge. Some academics indicated they were 'stealing time' from other activities in order to focus on research. Academics make deliberate decisions to distribute and organize their time in a very strict manner in order to devote time to research and consultancy. A senior academic in the Faculty of Arts noted that:

My case is a bit different when I talk about time. You remember I told you I teach only two units during the day and two during the evening, I did that by choice because I want to reserve time for research and consultancies […] this year I have not done any research, I have not done any consultancies, I have found myself with more time to sell but I didn't have a lot of work but still I insisted I still needed my time to keep trying here and there for consultancies or research money. (Personal Interview, November 2012)

In relation to the above quotation, the statistical data established that over 70 percent of the respondents reported that the "university or department encourages them to arrange their administrative and teaching commitments to allow time for research, publishing and supervision". This is in agreement with the policy items on a balanced work load as discussed above. Academics noted, as much as they engaged in research consultancies in the University they were not able to publish the works because of time constraints together with other

conditions demanded by the research funders. Closely related to time resources, is workload allocation for the academics in the university discussed in detail in the next section.

4.5.7. Workload Allocation

Subsequent to the description in the policies linked to incentives, allocation of workload in the university is one of the key areas that incentivize academics to research and supervise postgraduate students. In the same way as the allocation of the time resources, percentage of workload is spread across the key duties of academics including research, teaching, consultancy and service. The documents that were analyzed showed that a balance between research and teaching load was required of the university to meet its goals of production of knowledge for national development. For instance, it has been suggested that the general load should be 70 percent research and 30 percent teaching for research institutes. On the other hand, for academic departments to observe the balance between research and teaching load, their schedule should consist of 30 percent research and 70 percent other mission-oriented activities. Similarly, academics are to be allocated students for supervision based on the "teaching load, administrative duties and supervision experience and capacity" (Commission for Higher Education [CHE], n.d., pp. 19-20). The maximum number of the supervision load in an academic year indicated to be (i) Master's – 5 (ii) Doctorate – 3. The statistical data analysis showed that, on average, at least 18 percent of the interviewed academics were currently supervising 4 Master's students; and 44 percent were currently supervising 2 doctoral students. This shows that those respondents were still within the limits of the intended supervision load.

The relevant literature reviewed in Chapter Two showed that, manageable workloads in terms of staff: student ratios and ample class sizes are incentives to academics (Herbst, 2007). Despite the policy initiatives on balancing academic workload, academics felt that a heavy teaching load, to some extent administrative work, is a hindrance to academics that want to engage in research and supervise postgraduate students. This challenge was commonly stated across the two selected colleges for this study. This finding is consistent with the observations made in several studies, indicated in the literature review that teaching load was found to be one of the strongest negative

predictors of knowledge creation productivity (Smeby & Try, 2005; Chen et al., 2006; Hemming et al., 2007; Hassan et al., 2008; Hardre et al., 2011).

Similarly, work load particularly teaching load, was operationalized as full-time equivalent (FTE) student: full-time equivalent (FTE) staff ratios in this study. Like other African Universities, the student: staff ratios at UoN steeply increased from 13:1 in 2001 to 18:1 in 2007; followed with a subsequent increase to 36:1 in 2011. There was an increase of about 50 percent in the student: staff ratios between 2007 and 2011. The student: staff ratios at UoN were reported to have unfavorable ratios (36:1) by 2011 relative to other universities such as Cape Town and Dar es Salaam (15:1 and 17:1 consecutively) (see Bunting et al., 2014). Arguably, the increase in the student: staff ratios, leads to increase in academic workload. One of the main reasons that explain the increase in the ratios is the rapid increase in the student enrolment at the university, particularly on Module II programmes (see section 4.2). For instance, Pillay (2010), comments that in 2008/2009 there were over 40, 000 students enrolled at UoN, 16, 000 on Module I programmes and 33, 000 on Module II. Also, yearly, the faculty of Arts at UoN is reported to admit 850 students on Module I programme and 1, 200 students on module II programme (UoN Website). Despite the increase in the student: staff ratios over the years, in the structured interviews, participants argued that, when they refer to heavy teaching load, it doesn't necessarily imply large class sizes, but rather the several different programmes of students at UON, that is, Module I, Module II and Module II. In the interview responses, a respondent stated, "Heavy teaching loads at UoN are because of too many groups [Module I, Module II, Module III"], however the class sizes are normal". Although, the collected data shows that on average the class sizes range from 200-600, which could very well be large. The above claim resonates with the examination of Wangenge-Ouma (2012, p. 213), in the "public by day, private by night" as the respondents explained they have to teach Module I students during the day and most of the Module II classes are conducted in the evenings (Wangenge-Ouma, 2012).

To expound further on the issue of heavy work load, the evidence collected showed that amidst a heavy teaching load, UoN suffers a shortage of permanent staff and teaching assistants, thus sometimes academics are forced to teach several courses/classes (Personal Interview, November 2012). The analyzed data revealed that few participants, about 15 percent, reported that the

university provides well-trained teaching assistants and research assistants. In several instances, academics had to make their own arrangements with their PhD students they were currently supervising to assist in research and teaching (Personal Interview, November 2012).

The discussion on the availability of time resources signaled a relationship between research time and teaching load. To expound the following quotation illustrates how heavy teaching loads limits research time at the university. One of the participants noted that:

> *Finding time to engage in research is difficult; the university has bogged us down with a lot of teaching. We are fundamentally becoming just classroom teachers, teaching and marking, supervising, these have become like a 24hr job for us (Personal Interview, November 2012). Following the heavy teaching loads at UoN you have to single handedly work and create time for research. (Personal Interview, November 2012)*

In the above quote the influence of the teaching load on research is evident. Further, the above sentiments can be related to the claims by academics that, at UoN there is emphasis on teaching more than on research. A senior lecturer indicated, "*here the university is happy with you if you teach more*" (Personal Interview, November 2012). Thus, the named circumstances limit academics to engage in research and produce human capital required for national development.

Furthermore, apart from the said increase in student enrolment, the rise in private universities has also influenced teaching loads in the public universities. Private Universities, it is argued, have insufficient academic members, thus they tend to use the academics from the public universities to teach on a part-time basis (Oketch, 2009). However, academics in the public universities largely look at it as an opportunity to supplement their meager salaries. If the claims of heavy teaching loads in the public Universities are considered (Mwiria et al., 2007), the additional load from the private Universities can be straining the academics thus they are left with minimum time to supervise postgraduate students and engage in research.

In conclusion, despite the above claims on heavy teaching load illustrated by increase in student: staff ratios over the years, the study by Cloete al., (2011) seem to suggest the student: staff ratios are low in relation to other disciplines such as Science, Technology and innovation, except for business management. Therefore, the above authors argue that the universities should be able to

produce graduates in STI whose skills are critical in the knowledge economy. However, despite the argument of some favourable conditions and incentives available to encourage academics to engage in research and supervision of postgraduate students, despite the insufficiencies, this study revealed that there are dis-incentives as well. The following section discusses the various disincentives for knowledge production**.**

4.6 Competing incentives for knowledge production

This section provides an analysis of how available competing incentives impact the engendering of the research culture. Considering that academics tend to have multiple principals who incentivize different outputs (research, consultancy reports, extra teaching), these incentives may conflict with the incentives meant to reinforce research behaviour. Academics may focus on other activities that might not contribute to the mission areas of the university as intended by the principals. The main focus of this study was to understand the knowledge producing incentives, but these competing incentives reinforce non-research behaviour, hence will be analyzed in detail in this section.

The data collected shows that apart from the research-related incentives provided by UoN, there exist 'competing incentives', which may not necessarily reinforce research behaviour. As noted in the above sections, academics work within an environment where multiple principals including the university itself, the research council and the government make attempts to reward research, although they are largely perceived to be inadequate. For instance, on one hand, academics talk of limited research funding, limited fellowships and scholarships and inadequate financial allocations on research publications and postgraduate supervision. On the other end, there are claims of large amounts offered for extra teaching and research consultancies. In the cases described above we could argue there are competing incentives for academics. Therefore, following time constraints that academics are faced with, as indicated in the above sections, they constantly make 'trade-offs' in terms of which incentives to respond to. From the structured interviews, a senior academic noted:

> *So you are paid so little, then there is no research money and the challenges of time. So what is really an environment conducive to working? Here we are employed for two things we teach and*

do research, but there is no research money and salary for teaching is very small. So we go out to look for our own income through consultancies and teaching on module II, which tend to be attractive. (Personal Interview, November 2012)

In addition, one lecturer stated:

The salary here is ridiculous, this is something that is in the press, this is an open thing, Universities in Kenya pay very little, and that is why people are running around making money from other sources, teaching overloads on 'Module II', teaching courses elsewhere. (Personal interview, November 2012)

From the above extract, academics given the weak nature of research-related incentives, academics favorably get attracted to other 'complex and contradictory' non-research incentives offered to them. The above finding resonates with the observation of Altbach et al., (2012) who stress that elements of academic salary might include constructs of both basic salary and income supplements, as academics will earn their income from other sources such as consultancies to augment their meagre salaries. Similarly, the principal-agent model assumes that employees being utility maximizers will make rational choices mostly guided by opportunity cost, therefore, they will "look out for themselves" i.e., other means that are attractive and have the possibility of increasing their income.

The additional payments academics earn on extra teaching on the full fee paying stream in the university is claimed to be a great incentive for academics. Similarly, in their study, Altbach et al., (2012) noted that academics are attracted to teaching overloads in the university to earn extra money. Hence, Income generation at UoN through innovation of Module II programmes, followed by remuneration for academics who teach on these programmes has resulted in academics taking up heavy teaching loads, with the aim of earning the revenue and supplement their incomes. To some extent, the proliferation of private universities, which, largely rely on academics from the public universities, imply that academics teach extra loads. Statistical data shows that, about 63 percent of respondents engage in extra teaching, of whom, around 84 percent teach within the university, and 16 percent teach outside the university.

The significant rewards attached to consultancies and additional payments for extra teaching are so attractive to the academics, they may reinforce non-research behaviour in the university. To illustrate,

> *And there are some people who teach evenings from Monday to Saturday (…) these are some of the people who may opt to teach and not do any research. And then there is an attraction there because when you teach Monday to Friday you are assured of that money, when you refuse to teach and go out looking for either research money or consultancy it's risky because you are not sure … since this is money that is assured they [academics] will want to teach more. (Personal interview, November 2012)*

From the above extract it is evident academics make choices to engage in extra teaching and consultancy for the incentive. However, intensive research required for publishing in international peer-reviewed journals and postgraduate supervision, becomes a poor competitor against the time of extra teaching and consultancy. That is, academics have limited time to teach students, engage in research and supervise postgraduate students. Responses to the structured interviews showed that, it's much easier and more rewarding to teach extra loads at the university and conduct research consultancies than publish and supervise postgraduate students. These findings are consistent with those of Migosi et al., (2012), who observed that 72.5 percent of the academics agreed or strongly agreed with the statement "teaching is more important than publishing". Also, in the same study, a large proportion, around 78.4 percent, agreed or strongly agreed with the statement; "I will rather spend my time as a part-time lecturer than on writing an article" (p. 119). It's unclear in the above study why academics were of this view, however, I would say, based on the impressions from this current study, the 'incentive' attached to extra teaching would attract them.

The statistical data shows about 88 percent indicate they receive payment for the extra teaching. However, in most instances, academics claimed that the amount was an "honorarium" for the "service courses" at the university. The academics argued, the amounts were too little in relation to the workload. The study revealed that academics are paid 30 percent of the money earned on module II programmes. The majority of academics were not satisfied with these amounts as they claimed they were low compared to the revenue the university makes from the programmes. Scrutiny of the data by ranks shows, only a small proportion of the respondent who teach the extra classes are full professors (6.3 percent), associate professors (8.3 percent), senior lecturers (13 percent; while the majority being the lecturers (31 percent). Some interview respondents felt that the lecturers at the entry level in the university were not able to attract research consultancies or research grants. Hence opting for "*teaching overloads especially on the evening programmes*" (Personal Interview, November 2012).

Extra teaching and payments vary greatly in the colleges that were selected for this study. Of the academics reporting they were paid on extra teaching majority of the academics 37 % were from the Faculty of Arts; 30 %, from the School of Business while 12 % were from the Faculty of Agriculture. This finding can be explained by high numbers of students on Module II programmes in the named faculties (Personal Interview, November 2012). The Dean further declared that, unlike other faculties that depend on additional payments for extra teaching on Module II programmes, the academics in the Faculty of Agriculture rely on research grants for their sources of 'extra' money (Personal interview, November 2012).

The gathered data revealed that some respondents reported although they were faced with weak research-related incentives, they would not leave the university as they utilize their current status and positions at the university to win research grants and research consultancies. This observation can be linked to the suggestions of Langa (2010), who contends having a strong academic network link, together with research publications is a key determinant for academics to be allocated research consultancies. Interestingly, Langa discovered in his study that it is not that academics choose research and postgraduate supervision over research consultancies, but rather, some academics 'balance out' research and consultancy, while others tend to be intensely involved and dependent on consultancies and foreign aid networks (Langa, 2010). The anticipation of balancing research and consultancy, could explain why consultancy is seen as one of the key research activities that has "great potential … to contribute towards national development (UoN, 2008b, p. 3). Inasmuch as the university and the government expect the academics to 'balance out' these activities, they fail to do so as a result of time constraint and the element of competing incentives that exist between them.

An analysis of the gathered data shows that, the majority of the academics who were involved in consultancy projects, were lecturers (31 percent), senior lecturers (21 percent) and full professors (12 percent). In relation to the Faculties, 21 percent were from the Faculty of Arts; 26 percent from the School of Economics; 12 percent from the School of Business and 16 percent from the Faculty of Agriculture**.** From the responses in the study it can be concluded that academics will be attracted to competing incentives in their environment owing to, among others, insufficient

knowledge producing incentives such as poor remuneration, limited access to research funding and sabbatical leave. While the question of engagement in consultancy by academics at UoN remains such findings seem to manifest in other countries. For instance, a study conducted in the SADC region in 2008, by the Centre for Research on Evaluation, Science and Technology (CREST) in 14 countries, revealed that the majority of the survey respondents indicated they engaged in some consultancy work. When asked about the type of the consultancy they were engaged in, the respondents responded among those groups whom they consulted included: (a) governments in their countries, (b) the industry sector in their country, (c) academics in their country, (d) academics in other African countries, (e) academics in non-African countries, (f) governments of other African governments, and (g) industry in other African countries (Mouton et al., 2008). This shows that there are multiple principals who are offering alternative incentives to academics. Similarly, the reasons established in this study as to why academics engage in consultancy are consistent with the findings of Mouton et al., (2008). Their research revealed that academics engage in research consultancy for the following reasons: (a) Inadequate salary (b) consultancies advance their network and career (c) respondents' interests were not being met by their institutions (iv) consultancies improve knowledge and skills.

The implication of the above discussion is that the existence of competing incentives for academics can reinforce non-research behaviour, especially within a context where the knowledge producing incentives are weak. These factors result in a weak, output-oriented culture of research and Master's and Doctoral production**.** In this environment where academics are faced with competing supplements, the question arises, how does the government re-organize the incentives so that the knowledge producing incentives become more attractive? Altbach et al., (2009) argue, globally, the academic career is flexible. Therefore, this study has argued it is in this flexibility of the academic profession that the incentive regimes become important in aligning them (Shapiro, 2005), to the core mission of the universities, teaching research, innovation and service.

In conclusion, considering the weak nature of the research-related incentives, the academics at UoN seem to be more attracted to the non-research incentives because: (i) the magnitude of the competing incentives is greater than that of the knowledge producing incentives (ii) the non-

research incentives are easily accessible compared to those of knowledge production, and (iii) the poor socio-economic conditions of the average academic in Kenya reinforces the attraction to these non-research incentives.

4.7. Incentives: Theoretical Explanations to the Empirical Findings

This section provides an analysis that links the findings of this study to the main predictions of the principal-agent model. These explanations, using the economic principals provide an understanding of the incentives linked to research in the higher education context.

This study has established that multiple principals exist who are responsible for providing incentives for academics at UoN. Ntshoe and De Villiers (2004), claim that, in higher education "the identity of the principal is indistinguishable" (p. 19). The question paused always is, 'who is the principal'? Like other higher education contexts at UoN, there is more than 'one single clear-cut principal-agent relationship' relevant for setting incentives. In this case, there is a close principal- agent relationship between the university (represented by the department chair, dean, director, college head, DVCs and VC) and its academics as the agents. On the other hand, there is a similar but less close-relationship between the government (represented by the research council), foundations, societies or professional societies and the academics in the respective disciplines. These principals also incentivize different research outputs, consultancy reports and extra teaching. In cases where there are multiple principals, like in this context, other principals may or may not reinforce the key goals of the organization. Shapiro, (2005), is of the view that it is common in a principal-agent relationship for multiple principals to disagree or compete over interests or goals of an organization, a feature of the agency relationship dubbed as "hydra factor" (p. 267). For instance, the research council provides a research grant to the academics aimed at encouraging academics to engage in research that will contribute both to the mission of the university and meet the national developmental plans. On the other hand, the government may offer academics consultancies (both advising and policy), which according to the data collected in this study, tend to detract the academics from the activities that contribute to the academic core. Data collected in this study revealed that consultancy has a great advantage over university research. The research consultancies take away the time from academics to engage in

extensive research that will result in publishing as well as engage in successful supervision of postgraduate students. As signaled earlier, since academics are assumed to make rational choices, the incentive attached to consultancy is argued to be more attractive than the research grants, which have also been declared to be inadequate for research. Similarly, in the context, where the Council of University Education (CUE), the University, the Faculty Deans and HoDs are principals conflicting interests exist among these principals. For example, the CUE may indicate the need of research and training graduates; while HODs question how knowledge will be produced given the challenges academics are faced with such as heavy teaching loads, poor pay and limited research funding.

From the above discussion, it can be concluded that the presence of multiple principals providing multiple conflicting incentives may also negatively influence productivity. Therefore, according to Shapiro (2005, p. 267), the question remains, "how do agents understand and reconcile the duties delegated to them when they are receiving mixed messages and conflicting instructions – and – incentives from the multiple principals?" While the presence of multiple principals may mean a setting of conflicting incentives, the principals may also have conflicting goals or interests. In this context, the different principals mentioned often have contradictory instructions. For instance, as it is established in both the national and university policy, both the government and university expect academics to engage in research that will contribute to the economic growth and development of the nation. On the other hand, as has been discussed before the different policies have advocated for increase in student enrolment at the Kenyan public universities. There is a conflict of interests and goals in this case. The increase in the student enrolment has resulted in an increase in the staff: student ratio. Similarly, increased student enrolment has also resulted in an increase in the groups of students in the university, namely, Module I, Module II and Module III programmes. As mentioned earlier, academics felt that, inasmuch as there is an increase in the work load following increase in the staff: student ratio, the major problem is - being required to teach on the different programmes in the university. Therefore, academics are left with minimum time to engage in research and supervise postgraduate students. Similarly, as Munene (2013), claims the increase in the student enrolment has not been in tandem with the increase in academic staff, which also affects the workload allocation to staff.

Similarly, following the call to the universities to find alternative sources of income generation for the university operations, Module II programmes were introduced. Inasmuch as Module II programmes provide income for the universities, it has been argued to be an attractive incentive to the academics. Academics earn extra payment for teaching on the Module II programmes. However, the presence of this incentive detracts academics from engaging in rigorous research required for publishing and supervision of postgraduate students. From the above discussion, it is evident that, while the principal(s) have a key goal, which is knowledge production, the agents are faced with the conflicting interest and goals from the alternative principal(s) which may negatively influence productivity.

In the policy it is spelled out clearly that there are incentives linked to research and successful postgraduate supervision. However, looking at the magnitude of these incentives, there is a challenge in their implementation. Stolovitch, Clark and Condly (2002, p.1) argue, "when tangible incentives (monetary and awards) are carefully selected, implemented, and monitored, they increase incentivized work performance an average of 22 percent". Stolovitch and the colleagues emphasize that the impact of an incentive regime largely relies on "reliable and fair implementation" (Stolovitch et al., 2005, p. 5). The incentives available are inadequate, are not systematically applied in the universities and the rewards available are discontinuous. Therefore, these incentives are not strong enough to have significant impact on research and postgraduate supervision. The key argument of the principal- agent model is that employees should receive good compensation (sufficient and consistent) for their performance, efforts, capabilities and contribution to the institution for them to be effective and efficient in their productivity and commitment to their jobs. Arguably, if the incentive is small then the workers will not be attracted towards it (see Cameron and Pierce, 1997). For instance, although the extra payment on Module II is argued to be an attractive incentive in relation to research money, these programmes are not widely covered in the university. From the data collected in this study, it has been illustrated that through the efforts of the unions, there is an increase in the academic salaries. However, although the increase in 2014 was 33 percent, it occurred at a low base, and given the high inflation rate of 12 percent, the academics' purchasing power may remain stagnant. Furthermore, participants that were interviewed felt that the monetary allowances provided to them are too small to claim. These incentives may not be attractive to the academics. Lunenburg,

(2011, p. 2), discussing the expectancy theory argues that individuals are motivated when they believe that the "value of the rewards is highly attractive". Similarly, Gneezy and Rustichini (2000), found that providing monetary incentives to subjects/agents strictly decrease their performance, unless the incentive is raised to a high enough level. Therefore, the incentive should be large enough so that workers are 'tempted' to earn it.

Similarly, the rewards available at the university are not systematically applied in the university. Module II programmes which are argued to provide alternative incentives to the academics through extra payment, have not been implemented in all departments. When incentives are not systematically and consistently applied in the university, it may also have unintended consequences. In their research Stolovitch et al. (2002) established that longer and systematic incentive programs had greater impact on performance. For instance, incentive programs extending beyond one year yielded an average of 44 percent gain in performance, relative to short-term programs of one week or less that yielded a 20 percent performance increase.

Furthermore, incentive proponents argue that incentives should not be for employees of certain sections/departments only. The incentives should have a wide coverage and almost all the agents should be covered and be provided access to the incentives. They argue that the wide coverage of the incentives in the institution makes the incentives 'popular' at all levels and among all categories of employees (Bland et al., 2005). Therefore, the employees make the effort to deliver certain acceptable performance that can result in earning the incentives. Furthermore the incentives provided by the institutions should be equitable. This implies that, they should provide equal opportunity to all the employees to be productive and efficient to earn them.

Following evidence collected from the reviewed literature and the predictions of the principal-agent model, there is a central argument that incentives may result in increased effort and performance or productivity (see Lazear, 2000; Gneezy & Rustichini, 2000; Benabou & Tirole, 2003). Benabou and Tirole (2003) emphasize,, incentives may act as "positive reinforcers for the desired behaviour" (p. 489). In spite of this argument, in this study it is not conclusive that incentives lead to higher productivity. Benabou and Tirole (2003), argue that incentives are good for "engagement" (current activity) but they have a negative impact on the "re-engagement"

(persistence) of the activity (p. 490). Then, given the case relating to incentives Vis- a-Vis knowledge production, the question remains how do you apply these incentives to ensure sustainable "re-engagement"? Similarly, in their study Gneezy and Rustichini (2000) illustrated provision of (monetary) incentives resulted in increased performance. However, in some instances, offering monetary incentives did not always result in the desired performance, as some subjects offered monetary incentives performed more poorly than in cases where there were no incentives. Therefore, inasmuch as it is argued that incentives will steer academics in African universities to engage in research**,** it is not conclusive from the data collected in this study that incentives will result in higher productivity. In this study, the data does not illustrate conclusively whether proportionately, higher productivity is as a result of increased output of 'new researchers' (Master's, PhDs or post docs), those seeking promotion, or mainly as a result of established researchers in the university.

Considering the analysis in this study, it is therefore not conclusive whether all the items denoted as incentives contribute to high productivity. There are some indications of the principals reinforcing productivity, however there is no conclusive evidence. The study confirms the economic principle that incentives influence desired behaviour, in this case, high knowledge production. Therefore, in the presence of very attractive non-research incentives, provision of adequate research incentives would reinforce the research culture.

4.8 Conclusion

In this chapter the researcher has presented and discussed the findings from the analysis of the collected data. The researcher started by presenting and analyzing the data on the shifts in the remuneration regimes of academics, dividing them into three distinctive periods. From this analysis, it was evident that, given the relevance of higher education in the new nations, during the period between 1960 and 1970 academics earned competitive salaries in the civil service, which were not performance driven. Similarly, the period experienced economic prosperity and low inflation rates, which resulted in high purchasing power of the academics' salaries. The 1980s and 1990s era was described as a period of decline or stagnation in the remuneration of academics. The decline was mainly attributed to decline in government funding of higher

education. Higher inflation rates and lower economic growth similarly implied low purchasing power. The period of the 2000s to date illustrates an era where academics receive multiple incentives including: (a) additional payments for teaching on Module II programmes and, (b) incentives attached to consultancy reports.

The discussion on the current levels of academic salaries has revealed that academic salaries at UoN are centrally determined with the integration of the academic unions through collective bargaining agreement. The academic salaries are not performance based, as they are mainly attached to seniority, which is a key feature of the union determined salaries.

The study has shown that there are several incentives linked to research and successful postgraduate supervision. A typology of the incentives available is as follows: (i) Direct financial incentives (Pay – Basic salaries) (ii) Other direct financial incentives: financial allowances to publications and supervision, benefits such as allowances (housing) and paid sabbatical leave, provision of research infrastructure and research facilities, funding for research and PhD training (fellowships and scholarships) (iii) non-financial rewards: recognition through public acknowledgement, study leave and time resources. However, it has been seen that in practice it's difficult to insert the different incentives. Similarly the study shows that from the incentives provided at UoN the performance-based incentives (monetary allowances for research) are more attractive and will be appreciated compared to the fixed rate incentives such as salaries. Multiple principals in higher education contexts provide these incentives. The general impression is that the incentives are inadequate, not systematically applied and discontinuous. Overall, the research incentive regime of UoN is regarded to be weak and one that does not impact knowledge production significantly.

The analysis has also showed that apart from the multiple principals who provide knowledge producing incentives, academics also encounter other principals who offer them non-research incentives. These principals could be argued to reinforce non-research behaviour in the universities. The data revealed, these principals include non-governmental organizations, the government, industry and businesses that reward consultancy. On the other hand the university

provides additional payments over and above regular salaries for extra teaching on the parallel programmes.

In general, this study has revealed that individuals, particularly academics in this context, respond to incentives. However, research incentives at UoN are weak compared to the competing incentives that academics respond to favourably; consequently the research culture at UoN is negatively affected. For incentives to motivate, attract and retain the talented academics, the incentives have to be adequate, consistent and systematically applied, to reinforce positive research behaviour.

In the next chapter final conclusions are drawn for reasons that academics may accept UoN incentives in spite of the lower value compared to incentives offered by other principals. The chapter also highlights certain limitations of the study and offers suggestions for further research opportunities in the field.

CHAPTER FIVE

Conclusion and Recommendations

5.1 Introduction

This study is built on and has contributed to the broader debates of incentives in the higher education context today. Following the several aspects involved in these debates, this study has sought to explore the link between incentives and knowledge production at the University of Nairobi. In doing so, it has analyzed the shifts in the remuneration regime of academics from the 1960s to date in Kenyan public universities generally and UoN in particular and identified the key incentives to research and successful postgraduate student supervision at UoN. The overall sequence and structure of this study is provided in the next section.

5.2 Summary of the Study

This study comprises of five chapters. Chapter One provides the background of the study. Departing from the understanding that incentives influence behaviour both in terms of eliciting and sustaining it, this study seeks to understand the link between incentives and knowledge production at the University of Nairobi. In the background to this study it is argued, that higher education institutions have a key role to play in economic development through research and production of human capital. Therefore, in a case where knowledge production levels are sub-optimal, this study argues, incentives could be utilized to attract, motivate, retain and encourage academics to research and supervise Master's and PhD students. The study is underpinned by the central research question and the four sub-questions:

Central Research Question: How do incentives and disincentives available at UoN influence knowledge production and productivity?

The sub-questions:

I. How does UoN incentivize research and successful postgraduate supervision; and how do the incentives influence knowledge production and productivity?
II. How do academics at UoN perceive the incentives available for research and successful postgraduate supervision?
III. How do competing incentives available at UoN influence knowledge production and productivity?
IV. How have the remuneration regimes of academics in Kenya shifted overtime?

Chapter Two reviews the relevant literature and provides the theoretical framework of the study. From the relevant literature reviewed in this study, the main argument that emerges is that incentives can be used to steer employees to increase their effort and hence lead to improved productivity. Given the argument that incentives can attract, motivate and retain the best talents, use of incentives in higher education could result in engendering the desired research behaviour. Mainly, what is garnered from the reviewed literature is that productivity of academics in as far as knowledge production is concerned is a function of various factors. These include: direct monetary compensation such as salaries among other research-related incentives such as promotion, benefits and allowances (housing allowances, transport allowances, paid sabbatical leave), time resources, research funding and non-financial incentives such as recognition. Incentives for academics, as used in other contexts illustrate that incentives (monetary, promotion) provided to the academics resulted in the increase in research output. Also, literature has provided ample evidence that the use of (monetary) incentives for research, have not only positive effects but could also have negative impact such as 'crowding out' of the intrinsic motivation required for 'ground breaking' research. Overall, incentives are the master key to the elements of engendering a vibrant research culture in the university.

Importantly, whereas there is significant literature on challenges facing African higher education, including low knowledge production, the literature reviewed does not offer much on how this low knowledge production is linked to incentives that this study tries to elucidate. This study has mitigated this knowledge gap by contributing important insights on the link between incentives and knowledge production in African higher education. Similarly, the literature does not offer

comprehensive explanations on multiple principals, how they work in relation to provision of incentives and how the agents have to respond to the several conflicting incentives.

The principal-agent model mainly informs this analysis, whose primary argument is that for incentives to attract, motivate and retain employees these incentives have to be sufficient, fair and consistent. Additionally, the model predicts that a higher sum of monetary compensation (monetary incentives) triggers higher effort, resulting in higher productivity. Thus, the principal-agent model suggests that performance related pay (incentive) is more preferable than plain fixed pay, because it provides incentives and attracts workers, whose productivity is higher than average, thus they believe they can earn more within a performance related scheme. Applied to academics, we use the model to understand (a) how research-related incentives have shaped research behaviour and, (b) considering that academics tend to have multiple 'principals' who incentivize different outputs (research, consultancy reports, extra teaching, etc.), how the existence of competing incentives, which often require mutually exclusive responses, have affected the engendering of a research culture.

Chapter three discusses the research methodology used in the study. A qualitative approach with elements of quantitative research has been the main research approach utilized in this study. This chapter provides a detailed account of the case study, case study selection, participant selection, the process of collection of data, and the ethical considerations. The use of the case study was mainly informed by the argument that incentives are contextual in nature when applied to the higher education context. Inasmuch as knowledge production is the key role of the universities worldwide, the way the universities reward research differs from one to another.

Chapter four presents and discusses the data. This section is divided into four broad areas (a) the changes in the remuneration regimes of academics since the 1960s to date (b) the incentive opportunities multiple principals offer to academics for research (c) the perceptions of academics on the incentives available to them (iii) the existence of the competing incentives and how they have influenced research and supervision of postgraduate supervision.

5.3 Summary of the Findings

The analysis of the shifts in the remuneration regimes of academics shows that, the 1960s to the 1970s was a period hailed as a 'golden past', when academics were said to earn competitive salaries that were not performance driven. The economic prosperity and low inflation rates exhibited during this period saw large scale funding of higher education, and hence high percentage of government expenditure on the wages and salaries of academics. The low inflation rates also meant high purchasing power for the academics. In the 1980s, there was a decline in the remuneration of academic salaries. This period saw decline in the economic growth, high inflation rates, influence of the structural adjustment programmes, devaluation of exchange rates, large external debts, which could be argued to have resulted in a decline in the large-scale state funding. The decline in higher education funding resulted in decline or stagnation in the academic salaries. During the current period since 2000 to date academics have had access to multiple incentives. The sources of multiple incentives include: (a) Kenya's public universities incentivize extra teaching by offering additional payments, over and above the regular salaries, for academics who teach on Module II programmes (b) the vast growth of private universities has also resulted in academics earning extra for teaching in these universities as part-time lecturers.

Section two highlights on how UoN rewards research and successful postgraduate supervision. The findings of this study have showed that there are several incentives related to research at the University of Nairobi. The typology of the incentives available at UoN include: (a) direct financial compensation such as pay (basic salaries), (b) other direct financial incentives such as benefits and allowances (sabbatical leave, paid study leave, house allowances), research funding (fellowships and scholarships, travel assistance to conferences), research infrastructure (library resources, equipment, computers and computer software, laboratory and internet), monetary allowances for publications and successful supervision of postgraduate students; (c) indirect financial incentives such as promotion opportunities and (d) non-financial rewards such as time resources, advocacy for a balanced work load, recognition through public acknowledgement. Further analysis reveals presence of multiple principals that provide these incentives, including: the university itself, the national research council, and government. The study has revealed that,

multiple principals may disagree or compete over the goals of an organization. Looking at the above, the multiple principals are not complimentary and coordinated to reinforce a vibrant research culture.

The general perception of academics is that the UoN incentives are inadequate; they are not systematically applied in the university and are discontinuous. In particular, the analysis has showed several weaknesses in the incentive regime. Inasmuch as the promotions procedures were recently reviewed, participants in the study argued the promotion procedures were unfair and influenced by 'politics' in the university. Module II programmes appeared to be great incentives in the university however they are not applied across all departments. Monetary rewards attached to publications and supervision were said to be "too little" for academics to claim. The university has attempted to provide research infrastructure (library resources, computers and internet); however, respondents often described the available research facilities and research equipment as inadequate, obsolete and poorly maintained. Similarly, respondents reported on the impossibility to acquire the equipment maintenance funds. This analysis has revealed that, inasmuch as key incentives such as promotion are linked to research publications and supervision of PhD and Master's students, research funding and heavy teaching remain a key challenge in the university. Overall, the analysis has showed that the existing research incentive regime is regarded as weak, and one that does not encourage the maximization of the University's research goals. Nevertheless some respondents reported although they were faced with weak research-related incentives, they would not leave the university as they utilize their current status and positions at the university to win research grants and research consultancies.

Other than the multiple principals who reward research, academics are also confronted with other principals who reinforce non-research behavior. Such principals include non-governmental organizations and government departments that offer significant rewards for consultancies; and the University itself offers incentivized teaching on the full-fee-paying stream by providing additional payments, over and above regular salaries to academics who teach on these Module II programmes. These incentives can be argued to detract academics from research to other activities that don't reinforce research behaviour. For instance, when government and the institutions offer supervision allowance to academics with a small research grant, poor pay and

small incentive amounts, the university itself offers additional payment for academics who teach extra hours on Module II programmes. In this case, there are competing incentives that can undermine the weak incentive regime at UoN. Therefore, respondents reported academics make rational choices, particularly given their time constraint. They don't have time to teach undergraduate students, engage in research and successfully supervise PhD and Master's students.

Given the weak nature of the incentives for research, academics at the University of Nairobi seem to respond more favorably to the competing incentives. This is because of three main reasons: (a) the magnitude of these incentives tends to be greater than those for research (b) the non-research incentives are easily accessible compared to those for research, and (c) the unfavorable socio-economic circumstances of the average academic in Kenya, such as poor pay and low or stagnated purchasing power, which reinforce the attraction to the non-research incentives have a greater magnitude and are easily accessible.

5.4 Limitations of the Study

In this study, several aspects have been examined on incentives for knowledge production in general and in the University of Nairobi context in particular. There are, however a number of theoretical, methodological and conceptual limitations that were observed.

This study focused on one institution in the Kenyan context, with a brief reference to the research council (NACSTI). This study limited its focus of research to one public university, the University of Nairobi in Kenya, with a particular focus on two colleges, that is, the college of Humanities and Social Sciences and the college of Agriculture and Veterinary medicine. Therefore, the views of academics on incentives for knowledge production in other Kenyan public universities have not been included in this study. Given the peculiarities and differences in each institution in designing and determining knowledge producing incentives as indicated in the data collected, the findings in this study may not be generalizable. In addition, differences and variances exist on the income supplements earned on extra teaching on Module II programmes and consultancies, both within UoN and in other public universities. These aspects are

highlighted in this study. However, it was beyond the scope of this study to determine the extent of and the exact differences.

Second, this study has not studied the Research Council. Inasmuch as Kenyan public higher education institutions are under the auspices of a Research Council that is claimed to support research/knowledge production it is only mentioned briefly in this study, as referred to in the insights of academics. From their insights, it could be deduced that, NACSTI recently strongly emerged in support of research, especially in the research themes that are aligned to the three key pillars (economic, social and political). of the Vision 2030.

Since this study has been confined to examining incentives and dis-incentives for knowledge production in a university context, the study's sample for the structured interviews largely involved senior academics, with PhD qualifications that research, publish and supervise postgraduate students although academic administrators were also interviewed to expound some policy issues and clarify several perceptions raised by the academics. The views of university administrators in the research, production and extension services office, personnel officers in the human resource and management offices who directly deal with promotions, pay and other rewards, and lastly government officials who deal with salaries, have not been covered in this study.

This study has not focused on status as an incentive. This study briefly signals status in comparison to other civil servants and professionals positions, and the status that comes with promotion in the university. However, the study has not focused on rewards and status beyond promotion of academics in the university.

5.5 Recommendations for Further Research

This section highlights potential research areas that have emerged following this analysis. They are systematically discussed below.

First, the researcher believes there is need for further and detailed research on the research environment of the system of higher education. This study has focused on the research environment in one institution in Kenya, it could expand the current sample to involve (a) other colleges at the University of Nairobi, and (b) select one or two other public universities in Kenya which might be ranked lower in knowledge production relative to UoN.

Similarly, this study might involve studying policies of the Research Council (the National council of Science, technology and innovation). Universities in Kenya are located within a research council which is claimed to support science, innovation and technology. From the responses in the structured interviews, academics are aware of the government's efforts to support knowledge production, for instance, through providing incentives, though they seem to have little or no significant impact on the research activities and postgraduate supervision. Therefore, understanding the research environment of a higher education system could develop another area of research.

Second, another field of study could focus/compare and examine reasons why academics continue to publish after receiving promotion versus the academics that stop publishing after promotion. This study will be significant in understanding and examining the views of these two different groups of individuals. This will address the issue of status and rewards beyond promotion. In addition, the analysis in this study has highlighted promotion as the main premium attached to research productivity. An interesting finding has contradicted previous assumptions in this study that junior researchers publish more than academics in the senior ranks. Literature reviews show that academics in high cadres at times out-publish the junior academics. In her study, Tien (2007, p. 15) established, "the higher the level of the promotion reward, the greater the motivating effect the reward has on faculty research performance". Therefore, it would be interesting to investigate and establish how academics could be rewarded even after promotion to full professorship (the senior most rank).

Another aspect that could inform an area of research is a study that focuses on the issue of status amongst academics. This study only briefly signals status among academics, civil servants and

other professionals. As the study is weak on the area of status among academics future research could introduce new insights on this challenging theme.

5.6 Conclusion

Overall, the study confirms the economic principle that individuals, in our case, academics, respond to incentives. However, the current set-up of research incentives at the University of Nairobi is such that they are weak and, in the context of competing incentives, negative reinforcers of a vibrant research culture. Given the presence of competing incentives, the multiple principals who reward research have to ensure the incentives are adequate, systematically applied and continuous, to reinforce research behaviour.

The assumption exists that incentives play a key role in attracting, motivating, rewarding and retaining the academics to engage in knowledge production. Therefore, it has been the aim of this study that results will prove to be useful to Kenyan higher education institutions and the government. Greater awareness of the requirements to organize the knowledge producing incentives to be attractive to the academics can fill the existing gap, since it is in the flexibility of the academic profession that the incentive regime becomes important. As argued in (Yin, 2008), *the experiences of the University of Nairobi*, the oldest and largest institution of higher education in Kenya, "could contribute to understanding of similar cases" in Kenya and other institutions in Sub-Saharan Africa and the developing world. The data gathered in this study could also form the basis for future research on incentives for publishing and supervision, as well as understanding knowledge producing environments at higher education institutions in Sub-Sahara Africa.

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APPENDICES

Appendix 1: Ethical Clearance Form

SR1

UNIVERSITY of the WESTERN CAPE

UWC RESEARCH PROJECT REGISTRATION AND ETHICS CLEARANCE

This application will be considered by UWC Faculty Board Research and Ethics Committees, then by the UWC Senate Research Committee, which may also consult outsiders on ethics questions, or consult the UWC ethics subcommittees, before registration of the project and clearance of the ethics. No project should proceed before project registration and ethical clearance has been granted.

A. PARTICULARS OF INDIVIDUAL APPLICANT
NAME: **Agnes Omulyebi Lutomiah** TITLE: **Ms.**
DEPARTMENT: **Institute for Post-School Studies** FACULTY: **Education**
FIELD OF STUDY: **Higher Education**

ARE YOU:		
A member of UWC academic staff?	Yes ☐	No ☒
A member of UWC support staff?	Yes ☐	No ☒
A registered UWC student?	Yes ☒	No ☐
From outside UWC, wishing to research at or with UWC?	Yes ☐	No ☒

PARTICULARS OF PROJECT

PROJECT NUMBER: TO BE ALLOCATED BY SENATE RESEARCH COMMITTEE*:*

EXPECTED COMPLETION DATE: November 2014

PROJECT TITLE:

Examining the Incentives for Knowledge Production: The case of the University of Nairobi in Kenya.

THREE KEY WORDS DESCRIBING PROJECT: **Higher education, Incentives, Knowledge production**

PURPOSE OF THE PROJECT: **To understand the link between incentives and knowledge production**

M-DEGREE: **M.Ed. Degree** D-DEGREE: N/A

POST GRADUATE RESEARCH:N/A

C. **PARTICULARS REGARDING PARTICULAR RESEARCHERS**

FAMILY NAME: INITIALS:

TITLE:

PRINCIPAL RESEARCHER: N/A

OTHER PROJECT LEADERS: **N/A**

OTHER CO-RESEARCHERS: **N/A**

THESIS: STUDENT RESEARCHER: **Agnes Omulyebi Lutomiah**

THESIS SUPERVISOR: **Prof. Gerald Wangenge-Ouma and Prof. Nico Cloete**

GENERAL INFORMATION

STUDY LEAVE TO BE TAKEN DURING PROECT (days): **N/A**

COMMENTS: DEPARTMENTAL CHAIRPERSON: **N/A**

IS IT INTENDED THAT THE OUTCOME WILL BE SUBMITTED FOR PEER REVIEWED PUBLICATION?

YES ☒ NO ☐

SIGNATURE OF THESIS STUDENT RESEARCHER:

SIGNATURE OF THESIS SUPERVISOR – WHERE APPROPRIATE:

DATE: 4 October 2012

SIGNATURE OF HEMA COORDINATOR 2012

(In absentia of Dr. Wangenge-Ouma, G; the main supervisor):

DATE: 4 October 2012

SIGNATURE DEPARTMENTAL CHAIRPERSON:

NOTE: THESE SIGNATURES IMPLY AN UNDERTAKING BY THE RESEARCHERS, TO CONDUCT THE RESEARCH ETHICALLY, AND AN UNDERTAKING BY THE THESIS SUPERVISOR (WHERE APPROPRIATE), DEPARTMENTAL CHAIRPERSON TO MAINTAIN A RESPONSIBLE OVERSIGHT OVER THE ETHICAL CONDUCT OF THE RESEARCH.

E. DESCRIPTION OF PROJECT AND RESEARCH ETHICS STATEMENT

Introduction

Given the understanding that incentives influence behavior both in terms of eliciting and sustaining it, this thesis sought to understand the link between incentives and knowledge production at the University of Nairobi. Following the backdrop on the importance of knowledge in economic development, higher education institutions are required to increase production of knowledge, hence need to see how academics can be steered to produce knowledge.

According to Chen & Dahlman, 2005 universities are at the centre of the knowledge economy, training skilled and competent workers needed for the knowledge economy, majorly producing and distributing relevant knowledge and providing a global link to the world's knowledge system.

Universities as institutions that produce and transfer knowledge have become both politically and economically important in the knowledge economy.

However, the main concern is that knowledge production as an integral part in feeding the knowledge economy and a key factor of development is argued to be low particularly in Kenyan public universities. In a continuum debate about the low level of knowledge production, Cloete et al (2011) argue that this trend cannot only be underpinned by the commonly held view of lack of resources and capacity in the universities. The scholars are of the view that, incentives could be one way of attracting, motivating and retaining academics to engage in research. It's because of these suggestions that the study sought to understand the link between incentives and knowledge production at the University of Nairobi.

Aim of the study: The main aim of this study is to understand the link between incentives and knowledge production at the University of Nairobi.

The aim of the study is met by the following research questions:

Central Research Question: How do incentives and disincentives available at UoN influence knowledge production and productivity?

In addressing the above central research question, the following associated sub-questions were formulated:

1. How does UoN incentivize research and successful postgraduate supervision; and how do the incentives influence knowledge production and productivity?
2. How do academics at UoN perceive the incentives available for research and successful postgraduate supervision?
3. How do competing incentives available at UoN influence knowledge production and productivity?
4. How have the remuneration regimes of academics in Kenya shifted overtime?

Literature Review and Theoretical Approaches

From the relevant literature reviewed in this study, the main argument that stems out is that,

incentives can be used to steer employees to increase their effort and be productive (Gneezy et al., 2011). The key arguments garnered from the reviewed literature is that, productivity of academics, in as far as knowledge production is concerned is a function of various factors. These include: money, among other research-related incentives such as promotion, pay, benefits and allowances, time resources and research funding (Bland et al., 2005; Bland et al., 2006). Incentives for academics, as used in other contexts illustrate that incentives provided to the academics resulted to the increase in research output and production of postgraduate students.

The principal-agent model mainly informs this study, whose primary argument is that for incentives to attract, motivate and retain employees, they have to be sufficient, fair and consistent. Additionally, the model predicts that a higher sum of monetary compensation (monetary incentives) triggers higher effort, resulting to higher productivity (Bonner &Sprinkle, 2002). This model is applied in the higher education context to understand (a) how research-related incentives have shaped research behaviour and, (b) how the existence of competing incentives, which often require mutually exclusive responses, have affected the engendering of a research culture.

Research Methodology

The study adopted a qualitative research approach, with some elements of quantitative data. A single case study, the University of Nairobi was selected. The study utilized the structured interviews, document reviews and archival records to collect data.

Ethic Statement

Denscombe (2010) argues it has become increasingly common for researchers the need to gain formal approval from a research ethics committee before they embark on research. Following the above, the study was approved by the University of the Western Cape's Senate Research Committee. In Kenya, which is the context of the study, the university offered an affiliation letter approving the study to be conducted within its premises; thereafter, the National Council for Science and Technology used the same letter to approve the study by offering a research permit (see appendix 4). Participants were provided with written consent for participation by signing after review of the information sheet. Before conducting the structured interviews, consent forms (see appendix 2) clarifying the research problem and the aims of the study were presented to the selected participants for review. In the letter, the information to be collected from the participants and the way in which the participants were to

participate were clearly indicated.

With the exception of the university and the main units selected for the study, voluntary participation, anonymity and confidentiality of the participants involved in the study, were highlighted on the information sheet; and this was to be ensured both during and after the study as well as in the research report (Denscombe, 2010). The researcher obtained a signed written consent form from the Research, Production and Extension office that allowed me to collect data from the selected colleges. While this study was keen to consider the ethics guidelines pertaining the participant's confidentiality (Merriam, 1998; Denscombe, 2010), it was impossible to conceal the name of the university. The researcher ensured that the information and data collected were used for the intended purpose. This study has been under supervision of academics in higher education that ensured that the stated ethical guidelines and procedures were addressed.

Form issued by: Professor Renfrew Christie, Dean of Research, February 2002.

Appendix 2: Information Sheet

UNIVERSITY OF THE WESTERN CAPE
FACULTY OF EDUCATION

Participant Information Sheet
Project title:

Examining the incentives for knowledge production: The case of the University of Nairobi

Description of the study and benefits

This research project is being conducted by a M.Ed. (HEMA) student from the University of the Western Cape in South Africa.

The study focuses on the link between incentives and knowledge production at the University of Nairobi (UoN). The project involves a structure interview guide on the incentive and dis-incentives for research and postgraduate supervision.

There are no direct benefits for the participating academics or the case university. It is hoped that your responses would improve the understanding of the link between incentives, and research.

Participation in the study

Selected participants in two colleges (from selected departments) at the UoN are asked to participate by responding to the interview guide. A special session will be organized with each participant. It takes about 30-35 minutes for completion of each session.

Confidentiality

Confidentiality of the participants will be ensured during and after the research process. Consent forms will be attached to the structured interview guides and signed by the participants before taking part in the research project and remains under private custody upon completion of the thesis. Anonymity of the participants in the study will be ensured. The information gathered will be used in aggregate form and no identity will be disclosed to anyone.

Voluntary participation and withdrawal

Participation is voluntary. The decision on participating must be indicated by signing the consent form (on the next page). The participants are free to withdraw from the research process at any time without any prior explanations. In case of further information, complains or withdrawal at a later stage, you can contact the persons whose details are provided below.

Independent approval of the structured interview guides

The interview guide is currently undergoing a research ethics review process conducted by the ethics committee and senate research committee of the University of the Western Cape. The academic staff at the UoN will be requested to participate in the study. Similarly, the university will be asked affiliation for the researcher to be allowed to conduct research and if possible use the name of the university while compiling the report.

Informed consent

Before responding to the structured interviews your decision to participate in the study must be indicated by signing the consent form (attached on the next page). The consent form has to be reviewed before you decide on providing the required information by the researcher.

In case you need more information or follow up on the results, please do contact:

The researcher: Miss. Agnes Omulyebi Lutomiah,
Tel: +254 726932065/+27 733913239,
Email: allutomiah@gmail.com or 3205945@uwc.ac.za

Thesis Supervisors:

1. Dr. Gerald Wangenge-Ouma, Senior Lecturer, HE Studies
   Tel: +27 21 9599360,

   Email: gouma@uwc.ac.za

2. Prof. Nico Cloete, Extra-ordinary Prof of HE studies
   Tel: +27 21 7637100,

   Email: ncloete@chet.org.za

You may keep this page for future reference

Appendix 3: Respondents Consent Form

UNIVERSITY OF THE WESTERN CAPE

Faculty of Education
Private Bag X17, Bellville, 7535, South Africa
Tel: 021-959 2809, Fax: 021-959 2872

INFORMED CONSENT

Please if you agree to participate in this research project, you need to declare by signing this consent form in order for us to proceed with the interview.

By signing below, I indicate that:

- I assessed the information required for this project and had an opportunity to ask questions about it.
- I agree to my responses being used for research purposes on condition that my privacy is not infringed.
- I understand that my personal details will be used in aggregate form only so that my identity will not be disclosed
- I understand that I am not obliged to take part in this research project/study and that I have the right to withdraw at any stage/time
- I agree to participate in this research project

Signature of participant: _____

Name and signature of researcher: _____

Date: _____

Appendix 4: Supervisor's Letter

FACULTY OF EDUCATION

Private Bag X17, Bellville, 7535
South Africa
Tel: +27 (0) 21 959 3278 / 3888
Email: tluescher@uwc.ac.za
Website: www.cshe.uwc.ac.za

4 September 2012

To Whom It May Concern

Dear Madam/Sir

REQUEST FOR PERMISSION TO CONDUCT RESEARCH

Ms Agnes Lutomiah, student no. 3205945, is a fully registered M.Ed. student in the Higher Education Masters in Africa (HEMA) Programme of the University of the Western Cape (UWC), Cape Town, South Africa. The HEMA programme is a NORAD-sponsored, interdisciplinary programme involving the University of Oslo, Norway, the Centre for Higher Education Transformation (CHET), South Africa, and the University of the Western Cape.

As part of her Master's thesis, Ms Lutomiah is collecting data to understand ways in which different incentive and reward structures influence knowledge production at universities. For this purpose, she has selected the University of Nairobi, School of Humanities and Social Sciences, as a case.

Ms Lutomiah's research proposal and instruments (questionnaire) conform to the research ethics guidelines of the UWC Faculty of Education and it is expected that her application for ethics clearance to conduct interviews will be granted by the UWC Senate in October. Her research is designed to conform to highest standards of social research ethics. In this respect I wish to assure you that the data to be collected shall be utilised strictly for the study and that utmost confidentiality and other ethical considerations shall be adhered to.

I am therefore writing to you to kindly request that you afford Ms Lutomiah permission and support for her dissertation research and provide her with the data and access to potential respondents for her study as she may request.

Yours sincerely

Dr Thierry M Luescher-Mamashela
HEMA Coordinator 2012 and Co-supervisor
Centre for the Study of Higher Education, Faculty of Education
University of the Western Cape

Appendix 5: Research Permit

REPUBLIC OF KENYA

NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telephone: 254-020-2213471,2241349
254-020-310571,2213123, 2219420
Fax: 254-020-318245,318249
when replying please quote
secretary@ncst.go.ke

P.O. Box 30623-00100
NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref:
NCST/RCD/14/012/1425

Date:
18th October 2012

Agnes Omulyebi Lutomiah
University of Western Cape
Cape Town,
South Africa.

RE: RESEARCH AUTHORIZATION

Following your application for authority dated ***4th October, 2012*** to carry out research on ***"Relative influence of incentives and reward structures on knowledge production: The case of a flagship University in Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Nairobi Province** for a period ending **31st December, *2013.***

You are advised to report to **the Vice Chancellor of the selected University** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

DR M.K. RUGUTT, PhD, HSC.
DEPUTY COUNCIL SECRETARY

Copy to:

The Vice Chancellor
Selected University.

"The National Council for Science and Technology is Committed to the Promotion of Science and Technology for National Development".

Appendix 6: UoN's Introduction Letter

UNIVERSITY OF NAIROBI

INSTITUTE FOR DEVELOPMENT STUDIES

Website: www.uonbi.ac.ke
Telephone : 254 - 020 - 2314306/318262 Ext. 28177
Fax: 254-020-2245566

P. O. Box 30197 00100 G.P.O
Nairobi, Kenya
Email: director-ids@uonbi.ac.ke

4th January 2013

Institute for Development Studies
University of Nairobi
P.O. Box 30197 00100
NAIROBI

Re: Letter of Introduction for, and Request for Assistance in the Higher Education Research Project

This is to inform you that the Institute for Development Studies (IDS), University of Nairobi has been conducting research on various issues concerning higher education in Kenya and the region. Currently, we are looking at the issues surrounding motivation and productivity in research and graduate training at the University of Nairobi and the University of the Western Cape. The study involves a survey with individual members of academic staff and key informant interviews with Deans and Directors.

The purpose of this letter is to inform you about the project and also to ask for your assistance in making this project a success. In particular, we kindly ask you to kindly identify for us one member of staff from your department/ institute/ school involved in supervising graduate students. Ms. Agnes Lutomia (a student at the University of the Western Cape) is assisting with collection data from both universities under the direct supervision of Mr. Samuel W. Kiiru. We highly appreciate all forms of assistance that you may be able to provide for the success of this study.
Thank you in advance.

Yours truly,

Mr. Samuel W. Kiiru
Project Assistant, IDS

Appendix 7: Structured Interview Guide

Questionnaire - Academic staff members

This interview guide is part of the research project being conducted by Miss. Lutomiah O. Agnes on examining the incentives for knowledge production at the University of Nairobi, as part of her thesis for a master's degree**.**

Your sincere response will be highly appreciated. Please tick accordingly, or use the blank space**.**

Section 1: General characteristics of Respondents

Please provide the following information

1. Your Gender Male ☐ Female ☐
2. Your age in years

   Below 30 ☐ 30-34 ☐ 35-39 ☐ 40-44 ☐ 45-49 ☐ 50-55 ☐ 56-60 ☐

   Above 60 ☐
3. Your School/faculty/Institute _____
4. Your department: _____
5. Highest academic qualification

   Bachelors ☐ Master ☐ Doctorate ☐ Others [ ] (Please specify) _____
6. Academic rank

   Lecturer ☐ Senior Lecturer ☐ Associate Professer ☐ Professer ☐

   Other _____
7. How many years have you worked at the university? _____

Section 2: Teaching

8. Do you teach the following categories of students? (Tick all that apply)
   a. Under graduate students ☐
   b. Post graduate diploma ☐
   c. Masters ☐

   ☐

d. Ph.D.

9. On average how many units/classes do you teach per week in the following categories?

   a. Module I _____

   b. Module II _____

   c. Module III _____

10. On average what are the class sizes for the following categories of students?

   a. Undergraduate _____

   b. Post-graduate students _____

11. How would you describe your teaching workload per week?

   Light ☐ moderate ☐ Heavy ☐

   Please explain your response to question (11) above _____

_____

12. Does your department provide you with teaching assistants? Yes ☐ No ☐

   Please explain your response to question 13 above _____

_____

13. Does your department have a stated teaching workload policy per semester?

   Yes ☐ No ☐

   If yes, what is the policy _____

14. Do you teach any extra classes/modules? Yes ☐ No ☐ If No skip to Q.26 (Skip to Q. 26)

If yes, in which of the following set-ups do you teach the extra classes? (Please tick accordingly)

   a. Within the department ☐

   b. Outside the department ☐

If you teach the extra classes outside the department, is it within the university or outside the university?

Within the university ☐ outside the university ☐

15. Do you ever seek to teach the extra classes/modules in the department or university?

Yes ☐ No ☐

Please explain the response to question (15) above _____
_____

16. Are you paid for the extra teaching within the department or university?

    Yes ☐ No ☐

    Please explain your response to question (16) above _____
    _____
    _____

17. How much on average do you earn from the extra classes you teach? _____
    _____

18. If you teach any extra classes/modules, what reasons account for this?
    _____
    _____
    _____

19. If you do not teach any extra classes within or outside the university, what reasons accounts for this? _____
    _____
    _____

Section 3: Supervision

20. Are you involved in supervision of post-graduate students? Yes ☐ No ☐ (if no Skip to Q. 45)

    If yes, how long in years have you supervised post-graduate students? _____

21. How many post-graduate students are you currently supervising in the following categories?

    - Post-graduate diploma_____
    - Masters _____
    - Ph.D. _____

22. How many students have you supervised to completion in the last five years in the

following categories?

- Post-graduate diploma_____
- Master's _____
- Ph.D. _____

23. Have you authored any published papers from the dissertations that you have successfully supervised?

Yes ☐ No ☐

If yes, how many articles have you authored from your student's dissertations in the last five years? _____

24. Have you co-authored published papers with some of your students from their dissertations that you supervised?

Yes ☐ No ☐

If yes, how many articles have you co-authored with your post-graduate students in the last five years? _____

25. If you have not co-authored any published papers with your post-graduate students, what reasons account for this?

_____
_____
_____

26. Are there any rewards in your institution/department for successful supervision of graduate students? Yes ☐ No ☐ (If NO, skip to Q. 45)

If yes, please list these rewards (Please tick accordingly)

a. Promotion ☐
b. Supervision allowance ☐
c. Salary increase ☐
d. Other, (specify) _____

27. Is the amount and type of reward determined by the category of post-graduate students you successfully supervise? Yes ☐ No ☐

If yes, which of the following categories of post-graduate students you successfully supervise attract the greatest amount and type of reward? (Please tick accordingly)

a. Post-graduate diploma ☐

b. Masters ☐

c. Ph.D. ☐

28. Are you guaranteed of the rewards upon successful supervision? Yes ☐ No ☐

Please explain your response to question 28 above _____

_____

_____

29. Have the rewards impacted on supervision of post-graduate students in any way? Yes ☐ No ☐

Please explain your response to question (29) above _____

_____

_____

_____

30. Which of the rewards has the greatest impact on supervision of post-graduate students? Please list and explain

_____

_____

_____

31. What challenges have you experienced in supervision of post-graduate students?

_____

_____

_____

_____

32. In your opinion what resources/institutional support do you think should be put in place to enable successful supervision of post-graduate students?

_____

_____

_____

Section 4: Research and publishing

33. Does your department undertake any research activities? Yes ☐ No ☐

If yes, how many research projects is the department currently undertaking?

34. Are you involved in research? Yes ☐ No ☐ (if no, Skip to Q. 69)

If yes, how many research projects are you currently involved in? _____

35. How would you categorize the research you are involved in? (Please tick accordingly)

a. Institutional/departmental ☐
b. Individual ☐
c. Part of larger research networks ☐
d. Other, (specify) _____

36. Are these research projects academic or consultancies in nature?

Academic ☐ Consultancies ☐

37. How many of these are?

1. Academic projects _____
2. Consultancy projects _____

38. From whom do you mainly receive research funding?

Self ☐ University ☐ the government ☐ Foundations/donor agencies ☐

Other(specify) _____

39. How many research publications have you produced in the following categories in the last five years (2008-2012) and what was your position?

	Item	Number produced	Position held	
			Author	Co-author
a.	International conference papers			
b.	National conference papers			
c.	Refereed articles in local journals			
d.	Refereed articles in international journals			
e.	Peer reviewed book chapters			
f.	Peer reviewed books			

40. If you were involved in research consultancies in the last five years, were you allowed to publish from the consultancy research reports?

Yes ☐ No ☐

If yes, how many publications have you produced from consultancy research reports in the last five years? _____

41. If you have not published from the consultancy research reports, what reasons accounts for this? _____
_____
_____

42. Are there any incentives and rewards in your institution/department for refereed publications?

Yes ☐ No ☐

43. If yes, what are the incentives and rewards? (Please tick accordingly)

a. Promotion ☐
b. Appointment to senior positions (HoDs, director, etc.) ☐
c. Salary increase ☐
d. Support for International conference attendance ☐
e. Support for scholarships and fellowships ☐
f. Financial rewards ☐
g. Bonuses and allowances ☐
h. Others, (specify) _____

44. Is the amount and type of incentive and rewards determined by the type of research publications you produce? Yes [ ]; No [ ]

45. If yes, which of the following research publications attract the greatest amount and type of incentive and rewards? (Please tick accordingly)

a. International conference papers ☐
b. National conference papers ☐
c. Refereed articles in local journals ☐
d. Refereed articles in international journals ☐
e. Peer reviewed book chapters ☐
f. Peer reviewed books ☐

46. Does your institution/department guarantee these incentives and rewards for refereed

publications?

Yes☐ No ☐

47. Please explain your response to question (46) above _____
_____
_____

48. Have the incentives and rewards impacted on your research outputs in any way?

Yes☐ No ☐

49. Please explain your response to question (48) above _____
_____
_____

50. Which of the incentives and rewards has the greatest impact on research publications? Please list and explain
_____
_____

51. For what other reasons do you undertake research? (Tick all that apply)
    a. To assist in graduate training ☐
    b. To influence policy ☐
    c. To solve existing societal problems ☐
    d. Other, (specify) _____

52. If you are not involved in research, please give reasons _____
_____
_____
_____

53. How would you rate your institution/department, in terms of providing access to the following resources/support to facilitate your research activities?

	Very Strong	**Strong**	**Don't Know**	**Weak**	**Very Weak**
Literature e.g. books, journal articles and monographs in the library or on-line					
Computers					
Equipment, infrastructure and conducive offices					

Internet connectivity					
Start-up research funds					
Travel assistance to conferences					
Fellowships and scholarships					
Release time/ sabbatical leave					
Mentorship					

54. Has the provision of the above resources/institutional support impacted research output in any way? Yes ☐ No ☐

If yes, how?

_____

_____

55. What would you comment about salary as a basic incentive for you to engage in teaching, supervision and engaging in research activities? _____

_____

_____

_____

_____

56. What are the major challenges that you have encountered in your institution as you engage in research? _____

_____

_____

57. In your opinion what resources/institutional support need to be put in place to support scholars like yourself to engage in research and publish? (Please explain)_____

_____

_____

Section 5 – Policy overview

58. Please indicate your views by ticking your response to the following statements:

Strongly Agree AA, Agree -A, Uncertain- 0, Disagree –D, Strongly Disagree- DD

		AA	*A*	*0*	*D*	*DD*
1	The incentives and rewards encourage higher productivity in publications and successful supervision of graduate students.					
2	My institution has a clear and fair reward system					
3	My university rank fairly reflects my achievements and					

	accomplishments					
4	Consistent research standards are maintained for promotion and appointment purposes					
5	There are appropriate procedures in place to facilitate attendance/participation for conference.					
6	There are clear and appropriate procedures followed in approving and allocating research funds/grants.					
7	Academics are encouraged to arrange their teaching and administrative commitments to allow time for research and publishing.					

Appendix 8: Interview Schedule

University (Deans/Directors)

Research

1. Do members of the academic staff in your faculty/school have access to research funds?
   _____

2. What is the size of the research grants/funds to the faculty/school? _____

3. How many applications for research funds by members of the academic staff qualify for funding in the faculty/school per year? _____

4. For the applications that are not funded, what could be the problem? _____

5. What are the conditions/requirements for the members of the academic staff to acquire research funds from the university/faculty?
   _____

6. How easy or difficult is it for the members of the academic staff to acquire/raise research funds? _____

7. What are the funding guidelines in terms of the minimum and maximum amount of the research funds a member of academic staff can access? _____

8. Does the university/faculty/school require members of the academic staff to use research funds on masters and PhD students work? _____
   _____

9. Would you suggest that in future research funding should be attached to graduate teaching so that members of academic staff use the funds to mentor graduate students hence increase on the completion rates? _____

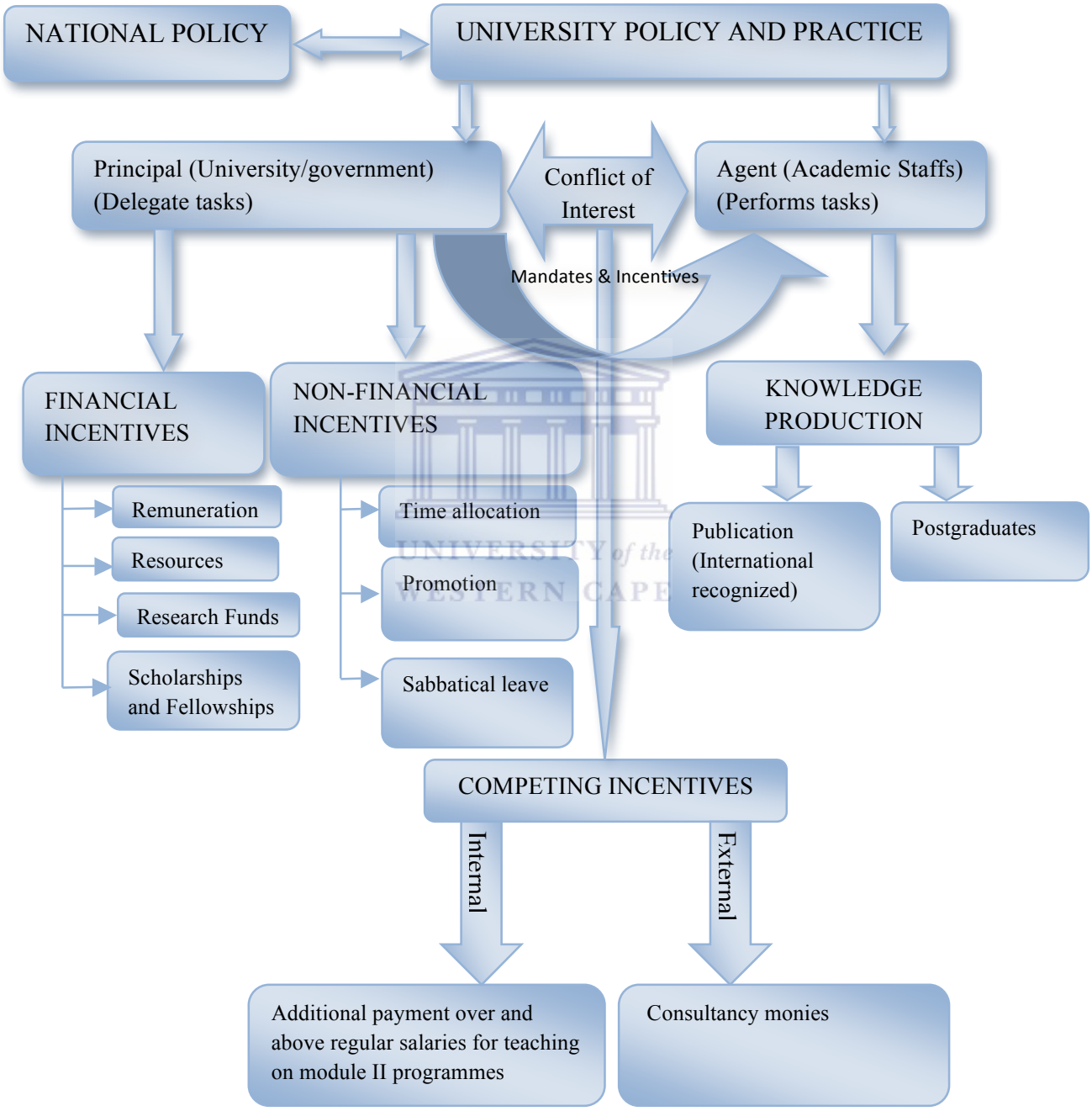
10. How many post-graduate students should a member of academic staff supervise?
    _____

11. What is the number of supervisors that should be allocated to each post-graduate student?
    _____

12. What are the guidelines on the teaching workload in terms of number of modules to be handled by the academic staff in a semester? _____

13. What system/structure is used in the faculty/school for module 2 payment of the academic staff? _____

Appendix 9: Hypothetical Model



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