CONSTRAINTS ON RESEARCH PRODUCTIVITY IN KENYAN UNIVERSITIES: CASE STUDY OF UNIVERSITY OF NAIROBI, KENYA

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INTRODUCTION

The development of knowledge-societies, particularly in the developed countries, has made universities to be crucial national assets where many governments are looking to them to generate and share knowledge through research, produce short-term practical outcomes, commercialize their intellectual property, and chase funding, no matter what it takes to win it (Group Eight, 2013). Consequently, the universities around the world have scaled up their regard for research from being a core function together with teaching, to becoming a dominant function for university prestige (Musiige, 2014). Nonetheless, this is completely a contrary situation in many universities in Africa. In Kenya for example, there are about twenty three public universities out of which seventeen are newly elevated colleges to offer degree programs while six are the Kenya’s oldest universities. This implies that only six are able to fully offer graduate programs such as master and doctoral programs.

In all these universities, it’s important to highlight that resources such as human resources that include administrative, support or technical staff and facilities like library, technology, laboratories and equipment, are available at a minimal level. However, the scope of research undertaken by academics in certain disciplines such as science and engineering is constrained by the high cost of resources and equipment. University of Nairobi (UoN) which was our main focus in this study is the largest research university in Kenya. Yet, its efforts to enhance research activities have been hampered by lack of adequate funds and other resources (Magoha, 2006). According to Merchant (2009), effective university leaders can embed research culture into their universities and sub-units by valuing and rewarding research and utilizing a range of human resource management strategies to develop and encourage academics’ research. Bland et.al (2009) goes further to state that research productivity is shaped by the interplay of the three vast compositions, and it is the progressive interaction of individual and institutional attributes, complemented with competent leadership, that results into efficient performance of individuals and departments. In fact, compared to University of Cape Town, which is among the leading research universities in Africa, (Musiige, 2014), UoN is lagging behind in terms of...
research productivity. Kenya is emerging as one of Africa’s key growth centers with sound economic policies in place for future improvement (Diarietou, 2015). Therefore, UoN being the leading research institution in Kenya, has a major role in producing knowledge-based resources necessary to sustain the growth momentum. While many past studies assert financial inadequacy as the common constraint on research productivity in universities, several recent studies have begun to focus on organizational factors as powerful attributes to research productivity in universities (Dunder et al). These factors, coupled with the generally acceptable financial constraint, impede research productivity in many universities and University of Nairobi is not an exception.

On the industry to universities linkages, most studies confirm that there is an out-come-impact gap in these collaborations. Most promising outcomes of universities’ projects do not result into meaningful impact to the collaborating firms (Pertuze et al, 2010). This view is reminiscent with the collaboration between Kenyan industries and local universities. The focus of the firms in these collaborations has always been on the outcome but not the impact. However Pertuze et al (2010) challenges this position by saying that, “what matters is not outcome but impact - how the new knowledge derived from a collaboration with a university can contribute to a company’s performance. Are new products made possible? New and more effective manufacturing processes? Novel kinds of computer hardware or software that enable greater logistic efficiencies? Patentable materials, designs or processes that enhance competitive advantage”.

While University of Nairobi had been collaborating with Oil giants like Total in a project meant to develop education through university-industry collaboration, student’s exchange and development of educational facilities, the proponents of these collaborations are not quiet loud about the benefits that will accrue to Total. In fact, the management of Total views this kind of collaboration as part of their corporate social responsibilities (UoN VC’s desk, 2011). It’s no wonder; there are very few collaboration projects between local firms and Universities in Kenya. Universities must come out clear with project proposals that address direct needs of specific firms if they have to engage in any meaningful collaboration that can enhance their research productivity.

THEORITICAL BACKGROUND AND INFORMING LITERATURE REVIEW

This segment of the paper reviews literature relevant to the study. It borrows content from several research papers and contributions of different authors. It reviews the understanding of research productivity as explained by different researchers and authors. Moreover, the review gives distinct reflection of research culture, institutional factors, research environment and resource factors as key influencers of research productivity in public Universities in Kenya. The paper conceptualized that inadequate levels or lack of resource factors, research environment, research culture and favorable institutional factors, have effects on research productivity in public Universities in Kenya. Lack of these factors heavily constrains research productivity in the Universities, as shown in figure 2.1.

The above diagram illustrates the relationship between research culture, research environment, institutional factors and resource factors; and research productivity in Public Universities. They are further explained as follows:

The Concept of Research Productivity

Research productivity and research activity are interdependent. Research comprises gathering, examining and interpreting data. Productivity develops from writing, reading, and publishing research reports in professional refereed journals, and presenting it on the web, or exposing it to the public through any other means (Olatokunbo, 2013). Most of the research work in Kenya takes place in universities. Faculty staff members undertake research and their productivity are determined in diverse methods. Academic institutions basically determine research productivity based on published works, externally funded grants, and the number of citations the published works received (Middaugh, 2003).

Research Culture and Research Productivity

In order to adopt research culture that enhances research productivity in their institutions, university leaders both at council and department levels need to come up with clear research goals and ensure such goals are effectively communicated to relevant stakeholders (Hanover,2014,p.3). Additionally, there need to be a system of how research success can be evaluated (Tash, 2006). Universities and other institutions involved in research need to ensure there is good relationships among faculty members as this would go a long way in developing and maintaining research culture in their respective institutions as well as supporting inter-faculty mentoring initiatives (MacPherson, 2005). Research culture development requires significant allocation of resources to training and development. Institutions or departments with inadequacies in research skills and other personal development issues will definitely require training and other personal assistance in order to be proficient. This can be achieved through programs of continuing education in research and other support related services (Chung-nan, 2014). In certain instances cultural change may require resources to be allocated according to the level of motivation of an individual faculty member. Those faculty members whose motivation levels are higher but are of low ability will definitely benefit more in training and support services.
While on the other hand those faculty members whose motivation levels are lower requiring development of their personal relationships both within their departments and across the institution (Darb and Newman, 2014). Research culture requires to be maintained regularly after being developed and established. The enforcement of research policies need to be carried out frequently before they are accepted (Merchant, 2009). After acceptance of the new policies, the management must be prepared to encounter challenges which generally are related to maintenance and attraction of resources to the institution as well as building partnerships and countering institutional challenges (Bassler, 2012). It’s also important to involve students as part of the strategy of developing research culture. Students who are pursuing their doctoral degrees would be very relevant in this endeavor.

The motivation by the faculty to advance in their discipline is the main idea behind research productivity in many institutions of higher learning. In fact, most disciplines are encouraging their members to work in collaboration and publish research papers in joint authorship so as to uplift the discipline’s standing (Majhi and Maharana, 2012). Salazar-Cleméña and Almonte-Acost (2007) notes that universities and colleges that need to reconstruct themselves into research institutions

**Institutional factors and Research Productivity**

According to Middaugh (2001) research productivity is dependent on the level and type of Research University. Like in Kenya, there are those research universities that offer a full range of Bachelor degree programs to graduate education through the Doctorate, and highly prioritize research; there are Universities that offer full range of Bachelor degree programs and can only offer master degree program at graduate level, there are chartered colleges and universities that offer a full range of bachelor degree programs and do not offer any graduate programs; there are middle level or constituent colleges that offer the associated certificates or diploma programs and do not offer bachelor degrees; and specialized institutions that offer diplomas and post graduate diplomas in a specialized field such as medical schools, law schools and art colleges. Of relevance to this investigation is the type of educational institution that can influence the level of staff research productivity (Lertputtarak,2008). A number of studies carried out on research productivity in high learning institutions report that faculty members in more research oriented doctoral institutions have more publications than their counterparts at bachelor degree and specialized colleges (Kotrikil and Williams, 2004).

Further, studies have also noted reduced research productivity rates for senior members of certificate and diploma colleges than those higher learning institutions that offer master and doctorate programs (Lertputtarak, 2008). In fact Lertputtarak (2008) emphasizes that research productivity is more likely to be higher in doctorate-granting universities than those that offer bachelors and master degree programs only. Previous studies have shown clearly that faculty staff behavior is less likely to be controlled by formal bureaucratic rules in master and doctorate-granting universities than in middle level colleges and bachelor degree programs universities (Colbeck, 2004). Meltzer and Slater (1962), and Lertputtarak (2008) that the level of job satisfaction is dependent on the level of supervision. They explained that in the institution where the level of supervision is lower, there is likelihood of greater level of job satisfaction. In master and doctoral research universities, faculty members are regarded as professionals. This is because they can independently determine their own agendas, bargain agreements and contribute to setting of standards of faculty work. Conversely, faculty members in the universities that only offer certificates and diploma programs and those that only offer bachelor degree programs, are seen as regular employees and consequently may find fewer opportunities to assimilate research into their work practices than their counterparts in master and doctorate-granting research universities (Colbeck 1998).

The selection of new faculty members is the most critical process for developing and strengthening a culture of research. Institutions with high Doctoral prestige produce the graduates that are the best sources for other institutions to recruit productive faculty members (Ju, 2010). Ideally, the chair and members of faculty recruiting committees should themselves have high research performance. This is of particular relevance because universities also value research from the standpoint of prominence of their faculty members in obtaining competitive research grant funding, which increases the reputation of the institution.

**Resource Factors and Research Productivity**

Research productivity is also affected by low morale of faculty members resulting from poor remuneration due to shortage of funds. Factors such as reducing staff numbers through retrenchment and other measures of downsizing in higher-education system is a commonly cited as a means of cutting cause of low morale of faculty members in the sub-sector (Lertputtarak, 2008). Gonzalez-Bambila (2007) said university should establish policies and practices that favour the appointment of highly able and motivated people. Several studies demonstrated that there is a relationship between research productivity and salary. Higher salaries may result in attracting productive faculty, while at the same time minimizing the possibility of losing active faculty to other institutions (Kotrikil et.al, 2002).

Lertputtarak (2008) supports this position by stating that success of many research universities is dependent on their abilities to secure research funding. Funding grants usually cater for the salaries for the professors and a budget available for hiring other key staff and professionals to help teach and conduct effective research. In a RIN and RLUK (2011) report, library expenditures measures represent one of the important institutional attributes to research productivity. Libraries are critically important in helping researchers to exploit the full benefits and opportunities of the networked world, including such developments as open access and social media. In this way, Libraries go a long way in establishing stronger links with researchers and in refocusing their services to promote and exploit new technologies and new models of scholarly communication. Lertputtarak (2008) highlights that there is strong relationship between increased expenditure on library facilities and the increased research productivity of the faculty staff. In the overall, the amount of time spent by a faculty member in research activity has a strong relationship with his or her research productivity (Jung, 2012).
Research Environment and Research Productivity

For each faculty or discipline, there are also differing amounts of research productivity. Kim (2005) believed that the discrepancies between each faculty arise from differences in their historical development especially in terms of the speed of knowledge production and technological advancement. Creswell (1985) studied influence of disciplinary differences on research productivity and concluded that research productivity differs for faculty from different disciplines and that disciplinary affiliation predicts research performance. Natural science faculty leads in producing journal articles followed by social science and humanities, in that order. On the other hand, for book publications, faculty of social sciences leads followed by humanities and natural sciences, respectively. Ossenbrink and Stephan (2013) assert that natural science and social science are different. Wanner, Lewis and Gregorio (1981) mentioned that the decisive edge that natural science enjoy in terms of journal article publicity over social and humanity disciplines is purely based on the result of the nature of work or favorable disciplinary milieu in natural science faculty and the attributes in social and humanity disciplines. Regarding research training, the faculties in ‘hard’ science areas such as physics have more opportunities to work with students than faculty in ‘soft’ science areas such as English (Gilmore and Lewis, 2015), While quoting Kelly and Warmbrodu (1986), Kotrlik et.al (2002) stated that ‘perceived institutional and departmental supports for research are seen as the most important enablers for research productivity’. According to the University of Carolina (UC) accountability report (2015), research productivity can be evaluated in a number of ways: research expenditures; the academic quality and impact of UC’s research; the enhancement of UC students’ educational experience; the contribution of research findings to public knowledge; and the economic and societal benefits that flow from research.

RESEARCH METHODOLOGY

Research Design

The study used descriptive research design. Chinese English (CE) Dictionary (2003) refers to descriptive research as a non-experimental research design used to observe (and measure) a variable when little conceptual background has been developed on specific aspects of the variables under study.

Sample

The researcher used purposive sampling to select 10 respondents from each of the six colleges of University of Nairobi. Purposive sampling, also known as judgmental, selective or subjective sampling, is a type of non-probability sampling technique. Non-probability sampling focuses on sampling techniques where the units that are investigated are based on the judgment of the researcher (Latham, 2007). In this regard the researcher found homogeneous purposive sampling technique relevant for this study as it aimed to collect data from research personnel working in the six colleges of the University of Nairobi.

Data Collection Procedure

Both secondary and primary sources were collected. Secondary data was collected from data obtained from similar past studies, from newspapers and library sources. The primary data was collected by use of semi-structured questionnaires.

Data Analysis

The collected data were thoroughly examined and checked for completeness and comprehensibility. The data were then condensed, codified and classified for ease of interpretation. Quantitative data were analyzed by use of descriptive statistics such as standard deviation, frequency distribution and mean. On the other hand, content analysis was used to analyze data collected from the sections of the questionnaire that contained open ended questions. Data presentation was done by use of frequency tables, percentages, pie charts, graphs and bar charts.

RESEARCH FINDINGS AND DISCUSSIONS

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this chapter is to analyze the variables involved in the study. Data collected were both quantitative and qualitative. The data were analyzed by use of descriptive statistics such as standard deviation, frequency distribution and mean. Data presentation was done by use of frequency tables, percentages, pie charts, graphs and bar charts.

Response Rate

A total of 60 questionnaires were issued to 60 respondents drawn from University of Nairobi’s six colleges out of which 58 were returned giving a response rate of 96.7%. According to Mugenda and Mugenda (1999) a 50% response rate is adequate, 60% good and above 70% is rated very good. This view is supported by Fincham (2008) who notes that there are now higher expectations for survey response rates. Response rates approximating 60% for most research should be the goal of researchers and certainly are the expectation of the editor and associate editors of many journals. This implies that basing on this assertion; the response rate in this case of 96.7% is very good. Response rate is important because it provides valuable insight into the accuracy of data. According to AJPE (2008), a lower response rate contributes to a higher nonresponse bias. Nonresponse bias is a deadly blow to both the reliability and validity of study findings.

Table 4.1. Response Rate

<table>
<thead>
<tr>
<th>College</th>
<th>Questionnaire issued</th>
<th>Returned</th>
<th>Return rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture &amp; Engineering</td>
<td>10</td>
<td>9</td>
<td>90%</td>
</tr>
<tr>
<td>Agriculture &amp; Veterinary Sciences</td>
<td>10</td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td>Biological &amp; Physical Sciences</td>
<td>10</td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td>Education &amp; External Studies</td>
<td>10</td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td>Humanity &amp; Social Sciences</td>
<td>10</td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td>Health Sciences</td>
<td>10</td>
<td>9</td>
<td>90%</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>58</td>
<td>96.7%</td>
</tr>
</tbody>
</table>

Demographic Information

The researcher sought to establish the general information of the respondents, which forms the basis under which the interpretations are made. The respondents were selected from the six colleges of the University of Nairobi and among the characteristics regarding themselves included: age, gender, college, position in employment and years in employment.
Gender

Figure 4.1 shows that majority of the respondents (70%) were male. Gender is an important factor to in assessing research productivity. According to Kiado (2011), after passing the age of about 38, women tend to receive, on average reduced funding for research than men, and are generally less productive in terms of publications, and are at a slight disadvantage when measured by citations of their publications. As such, the researcher sought to find the distribution of the respondents by gender as a factor to consider in research productivity. Sax et al. (2002) adds more insights to the gender issue by noting that, in spite the fact that women in the academia have made recent and significant gains, they still comprise a third of the faculty in many institutions and still remain underrepresented in many departments and institutions at the higher faculty ranks. Furthermore, the choice of career by women and men often differ with women being more likely than men to devote time to teaching and advising, serve in part-time positions, and teach in fields unlike the one in which they were trained. According Kirtiraj (2012), age of the respondents is one of the most important characteristics in understanding their views about the particular problems; by and large age indicates level of maturity of individuals in that sense age becomes more important to examine the response.

Age

From table 4.2 majority 18(31.1%) of the respondents are in the age group 50 and above, followed closely by respondents in the age group 29-39 years (27.6%). Interestingly, put together the age groups 40-50 years (17.2%) and 50 and above years (31.1%) constitute about 50% of the respondents. According to Levin and Stephan (1989), in physics and earth science, older scientists publish less than their youngest pears and in physiology and biochemistry older scientists publish less than their middle-aged colleagues. Therefore, age plays a crucial role in research productivity. The retirement age of faculty members of most universities in Kenya is 70 years, implying that a good percentage of faculty members of these universities are between the ages of 60 to 70 years, thus impacting negatively on research productivity of their respective faculties.

Position in employment

Xinyan Zhang (2014) asserts that academic staff specifically constitutes a significant component of the budget of universities and so they play key role in realizing the objectives of the institutions. Such staff when well motivated can build a national and international reputation for themselves and the universities. A profile built on such a background may have a significant impact on the ability of the university to attract more students, research funds and consultancy contracts. A shown in Table 4.3, academic staff constitute 50% of the total respondents, a factor worth noting. Position in employment is important in determining the level of authority an individual has within the institution and could translate into ease with which he can get access to information, materials or equipment. In fact, it is important to note that over 73% of the respondents comprise of both academic and technical staff, a factor that augers well for the study given the fact that the study sought to extract data about research productivity in which they are part and parcel. On the other hand, position on employment in many cases influence job satisfaction which in turn motivates the employee to produce more to realize better performance.

Table 4.3. Position in employment

<table>
<thead>
<tr>
<th>Position</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>29</td>
<td>50%</td>
</tr>
<tr>
<td>Administrative</td>
<td>4</td>
<td>5.2%</td>
</tr>
<tr>
<td>Technical</td>
<td>19</td>
<td>32.8%</td>
</tr>
<tr>
<td>Researcher</td>
<td>1</td>
<td>1.7%</td>
</tr>
<tr>
<td>Student</td>
<td>6</td>
<td>10.3%</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>100%</td>
</tr>
</tbody>
</table>

Years in employment

In her research paper, Fukuzawa (2013) asserts that experience has a statistically positive relationship with the number of research papers a researcher can produce. In this regard, the researcher was interested in knowing the number of years so far served by the respondents as a pointer to their ability in producing research papers. In Table 4.4, most of the respondents have experience of 18 years and above (34.5%). In fact, majority of respondents (79.3%) of over 6 years

Table 4.4. Years in employment

<table>
<thead>
<tr>
<th>Years</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 5 years</td>
<td>12</td>
<td>20.7%</td>
</tr>
<tr>
<td>6 - 11 years</td>
<td>6</td>
<td>10.3%</td>
</tr>
<tr>
<td>12 - 17 years</td>
<td>12</td>
<td>20.7%</td>
</tr>
<tr>
<td>18 years and above</td>
<td>20</td>
<td>34.5%</td>
</tr>
<tr>
<td>Not mentioned</td>
<td>8</td>
<td>13.8%</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>100%</td>
</tr>
</tbody>
</table>

Cultural factors

One objective of the study was to analyze the impact of cultural factors on research productivity in the University of Nairobi. Factors that were identified for investigation included; research policies, student’s involvement in strategy, budget guidelines and incentives and benefits. As shown in Figure 4.4 below, the analysis indicates that the respondents identified all the variables as important in influencing research productivity, however, in terms of score accumulation; research policy had the highest mean score (3.3), followed by research environment (2.9), budget guideline (2.6) and incentive and benefits (2.5).
As the results in figure 4.2 above indicate, all the cultural factors hypothesized as influencing research productivity in universities are confirmed by the study as important.

Research Policy

As Neumann and Lindsay (1988) noted, universities require research policies that take into account not only national research needs but also the full range of purposes of higher education, and its concomitant values, processes and structures. These policies should be concise of the fact that research receives its main impetus from problems defined within a discipline. In other words, the primary consideration of a research project is the contribution it may make to the field. Any direct economic or social benefits become secondary. Therefore, both research proposal and outcome are assessed based on their excellence rather than the values they can add to the industry or society. Universities policy makers should also be concise of the fact that both individual researchers and their departments or centers require a high level of freedom from external interference in order to adequately pursue specific research goals as well as the general purposes of higher education. Much of the human knowledge that is in use across the world, is generated in the world’s university departments through research (Goodall et al., 2014). Universities have the noble responsibility of developing policies that address this important role that they play in the society.

Student’s Involvement

Students’ involvement in the formulation and implementation of strategies geared towards instilling research culture in the University is a key factor, as shown by a mean score of 2.9 in figure 4.4. It’s also important to involve students Students who are pursuing their doctoral degrees would be very relevant in this endeavor.

Budget Guideline

Universities need to have adequate budget to procure research equipment and also to fund its faculty members to conduct research (Iqbal, 2011). Inadequate funding of researchers is a major bottleneck of research productivity in the University of Nairobi.

In addition, Universities with complex and complicated procurement procedures like in the case of universities of Nairobi, have low research productivity. This is reflected on a comment by one respondent as below:

‘Here at the University of Nairobi, we have a serious problem when it comes to procuring research equipment and materials. The process is cumbersome and time wasting. In most cases, it leads to wrong equipment or material being sourced’.

According to whitmire (2000), in order for universities around the world to enhance their research productivities, they have to make a choice among a number of research initiatives they undertake. This is to allow utilization of the available and yet scarce financial resources on more important research projects. In addition, senior management of universities need to make a case to their decision makers and education policy makers for adequate funding of research related programs.

Incentives and Benefits

Faculty members who excel in their research areas by presenting papers at research conference proceedings or publish their work in recognized journals, require incentives that may include; appreciation letters, financial rewards or promotion. Faculty members; to be given less teaching load, should be provided with smooth and progressive work environment should not be overburdened by administrative duties alongside their academic duties. Faculty members must be granted leave in a period of three years to carry out research. In addition university authority is required to provide funds to its faculty members to conduct research. The motivation by the faculty to advance in their discipline is the main idea behind research productivity in many institutions of higher learning. In fact, most disciplines are encouraging their members to work in collaboration and publish research papers in joint authorship so as to uplift the discipline’s standing (Majhi and Maharana, 2012).

Institutional Factors

The impact of institutional factors on research productivity in the University of Nairobi is another objective that the study sought to analyze.
In this category of variables, factors that were analyzed included: level of university, supervision, recruitment policies and practices, faculty disparity, training and institutional departmental support. Below are the mean score of responses: As shown in Table 4.4 above, all the other variables were rated important, but the level of university had the highest mean score of 3.3 followed by supervision at 3.3, faculty disparity at 2.9, training at 2.8, recruitment policies and practices at 2.7 and institutional/departmental support at 2.6.

Level of University

Universities vary in levels; there are universities that provide all graduate and undergraduate programs, there are those that provide only master and undergraduate programs and universities that provide undergraduate programs. In Kenya, for example, the levels of universities are dependent on the time the universities were given the charter. Older universities offer all graduate and undergraduate programs. Newer universities offer master and in some cases only undergraduate programs. Therefore, older and larger universities that offer all graduate programs are more productive in research than those that are newer and smaller. This view is supported by Radha Krishna et.al (1994) whose research finding asserts that faculty members in major research institutions publish more than those of the small and newer colleges.

Level of Supervision

The level of supervision was also found to have influence on research productivity. In larger research universities, faculty members are treated as professionals while in non research and smaller universities, faculty members are treated as employees. Therefore, there is higher job satisfaction in large research universities than there is in small and non research universities. According to Meltzer and Slater (1962), the level of supervision is conversely proportionate to job satisfaction. There is a notable contrast in the way faculty members are treated in research universities. Finkelstein (1984) notes research universities treat their members as professionals while in non research and smaller universities, faculty members are treated as employees.

Recruitment and Selection Policies

Institutionalizing effective recruitment and selection practices in the universities serve to enhance their ability to achieve research productivity goals. Bland and Ruffin (1992) stated higher learning institutions like universities need to put in place policies and practices favorable for the recruitment and retention of highly qualified and motivated staff. When universities carry out recruitment and selection without regard to key research requirements, matched with qualifications of job applicants, then there is bound to be converse outcome of their research productivities.

Disparities among Faculties

The disparities among faculties in universities were also found to have influence on their level of research productivity. Beyer and Steven (1974) comparatively found significant different rates of publication in faculties such as chemistry, physics, political sciences and sociology.

Natural science faculty members publish fewer articles compared to those in the social science (Lewis and Gregorio, 1981).

Training

Every worker has some strength and weaknesses in their workplace skills. Therefore training allows a worker to strengthen those skills that he or she needs to improve. Consequently, training was found to be important to research productivity in universities. Faculty members need to acquire skills on how to manage their time properly. They too need to acquire knowledge in statistics that they definitely need for data analysis and interpretation. It’s also necessary they acquire skills necessary to comprehend the research methodology and develop research skills, which are necessarily required to conduct research studies and write research papers (Iqbal, 2011).

Institutional/Departmental Support

The study found institutional and departmental support to be among the key factors that influence research productivity in the universities. The finding is supported by Kelly and Warmbroad (1986) who noted institutional and departmental support as key facilitators of research productivity in universities. Research productivity provides direct benefits to institutions and departments and therefore research productivity is dependent on the support of those institutions and departments (McGill and Settle, 2012).

Resource Factors

Another objective the researcher had interest to achieve was the impact of resource factors on the research productivity in the University of Nairobi. Under this variable the factors that were analyzed comprised of: qualified staff, better salary, expenditure on materials and equipment. In this category, as shown in figure 4.3, level of qualified staff had the highest mean score of 3.3 followed by expenditure on materials, better salary (2.5) and equipment at 2.7, which many members concurred is bedeviled by complex and slow procurement procedures (60%). Other members (40%) said expenditure on materials and equipment is characterized by scarcity of modern and functioning equipment.

As shown in figure 4.4, majority of respondents (60%) identified scarcity of modern and functioning equipment as major issues that are affected by resource factors. Another 40% felt that the aspect of resource factors is further aggravated by complicated and slow procurement procedures.

Staff Qualification

Universities seeking to enhance their research productivity need to acquire qualified staff in their ranks.
In this regard, universities should ensure they have in their recruitment committees the chair and members of faculty who are themselves ascertained as high performers in research. Such universities will attract competitive research grant funding thus elevating the reputation of the institution. Moreover, recruiting qualified research staff will go a long way in cutting down on training cost that could have been spent on training new research staff.

**Staff Salary**

The study found out that research productivity is also influenced by staff salary. This view is asserted by Tornquist & Kallsen (1992) who noted that higher salaries attract productive faculty while lower salaries lead loss of valuable faculty members to other universities. Paying attractive salary in exchange for performance may motivate productive faculty members to be even more productive (Kotrlik et.al, 2002).

**Expenditure on Materials and equipment**

The level of research productivity in any university is dependent on the expenditure on materials and equipment. Coggeshall et.al (1982) asserts this view by noting that the magnitude of direct expenditures on material support can be a reflection of research productivity. This is corroborated by Etzhowitz (1992) who noted that the capacity to obtain research grants to acquire equipments and materials has become a measure for success. While this position is true, the University of Nairobi is bedeviled by other uncommon factors, the factors of procurement process and un-functioning equipment. The procurement process is such slow that in certain times it ends up delivering unwanted material or equipment due to lapse of time. The process also affects the functionality of equipment due to sophisticated procurement process of enlisting a technician to maintain or repair the equipment.

**Research Environment**

Research productivity requires smooth and progressive environment (Iqbal, 2011). Such environment requires research supportive leadership that provides less teaching load to faculty staff and excludes them from administrative duties. Brand and Ruffin (1992) identifies research conducive environment to include; clear goals that serve a coordinating function, research emphasis, distinctive culture, positive group climate, assertive participative governance, decentralized organization, frequent communication, accessible resources, particularly human, sufficient size, age, and diversity of the research group, appropriate rewards, concentration on recruitment and selection, and leadership with research expertise and skill in both initiating appropriate organizational structure and using participatory management practices. When all these characteristics are available in a research environment, then it’s possible to enhance research productivity of an institution.

**Conclusions**

In conclusion, cultural factors that include; research policy, students involvement in research strategies, budget guidelines and incentives and benefits to faculty staff, are key for the improvement of research productivity in Kenya’s public Universities. Further, the study deduced that factors such as the level of University, level of supervision, recruitment and selection policies, disparities among faculties, training, department support; put together as institutional factors, play a greater role in enhancing research productivity in Kenya’s Public Universities. There is also a clear picture in the findings that resource factors which include; expenditure on materials and equipment, better salary and qualified staff, contribute immensely to research productivity in the Universities. Finally, the study concludes that, in order to increase research productivity in Kenya’s public Universities, there should be a research environment that provides supportive leadership, clear goals, and less teaching load to faculty staff.

**Recommendations**

**Cultural Factors**: Public universities need to involve students and faculty staff in developing and implementing research productivity strategies. Clear policies detailing the incentives and benefits to faculty staff involved in research should be developed and published.

**Institutional Factors**: Public universities that offer programs up to master degree level should be encouraged to offer them up to doctoral level where a lot of research work is involved. Further, public Universities that do not offer research-rich programs like those in physical sciences should be encouraged to offer them.

**Resource Factors**: Kenya’s public universities should double their efforts in sourcing for grants to finance research projects. This can be done through partnership with the government, industries and not-for-profit organizations. The Universities should come out with and publish policies which adequately remunerate research staff as well as outline research as a key qualification for employment in the faculty. The Universities should make procurement procedures of research materials and equipment less complicated.
Research Environment: Kenya’s public universities must adopt leadership styles that provide support to faculty staff involved in research activities. Such leadership style should develop and communicate clear research goals to faculty staff. Finally, there should be less teaching load and exemption from administrative duties to provide time for research activities.

Suggestion for further studies: Year in year out, Kenya’s public Universities graduate students both in master and doctoral levels through mandatory requirement of research projects or thesis; how the knowledge gained in these research activities are handled or disseminated to the potential users remains unclear and in some cases haphazard. Therefore, there is need for further studies to explore how Kenya’s public Universities handle and disseminate research findings to potential users.

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