University of Dar es Salaam Library Journal
Vol 15, No 1 (2020), pp 45-66
ISSN: 0856-1818

An Analysis of the Factors Influencing Research Capacity Developments in Higher Education Institutions in Tanzania

James Ernest Kazoka Directorate of Post-Graduate Studies Research and Consultancy Tumaini University, Dar es Salaam College
james.kazoka@gmail.com

Evans Wema
Information Studies Programme, College of Social Sciences, University of Dar es Salaam
wemafr@gmail.com

Abstract
The study examined factors influencing efforts towards developing research capacity in Higher Education Institutions (HEIs) in Tanzania. A mixed research approach (quantitative and qualitative) was employed in the study. Accordingly, a cross-sectional survey using questionnaires and semi-structured interview was used to collect primary data from simple randomly and purposively selected academic staff. The study findings show that competences, knowledge, and experiences in conducting research are the attributes that faculty members acquire through short training aimed to enhance competences in conducting research. Factors promoting research capacity development include presence of research policy and awareness of it, motivation to conduct research, availability and adequacy of research funds. Challenges faced were insufficient research skills, poor collaboration between senior and junior academic staff, and lack of pro-activeness and commitment in conducting research. The study recommends that HEIs should regularly organize training on research skills for academic staff and faculty members to be proactive and committed in carrying out research.

Keywords
Research capacity, Research development, Research policy, Higher Education Institutions**,** **R**esearch competence

Introduction

Worldwide, research is considered as fundamental venture that is used to generate practical knowledge and theories. Similarly, research is viewed and recognized as a process that is used in arriving at dependable solutions to problems facing communities. On the other hand, Chikwe, Ogidi, & Nwachukwu, (2015) argue that research is directed towards the discovering of the relationships that exist among the phenomena of the world in which we live. Thus, many research institutions, universities, organizations, and individuals have been carrying out research in different areas of specialization such as in education, business, natural resources and environment, human resources development, constructions, health related aspects; aimed at improving the quality of education provision and the lives of the citizenry. The information from these research outputs are used as a powerful tool for providing information for policy formulation and designing development projects (Kazoka, 2005; Stephenson & Hennink, 2002). The policies formulated are used to solve problems facing societies that need policy decisions (Kazoka, 2005). Thus, quality research offers a key to understanding the world we live in and help to produce

well-informed and effective policy.

According to Chikwe, *et al.*(2015) universities around the world have been recognized as the centre of knowledge accumulation and knowledge transfer. In fact, the traditional roles of universities are teaching, research and community services with the overall aim to provide trained human resources for essential areas of social development (Kent, 2006). It should be noted that universities can mould the surrounding communities if they will carry out research aimed at solving problems facing societies and use the research output as the source of information for solving their social economic problems (Kazoka, 2005). Bako (2005) argues that it is difficult to separate research and development because research is the most enduring and effective means of boosting sustainable economic development and re-enforcing competitiveness in face of rapid growth taking place between industries, countries and people in the world. In support of this, Kent (2006) point out that universities are the principal strength of many national innovation systems and Banji (n.d) views universities as the engines of development in their areas of locations. It is indeed highly inspiring to see that in Tanzania, people are gradually getting aware of the contribution of research to the development of Tanzania. In light of this, Higher Education Institutions (HEIs), Research units such as Consortium of University and Research Libraries (COTUL), Tanzania Education and Research Network (TERNET), Commission of Science and Technology (COSTECH), and Research in Poverty Alleviation (REPOA), bureaucrats, Non - Governmental Organizations (NGOs) and policy makers have equally emphasized the significance of researching and exploiting the benefits of research practice. Research, consultancy and teaching remain to be core functions of the academics in higher learning institutions of Tanzania (Kowero, 2012). Thus, building research capacity in HEIs globally (Griffioen, 2018; Li, Millwater & Hudson, 2008; Huenneke et al., 2017), Africa (Bako, 2005; Mugimu, Nakabugo, & Katunguka-Rwakishay, 2013; Adams, *et al.*, 2010) and Tanzania in particular (Kowero, 2012; Kazoka, 2005) is now a priority.

Building research capacity in Higher Education Institutions (HEIs)

Many higher education institutions (HEIs) have in place strategies for research capacity building that act as a catalyst for promoting research activities and quality of research outputs. To a great extent these strategies and initiatives have promoted research activities among members of staff and students (mostly Master's and Doctoral students). These strategies include establishing internal short training programmes with staff and students on research skills, bilateral training of both staff and students on research by establishing partnership network programmes and multilateral partnership programmes (Banji, n.d). Many universities adopt these three models of research capacity building. The fact that HEIs adopted these models reveals that they enhance research capacity of students, staff, and departments at large (Banji, n.d).

Many universities around the world establish research agenda for promoting research activities in their respective universities. For example, the University of Dar es Salaam in Tanzania has in place a research agenda 2017/2019 - 2028/2029 which clearly articulate on the need to promote research capacity at the university. The research agenda states clearly that research activities will be done by providing an enabling environment and resources for research and knowledge production, promoting strategic development of priority research areas, promotion of multidisciplinary research teams, human capital development, provision of research infrastructure and relevant research support, in pursuit of Tanzania's transition to an industrial economy (UDSM, 2018). This is critical for the current trends of social and economic development in the

country.

Generally, as for many other African countries, research development and capacities especially in carrying out multinational researches in universities and particularly in Tanzania are generally low (Harle, 2010). Many universities are struggling to strengthen research capacities and promote research activities, but yet there are a lot of challenges facing these universities (Adams, *et al.*, 2010). This research study therefore, designed to investigate the extent of research capacity and factors influencing efforts in building research capacity in HEIs in Tanzania. Specifically, it aimed to:

i. Determine the extent academicians are competent and experienced in conducting research
ii. Find out factors which promote research capacity development in higher education institutions
iii. Examine challenges facing higher education institutions in their efforts for research capacity building.

Review of related literature

Overview of research activities in HEIs in Africa

The origin and development of universities in Africa can be traced from Northern Africa especially in Egypt and Morocco. The oldest world degree-awarding institution in Africa was the University of Al-Karaouine (al-Qarawiyyin), at Fes in Morocco (Guinness, 1998). It was founded in 859 AD, and was followed by Al-Azhar University in Egypt (found in 970 AD). Despite the fact that Africa is the source of higher education and knowledge creation, Africa has been lagging behind in the development of science and technology. As a result, the continent remains to be the richest in terms of natural resources but the poorest in terms of economic development (OECD, 2012).

Scientific researchers have been playing key roles in the discovery of scientific methods that are used to give human control over nature and as such, research activity remains to be one of the core functions of academics in HEIs (UNESCO, 2009). Nonetheless, the research papers published in the region reflect the research activities carried out at a time. Between 1999 and 2008 for example, Africa produced the smallest quantity of research papers (Adams, *et al.*, 2010) and Universities observed to provide very low research levels (Harle, 2010) particularly East Africa (including Tanzania). Most of the research papers in Africa are highly contributed by South Africa, Egypt, Nigeria and Kenya out 54 countries (Adams, *et al.*, 2010) .The reputation most higher education institutions is based on excellence of generating knowledge through rigorous research and teaching offered in that particular HEIs (Mugimu, Nakabugo & Katunguka-Rwakishaya, 2013). It is from this perspective that research and teaching forms very important components of what goes on in HEIs. However, evidence from the literature (Mugimu, Nakabugo, & Katunguka-Rwakishay, 2013; Göransson & Brundenius, 2010) shows that different HEIs tend to give varying degrees of focus either on research or teaching HEIs. There are universities which put more emphasis on teaching while others emphasize more on research. Mugimu, Nakabugo, & Katunguka-Rwakishay, (2013) asserts that research-oriented universities usually put more emphasize on research activities than teaching. Subsequently, faculty members are given

incentives to carry out research, sometimes at the expense of teaching (Huenneke, Stearns, Martinez & Laurila, 2017). On the contrary, "non-research-based universities may tend to put more emphasis on the teaching than research" (Mugimu, Nakabugo, & Katunguka-Rwakishay, 2013). As such, faculty members that are actively engaged in rigorous teaching may receive more incentives (i.e. recognition) for doing so than those involved in research (Mugimu, Nakabugo, & Katunguka-Rwakishay, 2013). Despite HEIs differences around the world, research has become a desirable activity for academics to gain appointment, and a pathway for promotion and job security (Li, Millwater & Hudson, 2008). Studies (Li, Millwater & Hudson, 2008; Sharobeam & Howard, 2002) show that faculty members are required to conduct research to get promotion and tenure. Research capacity to some faculty members in HEIs in developing countries is, however, reported to be low (Onyancha & Maluleka, 2011). Consequently, research activities and publications in the reputable international referred journals by researchers in HEIs in developing countries are low compared to other universities in developed countries (Li, Millwater & Hudson, 2008; Sharobeam & Howard, 2002; Mugimu, Nakabugo, & Katunguka-Rwakishay, 2013). In combination with other factors, it makes HEIs from developing countries to be ranked low in the international ranking of universities.

Factors which promote research capacity development in HEIs

Many researchers wish to have knowledge and skills of carrying out researches which have had an impact on people's everyday lives in terms of poverty reduction, food security, and eradication of malnutrition or environmental sustainability (Neilson, 2001). This can be achieved once researchers are acquainted with knowledge and skills of carrying out multidisciplinary research. This is possible if there are regular training on research skills to both staff and students and mentoring junior faculty staff on research skills. Therefore, partnership in research capacity building needs to be created and strengthened in HEIs geared towards promoting social economic development in any country. Mechanism for providing assistances for research revitalizations leading universities to become a source of innovation, training and intellectual capital for promoting industrial economy in any country is of critical importance. The availability of research information and proper utilization in policy formulation, designing development programs, and in decision making will accelerate flexibility, economically-sustainability; promote community development through improving health care, learning, technology, and government services (World bank, 1998).

Higher education institutions are highly expected to engage in research activities covering vast areas of disciplines in order to stimulate social economic developments of the state (Göransson & Brundenius, 2010). Literature (Huenneke, Stearns, Martinez & Laurila, 2017) indicates that in established HEIs, growth of research activities is often done by adding faculty members to existing units and providing mentoring and infrastructure to maximize individual success. Conflicts within faculty roles and other aspects of university operations, however, influence the effectiveness of particular strategies for increasing research activity (Huenneke, Stearns, Martinez & Kelly Laurila, 2017).

Generally, Africa has been providing a huge intellectual input to research achievements of many developed states (including Europe and USA) through her Diasporas who pursued higher studies abroad (OECD, 2012) and declined to go back to Africa where most of graduates believed that they could underutilize their potentiality. Even many academicians in the HEIs in Africa are no

longer thinking of research activity as the core part of their responsibilities due to lack of conducive research environment (Jonathan, 2010). Previous research studies (Harle, 2010) show that many East and southern African Universities already have high access to top quality online subscription content in particular the top scholarly journals. Some of the postgraduate students and staff are, however, not aware of the availability of e-resources and cannot make use of these e-resources due to poor searching skills (Harle, 2010).

Challenges facing HEIs in its efforts for research capacity building

There several challenges facing developing countries in research capacity development in HEIs. Literature by Chikwe, *et al.,* (2015) on challenges of research and human capital development in Nigeria reveals that inadequate funding for research activities is a challenge. Research efforts in HEIs and other sectors of the economy hardly attract adequate government and donors funding. A study by Onyancha & Maluleka, (2011) on knowledge production through collaborative research in sub-Saharan Africa reveals that research is not clearly nationally defined in the development priorities. Consequently, there low research activities in those countries. Furthermore, studies (Chikwe, *et al.,* 2015; Onyancha & Maluleka, 2011; Huenneke, Stearns, Martinez & Laurila, 2017) show that there lack of commitment of government of some developing countries to support research activities in HEIs by set aside enough funds in its budget. Consequently, efforts of developing research capacity remain low in HEIs.

Moreover, it is reported that lack of equipment, facilities and materials in sciences related researches where teachers and lecturers complain seriously of lack of science equipments to carry out their experiments (Chikwe, *et al.,* (2015). Apart from that lack of awareness on research policy and availability of funds (Li, Millwater & Hudson, 2008), poor collaboration among faculty members and poor communication network are reported to among of the challenges HEIs faculty members face in their effects to engage to research activities.

Research methodology

This study deployed a mixed research design to collect primary data. This is a class of systematic investigation where the researcher mixes or combines quantitative and qualitative research approaches, sampling procedures, methods, and analysis in a single study (Mwantimwa, 2012; Johnson & Onwugbuzie, 2004). The combination of research methods involves the collection, analysis, and integration of quantitative and qualitative data in a single or multiple studies (Marczyk, Dematteo, & Festinger, 2005). In fact, the current study adopted exploratory research design to explore factors influencing efforts for developing research capacity development in higher education institutions in Tanzania.

This study was conducted in four selected HEIs in Tanzania, namely the University of Dar es Salaam (UDSM), the Open University of Tanzania (OUT), Institute of Social Work (ISW), and Tumaini University Dar es Salaam College (TUDARCo). These institutions were selected because its programmes and research activities they promotes. Furthermore, these institutions also have well-established teaching, learning and research infrastructures, and have generated substantive teaching and learning materials. The population of the study were members of academic staff (Assistant lecturers, lecturers, senior lecturers, and Professors). These respondents are responsible for teaching, research and consultancy. The sample size of this study included 79 respondents (23 respondents were from UDSM, 24 from OUT, 14 from ISW and 14 from TUDARCo). In this

study, a simple random sampling technique was used to select 75 members out of 79 respondents of teaching staffs who filled in the questionnaire. Purposive sampling technique was used to select four (4) Directors responsible for research from the selected HEIs. These were selected purposively because they have experiences with research activities in the selected institutions. Kothari (2004) asserts that the researchers in the purposive sampling procedure select items for the sample deliberately and his choice concerning an item remains supreme.

Regarding data collection methods, a cross-sectional survey method was used to collect data by mixing questionnaire and structured interview. The combination of these methods was deemed necessary taking into account the nature of the research problem under study and the fact that each of these instruments has both advantages and disadvantages in the research process. This study employed self-administered questionnaire. Standardized questionnaires with both open and closed-ended questions were administered with lecturers in this study. The respondents' socio-demographic characteristics provide a snapshot on the background of the respondents and their suitability for the inquiry (Mwantimwa, 2012). Regarding scales, nominal and ordinal scales (i.e. Likert scale) were used to set questions. Along that, face-to-face interviews with key informants were also used to collect qualitative data.

The data collected were subjected to quantitative and qualitative analysis. Qualitative data were analysed using content analysis of ethnographic summaries, direct quotations and selected comments from informants that corresponded to the specific objectives of the study. Findings are summarized and used to complement that found in the quantitative methods. The descriptive statistics (frequency and percent) were performed using Statistical Product for Service Solutions and presented in the form of tables.

Results

Profile of the respondents

The profiles of the respondents include information on gender, level of education, academic rank of the respondents, designation and work experience. All of these were considered, to have some effect in research processes and development to members of academic staff in higher learning institutions. Table 1 below summarizes results.

Table 1: Profile of the Respondents

Socio-Demographic Information (n=75)		Frequency	Percent
Gender	Female	21	72
	Male	54	28
Academic Rank	Assistant Lecturer	46	61.3
	Lecturer	17	22.7
	Senior Lecturer	6	8
	Professor	6	8
Working Experience	Less than 1 Year	1	1.3
	1-3 Years	19	25.3
	4-6 Years	23	30.7

	7-9 Years	14	18.6
	10 Years and Above	18	24.0
Educational Level Attained	Master's Degree	57	76
	PhD	18	24.0
Academic Discipline	Education	10	13.3
	Social Sciences and Humanities	33	44
	Information Studies	9	12
	Business Administration	9	12
	Computer Science	8	10.6
	Microbiology	2	2.7
	Engineering	2	2.7
	Law	2	2.7

The majority of the respondents (72%) were male. This situation indicates that the number of females who work in higher learning institutions in Tanzania are fewer compared to the male counterpart. It likely contributed by the previous education priority in many African families which mostly favoured male compared to female. This situation has however drastically changed because of the awareness creation especially on gender equality in education system.

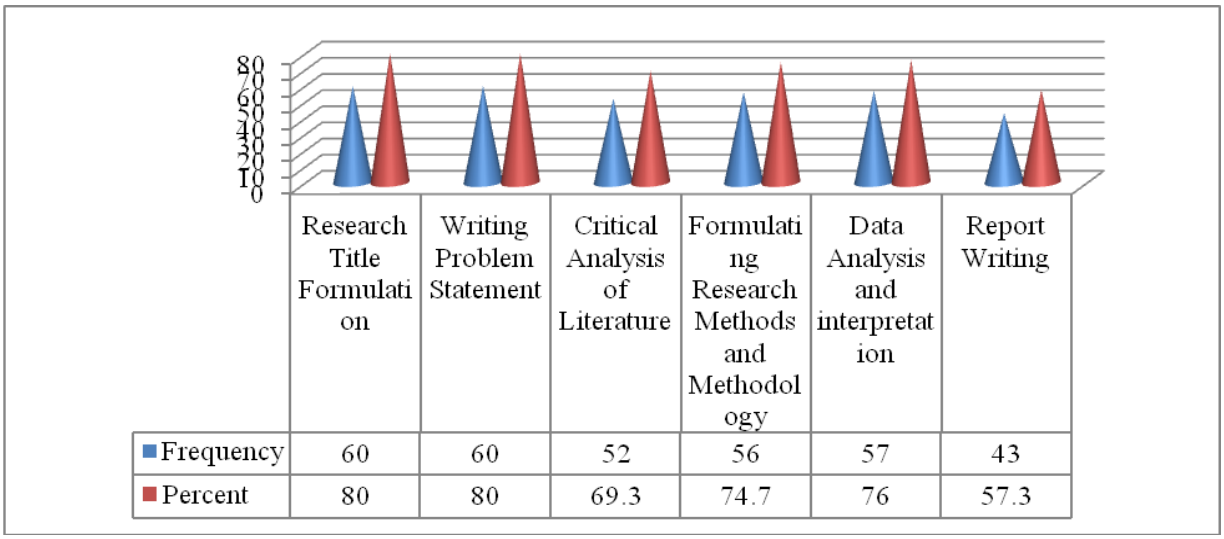
Furthermore, the findings indicate that most of the respondents (61.3%) were Assistant Lecturers and few (8%) were Professors who were more experienced in doing research. Lecturers and Senior Lecturers make a total of 30.7% of the respondents., Study findings on working experience show that 30.7% of the respondents had working experience of between 4-6 years while 25.3% had their working experience of between 1-3 years. The significant percent (37.3%) of the respondents had a working experience of 7 years and above. Moreover, the study findings show that 24% respondents were PhD holders. This is an indication that there is a need for encouraging young members of academic staff who possess Masters Degrees to pursue PhD. Consequently, they will engage in research activities and publish research and use the research findings in teaching and learning activities in the universities. This will further advance research activities in the universities.

The findings on the academic discipline of academic staff were also given priority. The findings show that almost all academic discipline of study was represented in the study. A significant number of respondents (44%) were from social sciences and humanities, followed by education (13.3%). Both business administration and information studies were represented by 12% each. Microbiology, engineering and law were represented by 2.7% each.

Academicians' competences and experiences in conducting research

The findings on the academicians' competences and experiences in conducting research show that 36% respondents were very competent in conducting research, 54.7% were competent and only 9.3% feels that they were incompetent in conducting research. Furthermore, respondents were asked how they acquired competences in conducting researches. The study findings show that majority (89.3%) attended research training after they had been employed as members of academic staff in the universities they were employed. These included short training and PhD induction courses. These have increased their competences of conducting research studies and level of participation in research studies.

In addition, respondents were asked to indicate areas in which they feel that they gained knowledge and competences after attending training. The findings show that that 80% gained knowledge and competences in research title formulation and writing problem statement respectively. Seventy four percent (74.7%) gained knowledge and competences in formulation research methods and methodology and 57(765) were gained knowledge and competence in data analysis and interpretation. The findings further indicate that 43(57.3%) were gained knowledge and skills in writing research report after attending training. For further details, see Figure 1 below.



	Research Title Formulation	Writing Problem Statement	Critical Analysis of Literature	Formulating Research Methods and Methodology	Data Analysis and interpretation	Report Writing
Frequency	60	60	52	56	57	43
Percent	80	80	69.3	74.7	76	57.3

Figure 1: Knowledge and competences gained after attending research training

Moreover, the findings from cross tabulation between working experience of members of staff with their attendance to research training show that a significant number of staff (26.7%) have a working experience of 4-6 years and 25.4% had a working experience of 1-3 years and they had attended training while 24% have a working experience of more than 10 years and they have attended training. Moreover, the Pearson Chi-Squire test show that there is a positive significance between working experience and attendance in research training (P= .00 and df = 10). For further details see Table 2 below.

University of Dar es Salaam Library Journal
Vol 15, No 1 (2020), pp 45-66
ISSN: 0856-1818

Table 2: Level of Significance between Working Experience and Attendance in Research Training

N= 75		Research Training		Total
		Yes	No	
Working Experience	Less than a Year	1 (1.3%)	0 (0%)	1(1.3%)
	1-3 Years	19 (25.4%)	4 (5.3%)	23 (30.7%)
	4-6 Years	20 (26.7%)	3(4%)	23 (30.7%)
	7-9 Years	9 (12%)	1(1.3%)	10(13.3%)
	10 Years and Above	18 (24%)	0(0%)	18(24%)
Pearson Chi – Squire Value = 80.284[a]; df = 10; Asymp. Sig. (2-sided) = .000				

The findings in Table 2 show that significant percent (26.7%) respondents had good working experience and they have attended research training to enhance research knowledge and competences. The findings indicate that after attending training, staff gained their knowledge and skills in formulating research title, writing problem statement, critical analysis of related literature, formulating research methods and methodology, data analysis and interpretation and writing report. These are critical knowledge and competences needed in conducting research.

Furthermore, respondents were asked to indicate if they have participated in research activities. The findings show that 86.7% have participated in research activities and 8% have not participated in research activities. Moreover, the level of participation in research activities differed from the members of academic staff. The findings show that 72% have participated as researchers while 16(21.3%) did not participate as researchers. 54.7% participated in data collection while 34.7% did not participate in data collection. Furthermore, 26.7% participated as research trainers and data analysts respectively while 73.3% participated as research supervisors.

Publication of articles in journals

Members of staff who participated in this study were asked to indicate whether they have published articles in research journals. The findings show that 49.3%) indicated that they published articles while 45.3% indicated that they have not published articles and 5.3%didn't indicate either.

Furthermore, respondents were asked to indicate the number of articles they had published. The findings show that 14(18.7%) published one article, 10.7% published two articles while 5.3% published three articles. The findings further show that 16% published more than four articles and 36% did not publish any article. For further see Table 3.

The Pearson Chi-squire test performed to test the degree of association between the publication and number of articles published in journals indicate that there a relationship between the

publication and number of articles referred in journals as df = 12 and p = .00. For further details see Table 3 below.

Table 3: Publications of Articles and Number of Publications

Number of Publications	Published Articles			Total
	Yes	No	NA	
One	13(17.4%)	1 (1.3%)	0	14 (18.7%)
Two	8 (10.7%)	0	0	8(10.7%)
Three	4(5.3%)	0	0	4(5.3%)
Four and Above	12(16%)	0	0	12(16%)
None	0	27(36%)	0	27(36%)
NA	0	0	4(5.3%)	4(5.3%)
Total	**37(49.4%)**	**34 (45.3%)**	**4(5.3%)**	**75 (100%)**
Pearson Chi-Square	*Value = 146.069[a]*	*df = 12*	*Asymp. Sig. (2-sided) = .000*	

The findings in Table 3 show that majority of members of academic staff (34.7%) have published less than four papers. This might be contributed by either their working experience or level of education attained at the time of collecting data.

Factors promoting research capacity development in HEIs

Research policy awareness

The findings indicate that the majority of the respondents (89.3%) were aware of the research policy guiding research activities in the surveyed institutions while 10.7% were not aware of the presence of the policy. The study findings show that members of staff who were newly recruited and have little experience in these institutions are not aware of the availability of research policy in their institutions. Furthermore, the findings show that the availability of research policy motivate research activities among faculty members as it was indicated by 72% of the respondents. These motivations range from promotion after publication or other rewards to the staff such as recognition for the work done by the institutions.

In addition, respondents were asked to indicate ways used to motivate research activities. The findings indicate a number of ways used to motivate research activities as stated in the research policy. The findings show that 34.7% agreed that incentives are given to staffs who conduct research while 48% did not agree. Furthermore, 45.3% agreed that promotion is given to those who conduct research and publish their findings in journals while 1.3% did not accept it. Apart from that 16%indicated that demotion is used as demotivation for those who do not conduct research activities while 81.3% did not accept it. For further details, see Table 4 below.

Table 4: How Research Policy Motivate Research Activities in the HEIs

Ways Used	Yes	
	Frequency	Percent
Institution Offer Incentives	26	34.7

on Research doing Promotion as Research motivation	34	45.3
Demotion as Research Motivation	12	16.0

Awareness on the availability of research funds and its adequacy

The findings show that 89.3% of the staff who participated in this study were aware while 10.7% were not aware of the availability of research funds. The study findings show that 56 % respondents indicated that funds allocated for research activities were not adequate. The findings clearly show that the availability of funds and its adequate has a crucial role to play in facilitating research activities in HEIs. The findings further indicate that funds set aside for research activities is not adequate as 56% of the respondents indicated that funds allocated for research activities is not enough.

Availability of facilities for facilitating research undertaking

The findings show that 77.3% respondents indicated that computers were available for research activities, 94.7% indicated that their institutions were connected to internet which facilitate to access research articles and other information. The findings show that computers for writing research proposal and report, internet services, library facilities and stationeries were available to support research undertaking. However their adequacy and reliability remain challenges to most HEIs. The findings indicate that the available facilities dedicated for research activities are not adequate. This has attributed by meagre budgets allocated to these institutions. Budget allocated for purchasing research facilities such as computers, books, laboratory samples and chemicals dedicated for research undertaking in HEIs were not enough for research activities. It is the challenge for all institutions to look for other sources of funds as well as all academic staff to be aggressive to write proposal to national and international research funding agencies.

Strategies used to promote research capacity development in HEIs

Among of the core functions of HEIs are teaching, research and consultancy/community service. However, the most leading activity is teaching. Consequently, many HEIs decided to put in place strategies for promoting research activities to enrich teaching activities. During the interview with Directors responsible for research in the surveyed HEIs, it was revealed that many higher education institutions (HEIs) have in place strategies for research capacity building. These strategies are aimed at promoting research activities and quality of research outputs in HEIs. It was further revealed that these strategies and initiatives have promoted research activities among members of staff and postgraduate students. For example, during the interview with staff 3 had this to say:

> "In our university we regularly conduct internal short training aimed at enhancing research skills among staff and students",

Through the interview with Directors responsible for research, it was further noted that other HEIs have set aside some funds dedicated for research activities. Academic staff develop proposal and compete for such funds. During the interview staff 4 had this to say

> "HEIs need to set aside budget for research activities. This provide source of

> funds for academic staff who are interested in doing research. These funds act as a catalyst for members to conduct research and publish papers in the international referred journal".

Moreover, it was noted that some HEIs have development projects they run with other foreign universities. Through these projects they conduct bilateral training of both staff and students on research. This is possible if the university has established partnership network and multilateral partnership programmes with other universities. It was noted that these programmes to a great extent enhance research capacity of students, staff and departments at large.

Furthermore, it was revealed that some universities such as the University of Dar es Salaam has in place a research agenda 2017/2019 - 2028/2029. The research agenda states clearly that research activities will be done by providing an enabling environment and resources for research and knowledge production, promoting strategic development of priority research areas, promotion of multidisciplinary research teams, human capital development, provision of research infrastructure and relevant research support, in pursuit of Tanzania's transition to a industrial economy (UDSM, 2018). It was further noted that the University run research week every year aimed to promote research activities at the university.

Challenges in promoting research capacity in HEIs

Collaborations between senior and junior staff are important in promoting research activities. Senior academic staff has accumulated knowledge and skills. Their collaborations with junior staff help in transfer of knowledge and skills to junior staff. The findings of this study show that the majority of respondents (78.7%) indicate that lack of collaborations between senior staff and junior academic staff is a challenge towards promoting research undertaking in the HEIs in Tanzania. Furthermore, the findings show that insufficient of research skills and competences is a challenge to them in conducting research activities.

Apart from that, the findings show that (84%) respondents indicate that insufficient funds was a challenge while (16%) did not agree that insufficient funds was a reason for poor research undertakings in HEIs. Furthermore, the findings show that 37.3% of the respondents indicated that lack of motivation among academic staff leads to poor research undertaking while a significant percent of respondents 49.3% indicate that lack of motivation is not a problem for promoting research activities in higher learning institutions.

Characteristically, for members of academic staff to engage in research activities they need to build interest, be proactive and well committed in doing research. These form basis for them to set aside time for conducting research activities. The findings show that 38.7% indicated lack of pro-activeness and commitment is a challenge facing HEIs in promoting research activities in their respective institutions. Moreover, 58.7%indicate that lack of pro-activeness and commitment did not affect much research activities in the higher learning institutions.

Furthermore, the findings of this study show that a significant percent (45.3%) indicate that lack of time due to heavy workload is a challenge while a majority of the respondents (54.7%) indicated that heavy workload was not a challenge. Furthermore, 5.3% indicated that poor internet connectivity was a problem while 24% indicated that internet connectivity was not a problem and

University of Dar es Salaam Library Journal
Vol 15, No 1 (2020), pp 45-66
ISSN: 0856-1818

70.7% were not sure if internet connectivity was a challenge or not. For further details, see Table 5.

Table 5: Challenges Facing Research Capacity Development in HEIs

Challenges faced	Yes		No		Not Sure	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Insufficient of research skills and competences	14	18.7	60	80	1	1.3
Lack of Collaboration between Senior and Junior academicians	59	78.7	2	2.6	3	4
Insufficient Funds	63	84	12	16		
Heavy teaching workload	34	45.3	41	54.7		
Lack of Motivation	28	37.3	37	49.3	10	13.3
Poor Internet Connectivity	4	5.3	18	24	53	70.7
Lack of Pro-activeness and Commitment	29	38.7	44	58.7	2	2.7

Discussions of the findings

The Extent academicians are competent and experienced in conducting research

Academicians' competences, knowledge and experiences in conducting research are the attributes that faculty members gain through attending training to enhance competences in conducting research. The study examined the extent members of academic staff are competent, knowledgeable and experienced in conducting research. The findings on the academicians' competences and experiences in conducting research show that a significant percent (54.7%) respondents were competent in conducting research, and only 9.3% feels that they were incompetent in conducting research. They gained competence after attending research training organized in their respective institutions. These included short training and PhD induction courses they attended. These have increased their knowledge and skills of conducting research studies and level of participation in research studies. The findings further show that after attending training, staff gained knowledge and competences in formulating research title, writing problem statement, critical analysis of related literature, formulating research methods and methodology, data analysis and interpretation and writing report. These are critical knowledge and competences needed in conducting research. Green & Langley (2009) observe that lack of professional training, qualifications, and clear career progression within higher education sector inhibits research management. Consequently, it creates difficulties in recruiting candidates of the requisite calibre and retaining and developing existing staff. Furthermore, Chikwe, *et al.*, (2015) acknowledge that knowledge, skills, attitudes, and motivation persons gain through training helps individuals to fulfil their objectives and enhance the quality of life of such persons and the organizations or society at large. In fact, competence of faculty member in carrying out research, leads to growth of the knowledge economy. Bako (2005) observes that there is ample evidence to show that research and development generated by higher education, more than anything else, has contributed to the rise and expansion of the world knowledge economy. The results of this study reveals that universities' management have taken several initiatives of revamping research activities in their respective HEIs that including offering research training to faculty members that provides

accredited training and nationally recognized qualifications. This is because university management has power and role of stimulating research activities in their respective universities (Green & Langley, 2009).

Factors promoting research undertakings in HEIs

Research policy awareness and motivation to conduct research

Chikwe, *et al.,* (2015) assert that awareness leads to research worker enjoy the desired maximum and lack of awareness leads to poor cooperation in research activities. In fact, most universities and research institutes have formulated research policies which guide research activities in these institutions. The findings indicate that majority of the respondents (89.3%) were aware of the research policy guiding research activities in their institutions. the findings of the study shows that their motivation for conducting research activities created awareness. These motivations range from promotion after publishing their findings in journals or other rewards to the staff such as recognition of the work done by their institutions and demotion as demotivation for those who do not conduct research activities.

Awareness on the availability of research funds and its adequacy

Availability of funds and its adequacy is crucial for smooth conduct of research activities in any university or research establishments. The findings of the study show that 89.3% staff who participated in this study was aware while 10.7% were not aware of the availability of research funds. Furthermore, 56 % indicated that funds allocated for research activities were not adequate. The findings further indicate that funds set aside for research activities is not adequate as 56% of the respondents indicated that funds allocated for research activities is not enough. Due to financial constraints in most universities in developing countries, budget set aside for research activities is very low. Consequently, few members of academic staff apply for funds and engage in research activities resulting to low research undertaking in most universities. Apart from that, donor funded research projects which some academic staff applies for funds are highly competitive. As a result, few faculty members apply and qualify for research funding. Kazoka (2005) observes that lack of enough funds for research activities inhibit researchers to take some aspects of research activities such as conducting seminars and workshops aiming in raising awareness on the policy impacts of the research they conduct. This situation calls for research funds awareness to faculty members and be trained on writing competitive research projects proposal which could be funded by international organizations.

Availability of facilities for research capacity development and its adequacy

Availability of facilities dedicated for research activities are very important for promoting research activities in universities. The findings show that 77.3% respondents indicated that computers were available for research activities, 94.7% indicated that their institutions were connected to internet which facilitate to access research articles and other information. The findings show that computers for writing research proposal and report, internet services, library facilities and stationeries were available to support research undertaking. However their adequacy and reliability remain challenges to most HEIs. The findings indicate that the available facilities dedicated for research activities are not adequate. This has attributed by meagre budgets allocated to these institutions. Budget allocated for purchasing research facilities such as computers, books, laboratory samples and chemicals dedicated for research undertaking in higher learning institutions were not enough for research activities. It is the challenge for all institutions to look for other sources of funds as well as all academic staff to be aggressive to write proposal to national

and international research funding agencies. Citing example from Nigeria, Chikwe, *et al., (*2015) indicate that necessary equipment, facilities and materials needed for a meaningful research in universities are either lacking or grossly inadequate. This is particularly the case in sciences where teachers and lecturers complain seriously of lack of science equipment to carry out their experiments. This has contributed to low human capital development in the sciences which is the bedrock of any technological advancement of any country. They further show that current journals, periodicals and textbooks are difficult to get in the libraries.

To access the internet for research activities such finding e-resources, communications and sharing research information there must be facilities which support internet connectivity (Kazoka, 2016). These may include desktop computers, tablets, laptops and Smart-phones. Currently, faculty members' access internet using laptops, others access it by using mobile phones, and few of them using tablets. Most mobile phones, especially android smart-phones have internet capabilities. The prices of mobile phones and laptops are generally affordable to faculty members who devotedly for research activities, particularly in the face of government waivers on taxes as well as the availability of used computers and laptops (Kazoka, 2016). The TCRA report (2013) shows that there is an increase in the number of internet-enabled mobile phone users and lower bandwidth adaptation applications that have tremendously increased the usage of internet among Tanzanians. Such an environment increases access to the internet to most faculty members than in previous years since now the chances of owning internet enabled mobile phones is greater.

Apart from that, the findings indicate that the funds allocated for purchasing facilities dedicated for research activities in universities such as computers, books, laboratory facilities and samples and chemicals in HEIs were not enough for research activities. This has attributed by meagre budgets allocated to these institutions. It is the challenge for all institutions to look for other sources of funds as well as all academic staff to be aggressive to write proposal to national and international research funding agencies.

Strategies used to promote research capacity development in HEIs

Research capacity development in HEIs needs strategies. The study findings reveal that many higher education institutions (HEIs) have in place strategies for research capacity building. These strategies are aimed at promoting research activities and quality of research outputs in HEIs. It was further revealed that these strategies and initiatives have promoted research activities among members of staff and postgraduate students. Some studies (Griffioen, 2018; Huenneke, *et al.,* 2017) show that among of the strategies used to promote research activities in HEIs is hiring active faculty members with reduced workload. According to Hill and Haigh (2011) as cited by Griffioen (2018) indicated that 'development of research competencies alongside the demands of teaching and the active involvement in a professional field' is not an easy task. It needs commitment for both staff and university management. These may include reducing workload for academic staff, setting aside funds dedicated for research, setting time for research activities on the part of academic staff and university management (Griffioen, 2018). These strategies will act as a catalyst for faculty members to conduct research and publish papers in the international referred journal.

Moreover, the study findings show that some surveyed HEIs have development projects they run with other foreign universities. Through these projects they conduct bilateral training of both staff and students on research. In fact, HEIs needs to establish development projects running with other

foreign universities. Through these projects it will be easy for establishing bilateral training of both staff and students on research. This will be possible if the university will establish partnership network and multilateral partnership programmes with other universities. A study conducted by Griffioen (2018) on building research capacity development in new universities indicates that there positive relationship between research development and network. However, it was noted that network development is not correlated with dissemination of research output (Griffioen, 2018).

Generally, HEIs needs to establish research agenda and strategies. These may include but not limited with provision of enabling environment and resources for research and knowledge production, promoting strategic development of priority research areas, promotion of multidisciplinary research teams, human capital development, provision of research infrastructure and relevant research support (UDSM, 2018).

Challenges facing research capacity development in HEIs

Insufficient research skills and competences

Possession of research skills such as writing proposal, data analysis and interpretation skills are essential for research undertaking. These competencies are crucial for developing proposal which can win research grants from government, national and international research organizations and international donors. Bako (2005) observes that all advancement we see in Western Countries did not fall from the sky or even evolved on its own. It was consciously and intellectually nurtured and researched into principally by the western universities through their triple mandate of producing requisite high skilled manpower, knowledge and related service. It is on this basis that, researchers in developing countries have a big role to play in researching and producing skilled manpower. However, lack of competences and skills in carrying out research, producing high skilled manpower and solve problems facing surrounding communities is a nightmare. The study findings show that researchers were lacking sufficient research skills especially in writing multinational research project proposals. This was a constraint for their research undertaking. In most of the universities in developing countries, and Tanzania in particular, most research projects in universities are initiated and funded by international agencies (Stephenson and Hennink, 2002). Some researchers are typically involved in donor-initiated research as consultants and few of staffs have international consultative skills.

Lack of collaboration between senior and junior academic staff

It is well accepted worldwide that collaboration (both domestic and international) in research activities is equally important for ensuring quality research undertakings (Bako, 2005). The study findings show that the majority (78.7%) indicate that lack of collaborations between senior staff and junior academic staff is a challenge towards promoting research undertaking in the higher education institutions in Tanzania. Furthermore, the findings show that insufficient of research skills and competences is a challenge to them in conducting research activities. For example, collaboration with researcher who have a good history of successful proposal submissions, insightful and innovative approaches to problem solving, and significant publications in the field helps much junior researchers when they collaborate with them (Collaborative Research Grants, 2005). Collaboration with such experienced researchers can lend credibility and increase validation to most project and may increase the chances of a successful submission. This alliance can both facilitate successful on-going research efforts as well as future collaboration.

Collaborations between senior and junior staff are also equally important in promoting research activities in universities. This is due to the fact that senior academic staff has accumulated knowledge and skills in research undertaking. Their collaborations with junior staff help in knowledge and skills transfer to junior staff. Junior faculty members may find working with senior faculty members as an opportunity for providing more support to them, and then will eventually lead them to start individual research projects. Junior faculty members who are aware of the possibilities will be best situated to explore those that work for them, and decline those that do not.

Characteristically, new faculty members continue to sharpen their research skills once they collaborate with the senior members of the faculty (CSU, 2007). By doing so, many opportunities to work with others arise and there are a number of advantages as well as challenges to doing so. For example, at the California State University (CSU) in USA it is insisted to do collaborative research. This is done because it is believed that collaborations starting with a small scale and gradually broadening collaborations is an opportunity for some junior researchers in making decisions about how to best spend their limited research hours.

Furthermore, collaborations can be done with graduate students. Some students want to pursue beyond assignments, or through more formal interactions between graduate students and faculty members. Collaborative research with students can be mutually beneficial in that the students begin to establish a record of publication, and faculty members continue to build their reputation and list of publications within the field with much needed help.

Insufficient research funds and lack of motivation

Availability of funds for research activities is of critical importance. The findings show that 84% of the respondents indicate that insufficient funds was a challenge while 16% did not agree that insufficient funds was a reason for poor research undertakings HEIs. For example, Stephenson and Hennink (2002) argue that dissemination of research output as part of research activities needs to be supported with enough funds for financing conferences, workshops, symposiums and distribution of research report. Availability of resources may facilitate or restrict the professional presentation of research findings and distribution of research report to policy audiences in the way they like. Chikwe, *et al.,* (2015) indicate that there is a general lack of commitment by governments in developing countries at all levels to the effect that researchers are not given adequate financial support. Researches carried out by professionals and associations are usually frustrated due to lack of funds. The annual government budget on education is not adequate, let alone provision of research grants to researchers and research institutes. This has negatively affected the development research activities in universities.

Lack of pro-activeness and commitment

For members of academic staff to engage in research activities they need to build interest, proactive and well committed in doing research. These form basis for them to set aside time for conducting research activities. The findings show that 38.7% indicated lack of pro-activeness and commitment is a challenge facing higher learning institutions in promoting research activities in their respective institutions. Lack of pro-activeness and commitment is a challenge facing HEIs in promoting research activities in their respective institutions. Pro-activeness of faculty members in doing research makes them to look for different sources of funds for research activities and lack of

it makes them inactive in doing research. In fact, lack of pro-activeness in doing research leads to lack of commitment. Consequently, faculty members are little engaging in research activities.

On the other hand, study conducted at South African University of Technology by Hart & Kleinveldt (2011) show that heavy teaching workload was a problem for fostering research activities at the university. Heavy workload to faculty members is a symptoms that there shortage of academic staff to universities which leads to allocate many teaching hours to faculty members.

Conclusion

The factors identified in this study that influence research capacity in higher learning institutions of Tanzania are many. The study results revealed that academicians' competences, knowledge and experiences in conducting research are the attributes that faculty members gain through attending training to enhance competences in conducting research. The findings suggest that a significant percent of faculty members gained knowledge and skills in research development though the applications of the knowledge and skills gained depend on the readiness and how individual faculty members are innovative. This means that application of the knowledge gained from the training is paramount for faculty members to realize the fruit of the training they attended. Faculty members recognize research as a crucial element for their promotion as members of academic staff in HEIs. Comprehensive strategies for promoting research activities in HEIs in Tanzania are of critical importance. Most universities and research institutes have formulated research policies which guide research activities in these establishments. It is obvious that awareness on the available research policies and guidelines of research undertakings is among of the factors motivates faculty members to participate in research activities and lack of awareness leads to poor cooperation in research activities among them.

Recommendations

First, HEIs should conduct research training regularly to faculty members. This will enable faculty members to update knowledge and skills they have in research and motivate them to conduct research. Second, HEIs should allocate enough funds (current allocations are very limited) for research undertakings. This will attract a steady flow of trained researchers. It's equally important that researchers are rewarded enough to keep them doing researches. Third, the research donor communities are advised to ensure that the research they commission to HES increasing collaboration among senior and junior researchers. Fourth, HEIs should develop university – industrial partnership to widen platform and avenue for provision of research facilities and funds for research. Fifth, individual faculty members should be proactive and committed in carrying out research. Sixth, faculty members should schedule time for research activities, form multidisciplinary research groups and problem solving research that would eradicate underdevelopment and poverty at levels in the society. Seventh, universities should review its research and consultancies policies and reduce teaching workload to allow faculty members engaging in research activities.

REFERENCES

Adams, J., King, C., & Hook, D. (2010). *Global Research Report: Africa.* Leeds: Thomson Reuters.

Bako, S.,(2005) Universities, Research and Development in Nigeria: Time for Paradigmatic Shift. 11th General Assembly of CODESRIA, Mozambique, 6th - 8th December, 2005

Banji, F.J., (n.d) University Research Capacity in Nigeria and the Challenges of National Development in Knowledge-based Economy Retrieved from: <www.niepa.net> . Access on 23/03/2017.

California State University (2007). Collaborative Research. Retrieved from: http://teachingcommons.cdl.edu/cdip/facultyresearch/Engagingincollaborativeresearch.html). Accessed on 23/2/2018

Chikwe, C. K., & Ogidi, R.C, & Nwachukwu, K., (2015) Challenges of Research and Human Capital Development in Nigeria. *Journal of Education and Practice.* 6(issues) No.28,

Collaborative Research Grants (CRG), (2005).. Retrieved from: http://www.getty.edu/grants/research/scholars/collaborative.html Accessed on 23/11/ 2017

Creswell, J. W. (2003) *Research Design: Qualitative, Quantitative and Mixed Method approaches; 2nd ed.* London: Sage Publication Inc.

Enon, J.C. (1998). *Educational Research, Statistics and Measurement.* Makerere University, Uganda.

GDN (2003). Bridging Research and Policy Project, Background Materials for the Phase II Research Competition.

Göransson, B., & Brundenius, C. (Eds.). (2010). *Universities in transition: The changing role and challenges for academic institutions.* New York: Springer Science & Business Media

Green, J. & Langley, L. (2009) Professionalizing Research Management (University of Leeds) Retrieved from: <http://researchsupport.leeds.ac.uk/images/uploads/docs.PRMReport.pdf> Accessed on 23/11/2017

Griffioen, D., (2018). Building Research Capacity in New Universities During Times of Academic Drift: Lecturers Professional Profiles. International Association of Universities 0952-8733/18

Harle, J. (2010). *Access to research in East and Southern African Universities. Growing knowledge*. London: Association of Common Wealth Universities.

Hart, G, & Kleinveldt, L. (2011). The Role of Academic Library in Research: Researchers' Perspectives at South African University of Technology. *South Africa Journal of Library and Information Science 2011, 77(1).*

Huenneke, L., Stearns, D., Martinez, j., & Laurila, K., (2017). Key Strategies for Building Research Capacity of University Faculty Members. *Innovation in Higher Education* 42(1):421–435

Johnson, R.B & Onwuegbuzie, A.J. (2004) "Mixed Methods Research: A research Paradigm Whose Time Has Come". *Educational Researcher, vol.33 (7): 14-26. American Educational Research Association.* Retrieved from: <http://www.jstor.org/stable/pdfplus/3700093.pdf?acceptTC=true&jpdConfirm=true > Accessed on 24/03/ 2019

Kahiigi, P., Kariuki, E., Kyalo, V., Muthoni, M., Ngarambe, D., Nungu, A (2012). African Great Lakes Rural Broadband Research Infrastructure. IST-Africa .Dar es Salaam: National IT Authority.

Kazoka, J.E. (2016) The Potential of the Integration of Web 2.0 Technologies in Teaching and Learning Activities in Selected Tanzania Universities. *PhD Thesis.* University of Dar es Salaam.

Kazoka, J.E., (2005) Factors Influencing Dissemination and Utilization of Research Findings: A Case Study of selected Research Institutions and Government Ministries located in Dar es Salaam. *Master's Dissertation*. University of Dar es Salaam.

Kent, H (2006). *University Research and Local Economic Development.* A product of Arizona State University's Productivity and Prosperity Project (P3)

Kothari, C.R. (2004). *Research methodology: Methods and Techniques* Delhi: New Age International Publishers. .

Kowero, A. (2012). *Exploiting the Potentials of the National Information and Communication Technology Broadband Backbone in Tanzania.* Dar es Salaam: CLKNET.

Krishnaswami, O. & Ranganatham, M., (2005). Methodology of Research in Social Sciences. 2nd Ed. Delhi: Himalaya Publishing House.

Lang, M., (2002). On the Dissemination of I.S. Research Findings into Practice. National University of Ireland, Galway Retrieved from: <http://ecommerce.lebow.drexel.edu/eli/2002Proceedings/papers/Lang102O> Accessed on 23/03/ 2016

Li, M., & Hudson,(2008). *Building research capacity: Changing roles of universities and academics.* Queensland University of Technology.

Marczyk, G., Dematteo, D., & Festinger, D., (2005). Essential of Research Design and Methodology. Hoboken, New Jersey: John and Wiley & Sons, Inc..

Mugimu, C.B., Nakabugo, M.G., & Katunguka-Rwakishay, E., (2013). Developing Capacity for Research and Teaching in Higher Education: A Case of Makerere University. World Journal of Education, 3: (6). 201-216

Mollel, K. (2013). Gender Analysis of Information Technology Adoption into Teaching, Learning and Research by Faculty and Students of Selected Universities in Tanzania. *PhD Thesis.* University of Dar es Salaam.

Mwantimwa, K. (2012). The Use of Pull Information Mode to Support Poverty Reduction Programmes in Rural Tanzania: A case of Monduli and Bagamoyo Districts. *PhD Thesis*. University of Antwerp, Belgium.

Nagunwa, T. & Lwoga, T. (2012). Developing eLearning technologies to implement competency based medical education: Experiences from Muhimbili University of Health and Allied Sciences. *International Journal of Education and Development Using ICT*,8: (2), 7 – 21.

Neilson, S., (2001). Knowledge Utilisation and Public Policy Processes: A literature Review, IDRC. Retrieved from: <http://www.idrc.ca/~evaluation> Accessed on 24/02/2017

Organization for Economic Cooperation and Development (OECD), (2012). Education Indicators in Focus. OECD. Retrieved from:<http://www.oecd.org/> Accessed on 15/07/2017

Onyancha, O. B., & Maluleka, J., (2011) Research Collaboration in the Archives and Records Management Field across and Beyond Universities in Africa: An Informetric Analysis. Retrieved from:<http://uir.unisa.ac.za/bitstream/handle/10500/21126/Ngoepe,%20Maluleka%20%26%20Onyancha_Research%20collaboration.pdf?sequence=1&isAllowed=y> Accessed on 24/02/2017

UNESCO. (2009). *World Conference on Higher Education: The New Dynamics of Higher Education and Research.* Paris: UNESCO.

Stephenson, R and Hennink, M (2002). Moving Beyond Research to Inform Policy: Barriers and Strategies for Developing Countries. University of Southampton, UK. Retrieved from: <http://www.socstats.soton.ac.uk/choices> Accessed on 24/02/2017

Sharobeam, M.H., & Howard, K., (2002). Teaching demands versus research productivity. *Journal of College Science Teaching,* 31(7), 436-441.

Swarts, P. & Wachira, E.M. (2010). *Tanzania: ICT in education situational analysis: Global e-School and Community Initiatives.* Accessed on February 24, 2017 at

Retrieved from: <http://www.youthmetro.org/uploads/4/7/6/5/47654969/tanzania_ict_in_education.pdf> Accessed on 24/02/2017>

Tanzania Communication Regulatory Authority (2013). Quarterly Telecoms Report for December, 2013.

Tanzania Commission for Universities List of University Institutions in Tanzania as of 30th September, 2016
Retrieved from: <http://www.tcu.go.tz/images/documents/LIST_OF_UNIVERSITY_INSTITUTIONS_IN_TZ_AS_OF_30_9_2016.pdf> Accessed on 15/07/2017

World Bank (1998). World Development Report. World Bank: Washington DC. Retrieved from: <http://www.worldbank.org/html/fpd/technet/wdr98/parttwo.htm> Accessed on 15/07/2017

The United Republic of Tanzania (2010). *Higher Educational Development Programme 2010 – 2015.*