TRACER STUDY OF RUFORUM ALUMNI

FINAL REPORT

'The RUFORUM initiative is a pride of Africa which has come at the right time', FGD, Rwanda

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ACRONYMS AND ABBREVIATIONS

ARC	Agricultural Research Corporation
BMGF	Bill and Melinda Gates Foundation
CARP	Community Action Research Grants
CGIAR	Consultative Group on International Agricultural Research
DAAD	German Academic Exchange Service
DFID	Department Funding for International Development
ESCA	Eastern, Central and Southern Africa
FAPA	Field Attachment Program
FGDs	Focus Group Discussions
FORUM	Forum for Agricultural Resource Husbandry
GRGs	Graduate Research Grants
ICT	Information and Communications Technologies
IDRC	International Development Research Centre
ILO	International Labour Organization
ILRI	International Livestock Research Institution
ISGs	Institutional Development Grants
IT	Information Technology
KUC	Kenyatta University Consortium
LUANAR	Lilongwe University of Agriculture and Natural Resources
M&E	Monitoring and Evaluation
MEA	Millennium Ecosystem Assessment
NGOs	Non-governmental Organizations
PI	Principal Investigator
RTPs	Regional Training Programs
RUFORUM	Regional Universities Forum for Capacity Building in Agriculture
SPSS	Statistical Program for Social Sciences
TOC	Theory of Change
TORs	Terms of Reference
UoN	University of Nairobi
UNDP	United Nations Development Programme

EXECUTIVE SUMMARY

A Tracer Study was undertaken of RUFORUM graduates since 2004 to date. The study aimed at obtaining insight into the graduates' employment situation after graduation. The main objective of the Tracer Study was to establish the location of the graduates, institutions in which they are employed, how they are performing in respect to the RUFORUM outcomes and in respect to the needs of the employers, the competitiveness of the graduates, retention rates after employment, regional distribution, and other relevant factors. The study was also expected to generate new ideas to be considered for new RUFORUM investments in future training programs and research grants schemes. Further, the study was to provide feedback on how the RUFORUM model/brand for training and research can be improved.

The specific objectives of the tracer study were to:

a) Establish the locations of all former RUFORUM graduates, and the sector and institutions/organizations in which they are employed and obtain their contact details.
b) Establish the graduate views on the relevance of training, skills and competences for the type of work they are doing.
c) Assess the extent to which the graduates are fit for purpose
d) Determine gaps in skills and competences that need to be filled in future training programmes
e) Draw recommendations for RUFORUM investments in future training programmes and research grant schemes
f) Provide suggestions on how the RUFORUM model/brand for training and research can be improved.

The Tracer Study of RUFORUM Graduates was done through online survey, Focus Group Discussions (FGDs) and face to face interviews for the list of alumni provided by RUFORUM. In depth interviews were undertaken for selected employers of the graduates.

Data analysis was done using both qualitative and quantitative methods. Quantitative data were analysed with the help of SPSS and Microsoft Excel. Thematic coding techniques were used to analyse qualitative data.

Key findings of the study include the following:

- The largest percentage (40.8%) of respondents was between 30 and 34 years at the time of the survey.
- Kenyans and Ugandans constituted the largest percentage of respondents, comprising 25.4% and 23.4%, respectively.
- With regard to training program undertaken, 69% of the respondents studied Masters, 16% Doctoral and 3% MPhil. MSc Research Methods had the highest number of respondents (18.4%).

- The top three highest response rates by RUFORUM member universities in decreasing order were as follows: Egerton University, Kenya 60%, Kenyatta University, Kenya 58.3% and Eduardo Mondlane University, Mozambique 57.1%.
- In terms of completion of studies, 45.1 % of the MSc and 66.7% of PhD completed their work within the stipulated time.
- Lectures, demonstrations, participation in research and discussions/tutorials were the modes of teaching and learning were ranked highly as most preferred by respondents.
- The memorable RUFORUM alumni experiences during their study period include: classroom learning, conducting research, writing research papers/articles and participation in conferences and seminars, with over 50% of the responses in the excellent and good ranks.
- Biennial conferences of 2008, 2010 and 2012, proposal preparation/writing trainings, research design and data analysis trainings, scientific data management trainings, scientific writing and thesis research proposal development trainings are the significant exposure events that alumni had attended.
- On employment before starting the training programmes, 81.8% of the PhD, 67.9% of the MSc and 50% of the Mphil RUFORUM alumni were already employed.
- With regards to employment the RUFORUM alumni who studied for MSc, MPhil and PhD programmes, majority 53.1%, 66.7% and 60.6%, have permanent employment, respectively.
- Most of the alumni (35.3%) were working in University/Academics/Education institutions followed closely by the National Agricultural Research Systems (23.9%).
- In regard to the sectors in which the RUFORUM alumni work, majority (59.2%) are in agriculture, (31.3%) are engaged in education/training and 4.5% in Lands and Environment.
- The duration of time the alumni have worked with the current employer revealed that 32.6% with Masters and 46.2% with Doctoral Degrees had been with their current employer for between 5 and 9 years.
- Over 40% of the alumni reported that as a result of both their training programs and being in that particular university, enabled them to improve their competencies in: technical knowledge of their field(s) or discipline(s), presentation & communication, working under pressure, team work, working with people of diverse cultures and backgrounds, and self-learning.
- There was no mismatch between the knowledge and skills given to the respondents and what is required by employers. A majority of 53.7% of alumni / respondents trained for Masters, 33.3% for MPhil and 48.5% for PhD found their studies very relevant in their places of work.
- There were 59.9% for MSc, 83.3% for MPhil and 60.6% for PhD alumni attesting to the fact that the studies they undertook were a worthwhile background for further learning on the job.
- There were 59.3% for MSc, 66.7% for MPhil and 60.7% for PhD who deemed the studies very relevant in enhancing their performance in their current work.
- More than half of the respondents were doing jobs linked to their training.
- On post-training winning of research grants, 41.1% of alumni with Masters had won between 1-5 grants, while 88.5% with Doctorate had won a similar number.

- With regards to alumni post training publications, as would be expected those with doctorate degree had more publications than those with the other qualifications.
- During the FGDs, employers noted that the RUFORUM alumni have the capacity to manage and oversee research projects and have generally acquired the right skills for the work they are doing
- Most employers observed that: RUFORUM alumni are confident and express themselves before audience with clarity, they have enhanced their presentations skills, they have been given more responsibilities at their work places and are often left in charge whenever immediate supervisors are absent.

Conclusions made based on the empirical findings and qualitative FGDs, include:

- RUFORUM is the impetus for resurgence of intellectual prowess on university campuses through exposure to a network of people, ideas and organisations around the world and a restructuring of curricula to make them relevant to today's needs.

- RUFORUM is shaping the way agriculture is taught in higher education institutions in the mandate region.

- RUFORUM graduates are equipped to solve the problems of a changing world. They will be at the forefront of Africa's Green Revolution, re-vamping agricultural research, institutions and advising governments on policies best suited to increasing agricultural productivity.

- RUFORUM has been the conduit for hundreds of young researchers pursuing reputable careers, and for pioneering innovative methods that now benefit thousands of people in farming communities.

- RUFORUM alumni bring an ethos of hard work, critical thinking and analytical rigour and change to their jobs.

- RUFORUM's impacts on farmers, scientists, university faculties and a range of others in the agricultural sector has been varied and enduring within the mandate region. New strengths - in ICT, transdisciplinarity, biotechnology, and in business - have emerged through the regional postgraduate programmes, which has led to broader changes within the RUFORUM member universities and their higher education systems.

Key recommendations from the study include the following:

- RUFORUM should institutionalize racer studies.
- RUFORUM should consider supporting the formation of a professional network for its grantees.
- Since most employers interviewed valued soft skills like interpersonal relationships, communication, creativity and leadership drive, it may be desirable for RUFORUM to:
    i. Incorporate programmes or subjects that emphasize such soft skills and make students develop the interest for lifelong learning. The curricula review by agricultural faculties in member

universities should be continuous to address emerging issues such as value-chain analysis and development, post harvest loss management.

ii. Cause enhanced research methods topics and applied statistics to be taught in agricultural faculties of member universities.

iii. Influence the teaching of database design and management training - including programming (VBA and SQL) in agricultural faculties of member universities.

iv. Influence member universities to integrate communication skills and public relations as a common unit in agricultural faculties

- In view of the finding from FGDs that different categories of employees demand specific knowledge and skills from alumni, it is recommended that agricultural faculties in member universities should equip students with analytical minds and critical thinking that will make them more adoptable to changing work environment. This may require re-orientation of lecturers to participatory teaching techniques such as the use of case studies and student group work.
- RUFORUM investments in future training programmes and research grant schemes should:

  i. Provide Institutional support for publications in African regions

  ii. Support global projects in data management and analysis

  iii. Provide support to understand the role and impact of public private partnerships sector and to participate effectively in the PPP.

  iv. Introduce open innovative research grants

- To make agricultural training more responsive to market demands, it may be desirable for RUFORUM training programmes through member universities to establish stronger linkages with industry such that students could have extended practical attachments to various industrial establishments. This should be done in a more systematic manner by the member universities identifying well-established farms or industries where agreements could be reached to take a number of agricultural graduates annually on attachment for practical training as a necessary condition for graduation. Other ways of facilitating exposure of students to the real world of work are through mentoring, counseling, and guest-lectures from industry practitioners. Such a linkage will ensure that agricultural graduates have an understanding of the demands of industry and thus be able to transform their scientific knowledge into relevant innovations for accelerated development.
- The RUFORUM model can be improved through modules that have a full practical training in the field with actual solutions and innovations relating to the agricultural sector. These modules can be offered in areas where the students will be engaged with the farmers/communities in solution of existing problems. The modules can be intensive 2-3 week courses and lecturers/instructors should also be engaged in these training workshops to horn their skills and bring them up to date with the current demands of the sector.

- RUFORUM Secretariat as a next step should look at the value of the programmes and funding. What value does each trainee have once they join the job market? Is the cost of funding the alumni able to have returns through active participation in the agricultural sector and beyond?
- RUFORUM Secretariat could use the modular approach in the short courses which should be tailor made for specific needs. Such programmes should have specific instructors/lecturers who concentrate on delivering within a given period possibly as guest lecturers so that they target the specific program.
- RUFORUM Secretariat should continuously monitor and evaluate the students progress during the course of the study period thus promptly dealing with student problems, particularly in relation to funds disbursement, that has often been cited as a cause to delays in study completion.

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND TO THE STUDY

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) is a consortium of 32 universities in 18 countries in Eastern, Central and Southern Africa (ECSA) established in 2004. RUFORUM's mandate is to oversee graduate training and networks in the region. RUFORUM recognizes the important and largely unfulfilled role that universities play in contributing to the well-being of small-scale farmers and economic development of countries throughout the sub-Saharan Africa region. This contribution is made through training of quality graduates entering the rural development workforce, and the production and dissemination of demand-driven, development-oriented research that is defined and applied through participatory processes linking researchers, farmers, policy-makers, and business.

RUFORUM envisions a vibrant agricultural sector linked to African universities which can produce high-performing graduates and high-quality research responsive to the demands of Africa's farmers for innovations and able to generate sustainable livelihoods and national economic development. Its mission is to strengthen the capacities of universities to foster innovations responsive to demands of small-holder farmers through the training of high quality researchers, the output of impact-oriented research, and the maintenance of collaborative working relations among researchers, farmers, national agricultural research institutions, and governments.

The Forum for Agricultural Resource Husbandry (FORUM) initiative, funded by the Rockefeller Foundation, was designed to revitalize postgraduate training in agricultural sciences in 10[1] universities in Kenya, Malawi, Mozambique, Uganda and Zimbabwe from 1992-2002. An independent assessment in 2003 found that postgraduate training had indeed been strengthened and was linked to addressing needs of smallholder farmers. Some of the universities had built capacity to venture into new areas including PhD training. In 2004, the Rockefeller Foundation devolved the FORUM to the consortium of 10 universities, which it had supported under the

[1]Namely: Makerere University, University of Nairobi, Egerton University, Jomo Kenyatta University of Agriculture and Technology, Kenyatta University, Moi University, University of Malawi, University of Zimbabwe, Africa University, and Eduardo Mondlane University.

FORUM. The Universities reconstituted the Program into a Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), as a joint initiative to strengthen graduate training and to align themselves better with the development agenda in the continent, more specifically in the eastern, central and southern Africa region. The Rockefeller Foundation provided a seed grant of $3.52m, and a Secretariat was established in Uganda to service the Network.

In 2005 RUFORUM developed and launched a 10 year strategic plan (2006-2015) which is being operationalized through two 5 year-business plans, 2006-2010 and 2011-2016. The Organization has 7 strategic thrusts that it has been implementing since 2006. In 2009, the organization received a boast through a $12.73m funding from the Bill and Melinda Gates Foundation that focused on strengthening the RUFORUM institution in four key areas: (1) Strengthening research capacity to engage in and support rural agricultural-based innovation; (2) Strengthening RUFORUM Monitoring and Evaluation (M&E), Dissemination and Advocacy; (3) Strengthening Knowledge Management and the Role of Information and Communications Technologies (ICT) in RUFORUM; and (4) Tightening and Enhancing RUFORUM Governance and Management. In addition, RUFORUM received support from other organizations notably the European Union, Rockefeller Foundation, DFID and IDRC that allowed it to scale up some of its activities.

In 2006, RUFORUM expanded from 10 universities to 12, and operating later in 2009, RUFORUM increased its membership to 25 universities in 15 countries, and is currently in 32 universities in 18countries; thus taking advocacy for higher education in Agriculture in Africa to new dimensions. RUFORUM, over the years, has managed 5 to 25 projects annually, which contribute to the achievement of various elements of the RUFORUM objectives and Business Plans, and are implemented in partnership with a number of institutions and the member universities.

1.1.1 Focus on the students trained

One of the key pillars of RUFORUM is the training of graduate students in agriculture and agricultural related fields at both MSc. and PhD. levels. RUFORUM supports this training through three main channels: Regional Training Programs (RTPs), Graduate

Research Grants (GRGs), and Institutional Development Grants (ISGs) also called nurturing grants (NGs). A small grant, the Field Attachment Program (FAPA), supports the field attachment of students, who have just completed their MSc degrees, in communities, agri-business and other institutions where they wish to disseminate their research findings while getting hands-on-training and experience.

1.1.1.1 The Regional Training Programs (RTP) 2008

A regional training program is hosted by a member university, in which five to thirty five students may be trained per cohort; all in one training program. The RUFORUM Secretariat, together with its member universities, therefore established 10 RTPs as indicated in Table 1. The faculties or departments hosting these programs have also been called regional centers of excellence. A regional training program has so far been defined by the following characteristics:

- Addressing issues of regional importance / niche areas
- Common challenges across the region
- Consultative development of curricula (national, regional, international level)
- One University with comparative advantage hosts and coordinates the program, with other universities, knowledge centres and experts participating in teaching, supervision, mentoring, and other responsibilities
- Students from the region (preferably not only from the hosting university/ country)
- Guided by an MoU signed by Vice Chancellors
- Flexibility by participating universities / institutions in running the programs

Table 1.1: Regional Training Programs

Training Program	**Host University and Country**	**Year Started**
MSc Research Methods	Jomo Kenyatta University of Agriculture and Technology (Kenya)	2009
MSc Agricultural Information and Communications Management	Egerton University (Kenya), University of Nairobi (Kenya) and Haramaya University (Ethiopia)	2008
MSc Plant Breeding and Seed Systems	Makerere University (Uganda) and University of Zambia (Zambia)	2009
PhD Aquaculture and	Lilongwe University of Agriculture and Natural	2010

Fisheries	Resources – Formerly Bunda College of Agriculture, of the University of Malawi (Malawi)	
PhD Food Science and Nutrition	Jomo Kenyatta University of Agriculture and Technology (Kenya)	2013
PhD Dryland Resource Management	University of Nairobi (Kenya)	2008
PhD Agricultural and Resource Economics	Lilongwe University of Agriculture and Natural Resources – Formerly Bunda College of Agriculture,of the University of Malawi (Malawi)	2010
PhD Soil and Water Management	Sokoine University of Agriculture (Tanzania)	2011
PhD Plant Breeding and Biotechnology	Makerere University (Uganda)	2008
PhD Agriculture and Rural Innovation Studies	Makerere University (Uganda), Egerton University (Kenya)	2012

1.1.1.2 The Competitive Grants Schemes (CGS)

These grants are availed to member universities – in which two to five students are trained in each research grant. The Competitive Grants System (CGS)[2] comprises a number of different grant windows including: (i) the Graduate Research Grants (GRG) - 86 grants[3] since 2009, 90 between 2004 to 2008, and 35 between 1992 to 2003; (ii) the Community Action Research Grants (CARP) – three grants; (iii) the Institutional Strengthening Grants (ISG) / Nurturing Grants – eight grants since 2009, and27between 2004 and 2008; and (iv) the Field Attachment Program (FAPA) – fifty one grants.

1.1.1.3 Institutional Strengthening Grants (ISG) 2004

These grants are provided to member universities in which two to twenty students are supported to undertake MSc. or PhD studies at the member university. This funding is coordinated by one senior staff at the focus faculty. The students may be enrolled into different training programs at the member universities.

[2] The CGS has been supported primarily through the Bill and Melinda Gates Foundation (BMGF) since 2008, in addition to other funding windows such as the Rockefeller Foundation among others.
[3] Graduate Research Grants (GRG) – Call 1: 4 (TADS/RF) and 16 (BMGF); Call 2 = 26 (BMGF); Call 3 = 24 (BMGF); Call 4 = 16 (BMGF); Total 86

The training programs work towards ensuring that the graduates are well skilled, proactive, and dynamic change makers, who will be on high demand by the agricultural employment sector as indicated in RUFORUM's Theory of Change (TOC). RUFORUM Secretariat currently has 1209 student records at various stages of completion. It is against the above background that the RUFORUM Secretariat sought to undertake a Tracer Study of RUFORUM alumni.

Table 1.2: Students in various programs

	GRG	CARPS	NGs	RTPs	Total
1992-2003	90	0	0	0	90
2004-2008	71	0	152	99	322
2009-March 2014	169	11	133	335	648
Total	**330**	**11**	**285**	**434**	**1060**

1.2 PURPOSE AND OBJECTIVES OF THE STUDY

1.2.1 Purpose of the Study

The purpose of this study was to undertake a Tracer Study of RUFORUM alumni whose start year was 2004 to 2010 inclusive. The study aimed at obtaining insight into the graduates' employment situation after graduation. The main objective of the Tracer Study was to establish the location of the graduates, institutions in which they are employed, how they are performing in respect to the RUFORUM outcomes, and in respect to the needs of the employers, the competitiveness of the graduates, retention rates after employment, regional distribution, and other relevant factors. The study was also expected to generate new ideas to be considered for new RUFORUM investments in future training programs and research grants schemes. Further the study was to provide feedback on how the RUFORUM model/brand for training and research can be improved.

1.2.2 Specific Objectives of the Study

The specific objectives of the tracer study were to:

g) Establish the locations of all former RUFORUM graduates, and the sector and institutions/organizations in which they are employed and obtain their contact details.
h) Establish the graduate views on the relevance of training, skills and competences for the type of work they are doing.
i) Assess the extent to which the graduates are fit for purpose
j) Determine gaps in skills and competences that need to be filled in future training programmes
k) Draw recommendations for RUFORUM investments in future training programmes and research grant schemes
l) Provide suggestions on how the RUFORUM model/brand for training and research can be improved.

1.3 ORGANIZATION OF THE REPORT

The rest of the report is organized into five chapters. Chapter 1 describes the background to the study as well as purpose and objectives of the study. Chapter 2 describes the conceptual framework that guided this study. The study design is presented in Chapter 3. This Chapter contains the description of the study, scope and limitations of the study approach, methodology and data analysis. The study findings and discussions are presented in Chapter 4. Finally the key findings, conclusions and recommendations are presented in Chapter 5.

1.4 PROJECT DELIVERABLES

The following were the project deliverables expected from the study according to the terms of Reference (**Annex 1**):

- Inception report detailing the research design (including data collection methods, sampling method, data collection tools and data analysis plan);
- Progress report at the end of the first month of study;
- Provision of a preliminary list of graduates with their contact details;
- Presentation of draft report to the RUFORUM Secretariat
- Produce a detailed draft report stipulating a minimum of the following information;
  i. Profile of the graduates traced, including list of untraced graduates,

ii. Detailed list of all graduates by type of employment destinations/career paths. Brief about the employing institutions,

iii. Proportion of the RUFORUM graduates that are employed within one year of graduation/completion of the studies - both in formal and self employment,

iv. Employer satisfaction on performance of the graduates
   a. Competitiveness of the graduates on the job market
   b. Job performance of the graduates
   c. Skills, knowledge, and competence gaps

v. Self assessment: performance of the graduates in their different career destinations
   a. Usefulness of the skills graduates acquired
   b. Graduates' assessment of the training received (curriculum, mode of delivery, usefulness of the courses, etc) for only graduates in the last three years (2008-2010).
   c. Graduates' perspective on the role played by RUFORUM in their studies and achievements - impacts on personal and professional life.
   d. Skills, knowledge, and competence gaps.
   e. Attitude towards employment in the agricultural sector
   f. Graduate satisfaction levels relating to the type of training; and also in relation to the expected outcomes of RUFORUM as highlighted in RUFORUMS's Theory of Change.
   g. Whether the graduate would like to be part of an Alumni Association or contact group and how this would work best for them.

vi. Recommendations for improving effectiveness of the RUFORUM graduate training and research programmes.

- Final report addressing the comments from the stakeholders and RUFORUM Secretariat.
- Hard and soft copies of all documents expected from the study:

CHAPTER TWO

2.0 THEORETICAL FRAMEWORK FOR TRACER STUDY

The ILO Thesaurus 2005 defines a tracer study as an impact assessment tool where the "impact on target groups is traced back to specific elements of a project or programme so that effective and ineffective project components may be identified." In educational research the tracer study is sometimes referred to as a graduate or alumni survey since its target group is former students. Schomburg (2003: 36) notes that graduate surveys are popular for "analysis of the relationship between higher education and work." They provide quantitative-structural data on employment and career, the character of work and related competencies, and information on the professional orientation and experiences of their graduates.

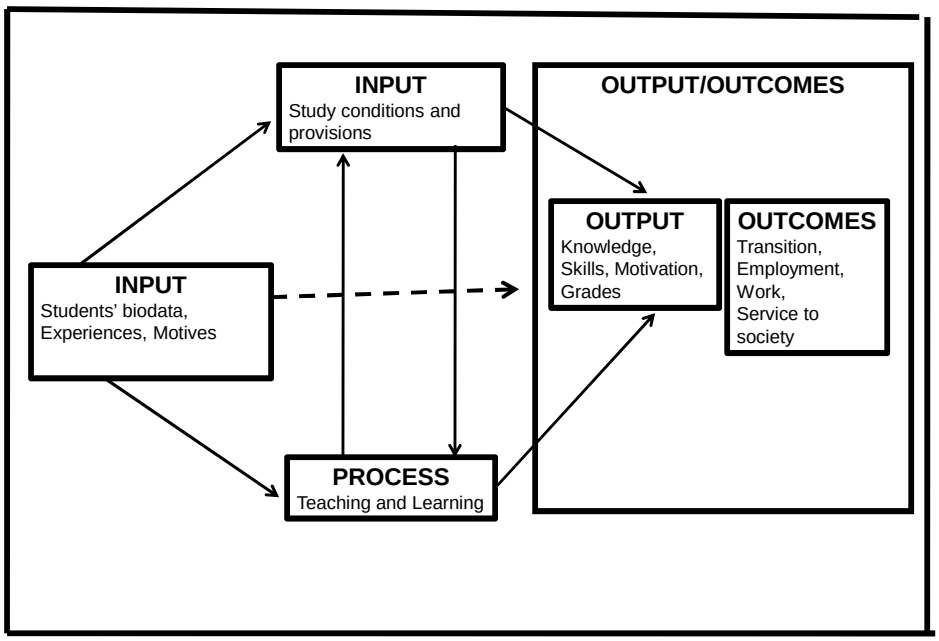
Although the usual end of the course evaluation can ask for the student to assess whether they have gained the knowledge and skills necessary for fulfilling their personal objectives, there is really little proof of this until the student has completed the entire course of study and has entered the workforce. By surveying a cohort of graduates from: a specific institution; profession; discipline; graduation date; level of education; or a combination of these for comparative analysis, Schomburg presents examples of issues which can be addressed in tracer studies. Biographical data on "***Where are our graduates now?***" may supply information on income, job title, nature of employment, and years of employment. He also believes that surveys should also include information "about the kind of work task the relationship between study and work, and professional values and job satisfaction." The information gained from survey items can be used by the graduate's *alma mater* and indeed other education stakeholders for curriculum development and reform. Graduate survey studies could provide information to such general questions as:

- What are the retrospective views of graduates on higher education based on their career experiences?
- To what extent do graduates consider their education and training as wastage or an opportunity?

- How are the outcomes of curricula aiming to create new types of learning and qualifications to prepare for newly emerging types of occupation and work task?
- How broad or narrow is knowledge fostered in individual degree programmes in comparison to occupational tasks or major occupations? (Schomburg, 2003).

The conceptual framework used in this study utilized the input-process-output-outcomes model (**Figure 2.1**). On the input side, there are the students (now graduates). Their individual motives, performances, socio-biographical origin, and experiences are at the centre of attention. The second type of input are the institutional resources devoted to train the students (teaching staff, institutional endowment). The process dimension includes teaching, learning styles, curriculum, etc.). On the "result" side, we can distinguish between the "output" and the "outcomes". Output measures refer to the explicitly targeted results (e.g. competencies acquired) whereas the outcomes "are measures of desired or likely impacts beyond mere output, for example status, work assignment, job satisfaction and service to society." (Teichler, 2000, p. 37).

Figure 2.1: Conceptual framework of graduate tracer study surveys
(Source: After Mugabushaka, Schomburg&Teichler, 2007)



CHAPTER THREE

3.0 STUDY DESIGN

3.1 DESCRIPTION OF THE STUDY

The Tracer Study of RUFORUM Alumni was done through online survey, Focus Group Discussions (FGDs) and face to face interviews for the list of alumni provided by RUFORUM Secretariat. In depth interviews were undertaken for selected employers of the graduates. The spatial coverage of RUFORUM programs is indicated in Figure 3.1 shows the 10 countries in Africa where the respondents undertook their studies and/or research.

3.2 SCOPE AND LIMITATIONS OF THE STUDY

RUFORUM has commissioned a Tracer Study of all former M.Sc. and PhD alumni to establish the employment status, and views on the relevance of training, skills and competence gained, and research development. This tracer study will draw recommendations for RUFORUM investments in future programs and research grant schemes. The Tracer Study is informed by the following:

- That an “alumni” would be anyone who has *completed* their studies and was fully or partially sponsored by RUFORUM to undertake their studies at MSc and/or PhD level;
- That an “alumni” is also anyone who got sponsorship from a scholarship program that RUFORUM Secretariat lobbied for funding (e.g. SCARDA, AGRA, ICIPE, DAAD)
- That an “alumni” is also anyone who trained under a regional training program whose establishment was influenced by RUFORUM
- That “*completion*” means the student has submitted the final thesis to the graduate school for external examination
- That seeking opinions of RUFORUM training alumni will provide information on the relevance of the training and research.
- That tracking destinations of the graduates will enable RUFORUM evaluate the programs for regular improvement in training and research.
- That the tracer will provide relevant data for evaluating RUFORUM training and research grants schemes

You have been identified as one of the RUFORUM Programs alumni. Kindly fill in the online questionnaire: http://onlinesurvey.rufurom.org/limesurvey. It will take you about 20 minutes to complete. If for any reason you are unable to complete it in one sitting, please save your file, and come back to complete it later.

We are very grateful for your time and effort in completing this survey.

If you have any further questions concerning this tracer study, please do not hesitate to contact the following: Agnes Obua-Ogwal (a.akwang@ruforum.org) from RUFORUM Secretariat or Chris Shisanya (chris.shisanya@gmail.com) from KU-C at or the Administrator (terry.njoroge@gmail.com)

The Tracer study was based on the RUFORUM alumni - from 2004 to 2010 inclusive - and employers as per the TORs (**Annex 1**) using the following hybridized approaches:

i. Through an online survey to the provided list of alumni (**Annex 3**)
ii. Through in depth interviews of the employers of the RUFORUM alumni (**Annex 4**).
iii. *Through Focus Group Discussions with selected RUFORUM alumni (**Annex 5**)

The FGDs were only undertaken with the RUFORUM alumni who had completed the online survey and confirmed our requests to meet them in their respective countries. The in-depth interviews with employers likewise were done with only those who confirmed meeting dates through telephone follow ups.

3.3 APPROACH AND METHODOLOGY FOR THE STUDY

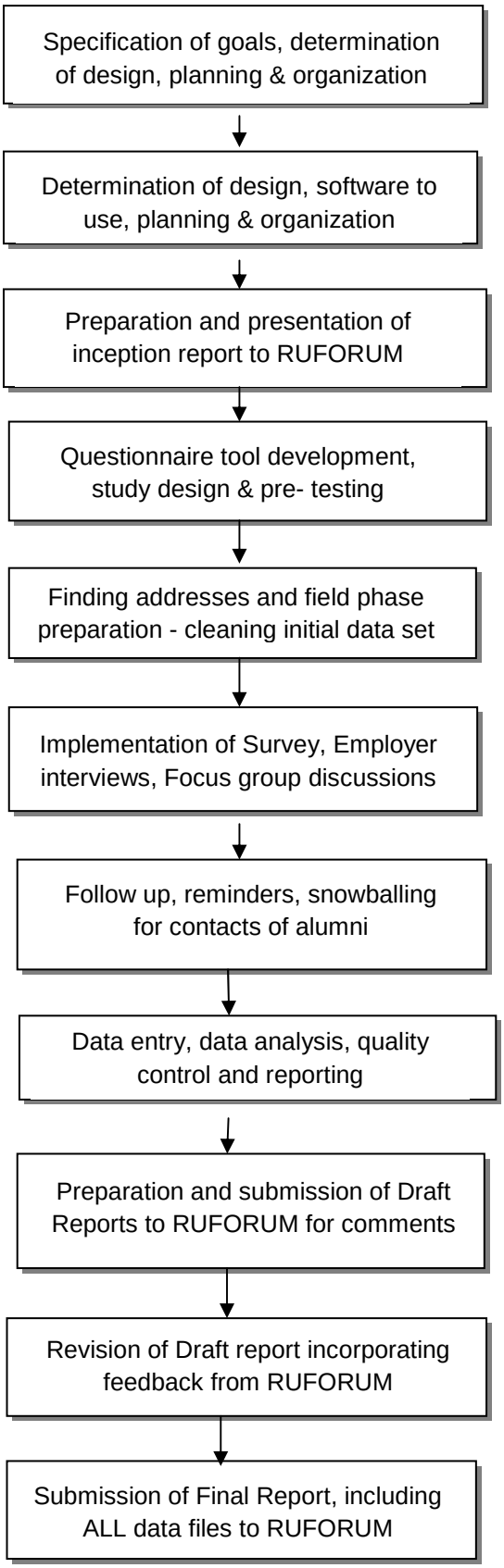
The methodology used to undertake the Tracer Study of RUFORUM Alumni was based on the objectives of the assignment found in and the expected outcomes/deliverables presented in Chapter 1. Figure 3.2 summarizes the study approach. The data from the RUFORUM category was collected through an online questionnaire covering the key variables of investigation powered by the Limesurvey open source software. The technical process in setting up the Limesurvey is

provided in **Annex 6 and 7**. The alumni were sent tokens[4] that gave them access to the self-administered online questionnaire. The list of universities with RUFORUM alumni was provided by RUFORUM (**Annex 8**).

[4] [4]A token is a computer generated code which is unique to every respondent, and is used to identify a specific respondent in the Limesurvey

Figure 3.1: Map showing the RUFORUM countries of operation

Figure 3.2: The Study Approach



3.3.1 Design of the Study

This online survey was sent out to the emails of alumni. The initial contact was made by email with a token that gave them access to the survey tool. This was followed up by reminders as well as telephone calls due to the large number of emails which bounced. The student questionnaire (**ANNEX 1**) had 48 questions and 382 variables. The four main themes of the questions were as follows:

i. Socio biographical characteristics
ii. Study conditions and provision, Study experiences
iii. Employment and work
iv. Work and competencies, Relationships between study and work

3.3.2 Development of Online Research instruments for graduates and employers

Through meetings among the team, the issues indicated in the TORs were grouped into the four main themes (Section 3.3.1) and in relation to the conceptual framework of Graduate Tracer Studies (Figure 2.1). The questions were then shared with RUFORUM Secretariat for input before the pre-testing.

3.3.3 Pre-testing of research instruments

The developed online research instrument was tested with 20 graduates randomly selected from the data set. The test was done in order to check:

i. That the questions could be understood by the respondents
ii. That the tool could be navigated without problems
iii. The time it would take to complete the survey
iv. The mandatory questions and filter questions were properly set out
v. To minimize ambiguities
vi. To enhance clarity and check on internal reliability
vii. The questions captured the issues raised in the TORs

Following pre-testing, the questionnaire will be amended as necessary and subsequently used in the main survey.

3.3.4 The Tracing process and administration of the online survey

The tracing process (Figure 3.3) involved cleaning out of data that was received from RUFORUM Secretariat so that only respondents with a valid email address remained on the data set for issuance of tokens to participate in the online questionnaire.

Table 3.1: Summary of the dataset used for the Tracer Study

SN	Country	University	Original data set	Number Tokens Issued	Fully Completed Questionnaires	Partially Completed Questionnaires
1.	Botswana	University of Botswana	1	1	1	0
2.	Ethiopia	Haramaya	-	13	3	10
		Mekelle	9	5	1	4
3.	Kenya	Egerton University	43	30	12	8
		Jomo Kenyatta University	85	66	34	32
		Kenyatta University	35	12	6	6
		Moi University	14	11	3	8
		University of Nairobi	81	55	21	
4.	Lesotho	National University of Lesotho	3	2	1	1
5.	Malawi	University of Malawi	50	35	17	18
6.	Mozambique	Eduardo Mondlane	30	18	8	10
7.	Sudan	Agricultural Research Corporation	10	9	0	0
8.	Tanzania	Sokoine University	56	30	11	19
9.	Uganda	Makerere University	215	146	61	85
10.	Zambia	University of Zambia	15	2	0	0
11.	Zimbabwe	Africa University	38	22	9	13
		University of Zimbabwe	57	16	5	11
	TOTAL		**742**	**473**	**193**	**225**

Figure 3.3 shows the step-wise and iterative procedures that were used to get to the initial (456) respondents who were invited to participate in the online tracer survey. Key highlights of the process were as follows:

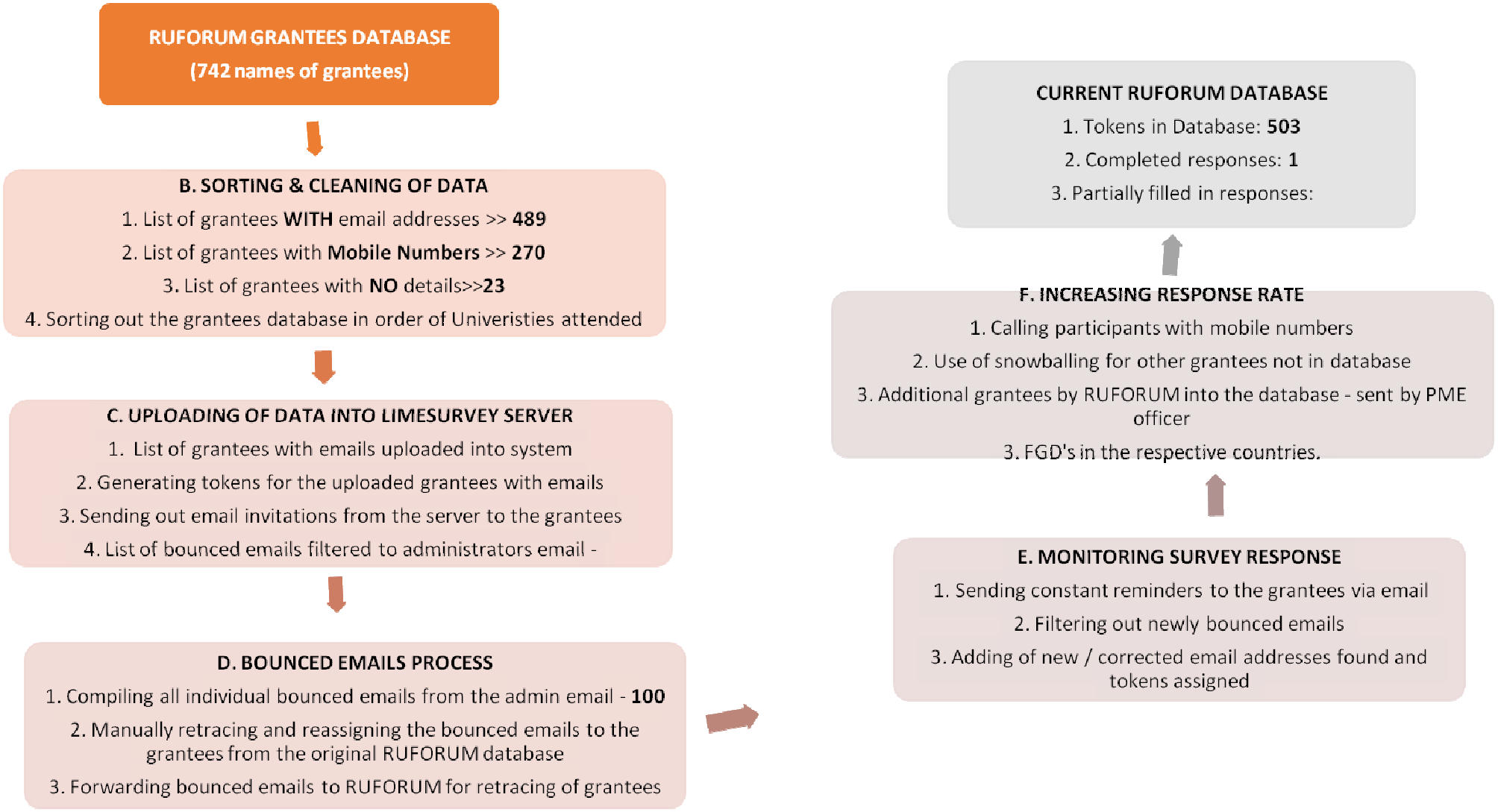
i. The original database received from RUFORUM contained 742 entries (Table 3.1).
ii. The data was then separated according to 10 countries
iii. Under the specific universities, data that was not complete was filtered out. This included entries without names and/ or email addresses. Also the entries that were repeated were deleted from the final file
iv. Total original entries that were used for token generation were **456**
v. Through snowballing, using the telephone calls and emails to alumni, a total of **516 (see Table 3.2)** valid tokens were sent out as of April 4th 2014.

The tracing process is summarized in Figure 3.3.

Table 3.2: Cleaning of the original database

SN	University	Entries without email addresses	Entries without names	Blank entries	Entries with same email address	Number of repeated entries
1.	University of Zimbabwe	24	0	0	3	3
2.	Africa University (Zimbabwe)	15	0	0	0	8
3.	University of Zambia	14	12	0	0	0
4.	Makerere University (Uganda)	30	0	0	0	30
5.	Sokoine University (Tanzania)	7	0	12	0	9
6.	Eduardo Mondlane (Mozambique)	0	3	11	0	2
7.	University of Malawi	1	0	0	0	8
8.	National University of Lesotho	0	0	0	0	1
9.	Jomo Kenyatta University of Agriculture and Technology (Kenya)	1	0	0	0	17
10.	University of Nairobi (Kenya)	4	0	0	0	27
11.	Egerton University (Kenya)	14	0	0	0	9
12.	Moi University (Kenya)	2	0	0	0	1
13.	Kenyatta University (Kenya)	16	0	0	0	7
14.	Mekelle University (Ethiopia)	0	0	0	0	2
15.	Haramaya University (Ethiopia)	0	0	0	0	0
16.	University of Botswana	0	0	0	0	0
17.	Agriculture Research Corporation (Sudan)	1	0	0	0	0
	TOTAL	**129**	**15**	**23**	**3**	**124**

Figure 3.3: The Tracing process



3.3.3.1 Accessing respondents

Accessing respondents employed several strategies including:

i. Use of email addresses to send invitation emails to participate in survey
ii. Following up the alumni by calling them using their mobile phone numbers
iii. Snowballing techniques
    a. Using the mobile contacts and requesting the respondents to send to us their colleagues contacts with whom they studied
    b. Using emails of those who had completed the survey and requesting them to send their colleagues contacts.
    c. From the Focus Group Discussion participants also provided other alumni and their contacts.

3.4 FOCUS GROUP DISCUSSIONS

The tracer study included face to face discussions with the alumni and the employers in the respective countries through focus group discussions. The process for identifying the target alumni and employers for the FGD included:

- Downloading the completed questionnaires by the alumni from the Limesurvey
- Filtering out the data for the Name, Email, Current country of Residence, University, Current place of Work and Current employer fields.
- Contacting of the alumni via phone calls or email correspondence to confirm on suitable dates for the FGD
- Contacting employers to book appointments for the employer interviews.

The Plates 3.1 to 3.3 show some of the focused group discussion sessions.

Plate 3.1: Malawi Alumni during a focused group discussion

Plate 3.2: Tanzania Alumni pose for a photo after FGD session

Plate 3.3: Tanzania Alumni during FGDs

3.5 INTERVIEWS

The employers were contacted through telephone and email correspondence for the booking of the interview appointments. This was done concurrently with the FGD process (Section 3.4). Plate 3.4 shows an interview carried out with an employer.

Plate 3.4: Prof. Kinuthia, University of Nairobi during interview

A total of 47 alumni participated in the focus group discussions and 24 employers were internviewd. Table 3.3 provides details of the number of alumni and employers from the respective countries who took part in the Focus Group Discussions and the interviews. **Annexes 9 and 10** provide the details for all the FGDs.

Table 3.3: Focus Group Discussion and Interviews

Country	Alumni who attended FGD sessions	Employer Interviews
Kenya	5	10
Malawi	6	3
Rwanda	9	2
Tanzania	4	2
Uganda	14	3
Zimbabwe	9	4
TOTAL	**47**	**24**

3.6 ETHICAL CONSIDERATIONS

All the targeted RUFORUM alumni were informed of the study and its importance in enhancing the future programs and research grant schemes. They were given a

choice in responding to the online questionnaire through email as well as follow up telephone conversations. This same was also done during the face to face interviews and both alumni and employers were informed of the purpose of the tracer study.

The introduction to the online questionnaire (**Annex 3**) also provided the information to the alumni and thereby allowing them the chance to contribute. Furthermore, the information provided is treated with utmost confidentiality and only for purposed of the objectives of the tracer study of RUFORUM alumni. The alumni were provided with the opportunity to ask any questions directly to the RUFORUM Secretariat.

3.7 METHODOLOGICAL CHALLENGES IN THE TRACING PROCESS

i. The database granted by RUFORUM had many invalid or out-of-date email addresses which resulted to huge numbers of bounced emails and consequently low response rate.
ii. Some of the alumni in the RUFORUM database had neither the email nor mobile contacts, while some contacts only had the PI email addresses, which made it very difficult to get their feedback and participation.
iii. Most of the respondents once called would confirm that they had received the invitation email, but ignored it as they had a lot of work or they thought it was spam email, and hence deleted the email.
iv. The database had many double entries of the same person, in different formats, making it difficult for us to know whether it's the same person or different people, e.g.:
    a. One record would have the first name in the surname column, and the surname in the first name column; and the second record would have it in the opposite manner. Sometimes an individual would have more than two names and the two different records would have only one name in common, sometimes with similar email addresses, and sometimes with different email addresses.
    b. Some records had the names interchanged and different email addresses – using gmail and yahoo, but the same person
v. With the constant updates and adding of new contacts into the database, created unnecessary repetition in the Limesurvey database. This process was

very delicate yet complex due to the fact that some of the respondents had already received their tokens but not responded to the survey, and re-entering them into the survey would result to double invitations

vi. Out of 270 alumni who had had mobile contacts, 129 had invalid mobile contacts or numbers which are currently out of service, making it difficult to reach out to them and request for their email addresses.

vii. Some of the alumni email or phone contacts were not their personal email addresses and would belong to an institution where they worked initially before, or others for family members who may be in a different country, while others had their friends contacts enlisted who would disconnect upon introduction.

viii. In some countries, e.g. Zimbabwe, there was very poor network connectivity as the phone lines would constantly disconnect while still in communication and at times the lines were very unclear.

ix. In Mozambique and partially Rwanda, language barrier would pose a great challenge and it would take a long time before communicating the message across with the alumni.

i. Internet access in Zimbabwe, Malawi, and Mozambique proved to be quite a challenge as some participants complained, when called on phone, that they do not have access to internet.

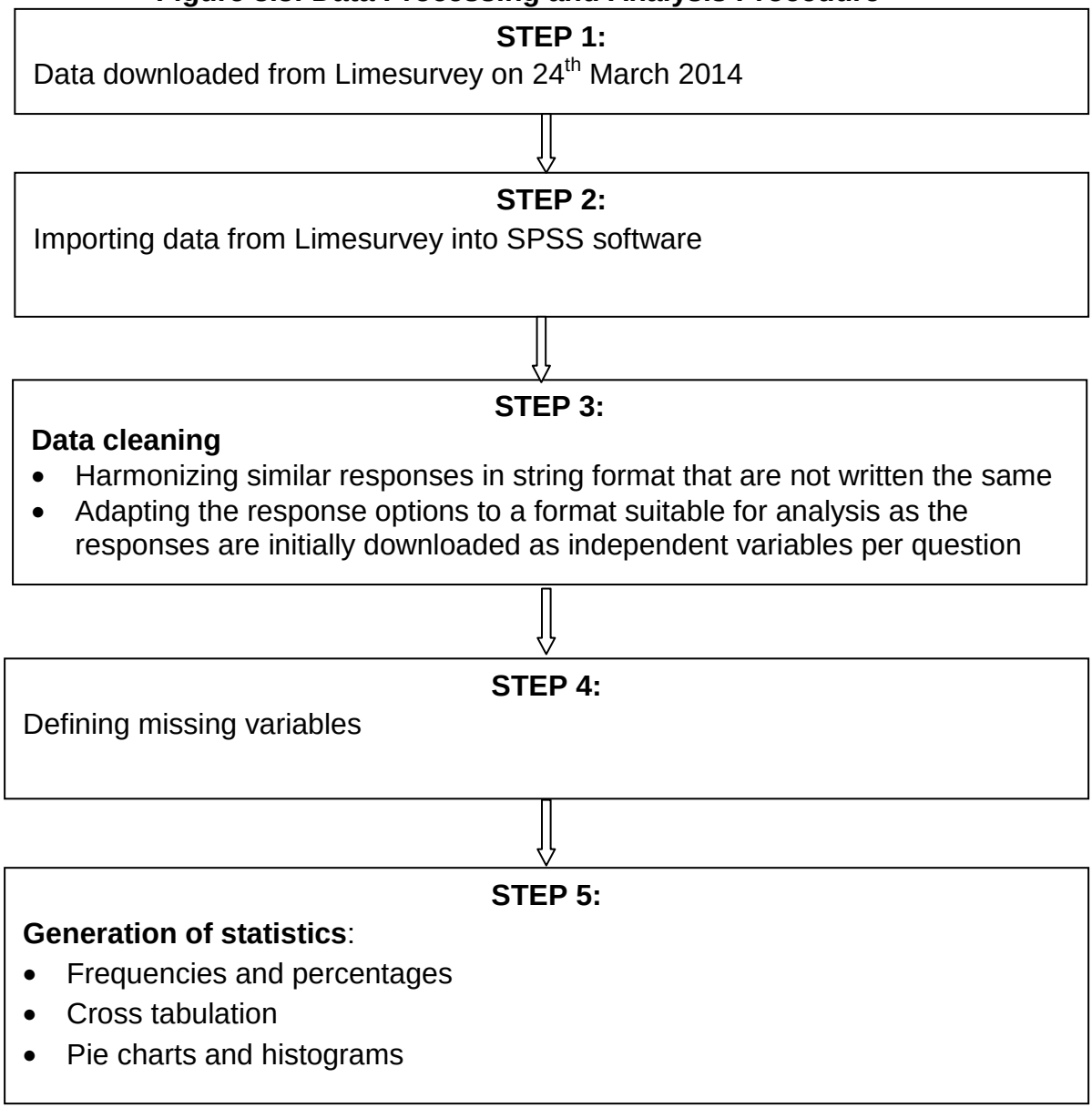
3.8 DATA PROCESSING AND ANALYSIS

The first step in data analysis involved importing data from Limesurvey into SPSS software Version 21.0 for data cleaning. Data cleaning involved harmonizing similar responses in string format that are not written the same for instance similar answers written in different cases to avoid separate reading by the software. To illustrate this in providing their nationality some respondent provide “Kenyan” while other write “KENYAN”. The software that was used for the analysis reads the two entries as separate and therefore must be harmonised to be read as similar entries. The second reason for cleaning was because after downloading the data and importing it into SPSS, some responses were transposed into full variables. To get an accurate information about these specific ‘variables’ they had to be transposed back into

original responses. The next step in data cleaning involved defining missing variables to ensure that after the analysis, all data could be accounted for.

The second step in the data analysis process using SPSS was the generation of statistics. At this stage the analysis included frequencies and percentages that would be used to show prevalence of specific facts. In the final stage, more procedures like cross tabulation were included to give a more comprehensive picture of the survey as well as broaden the understanding of the data captured through Limesurvey online tool. Figure 3.4 shows a summary of the data processing and analysis procedure.

Figure 3.3: Data Processing and Analysis Procedure



CHAPTER FOUR: PRESENTATION AND DISCUSSION OF FINDINGS

4.0 INTRODUCTION

This chapter presents and discusses findings from the Limesurvey tool of the Tracer Study for the RUFORUM alumni. The data was analyzed using SPSS and it comprised 201 respondents. This is the data downloaded from the survey on May 31st 2014. The presentation of findings has been made with an **"r"** varying for the various responses so as to base them on the actual number of respondents per question rather than the general 201 respondents in total. The findings are discussed in the following subsections below.

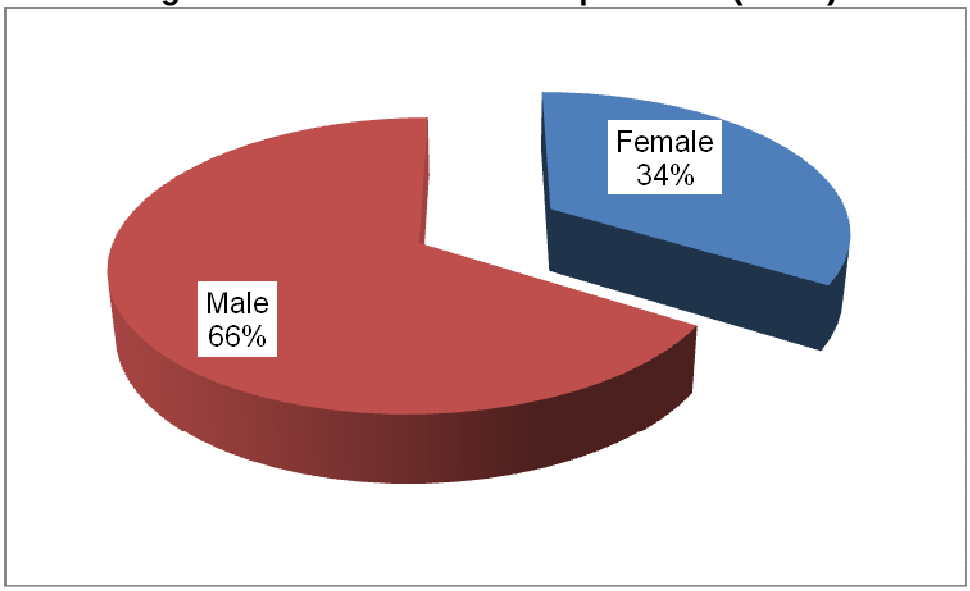
4.1 SOCIO BIOGRAPHIC CHARACTERISTICS OF THE SURVEYED GRADUATES

The respondents' socio-biographic data comprised gender and age, nationality and current country of residence. These characteristics are discussed and presented in the following section.

4.1.1 Gender and Age

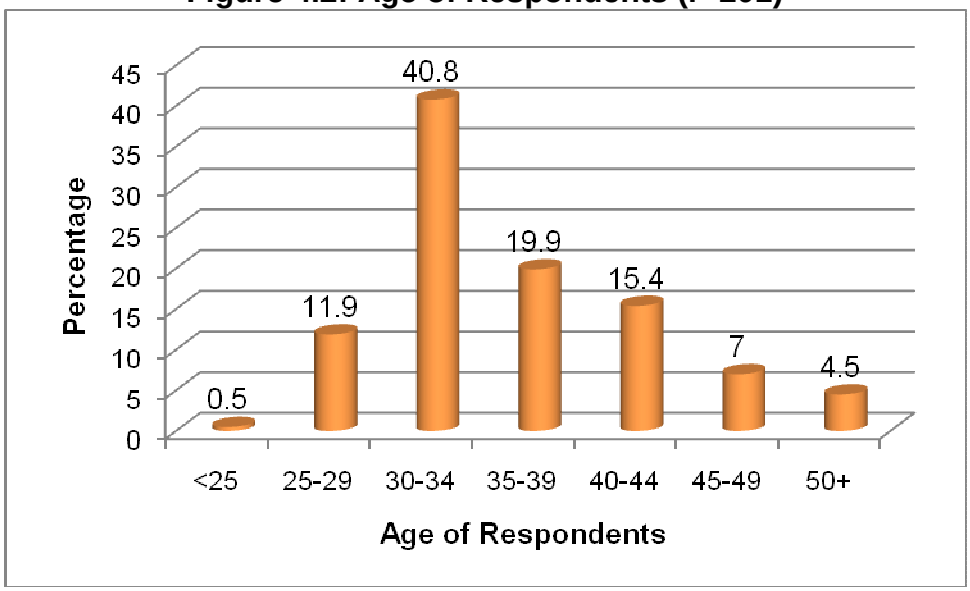
The respondents' distribution was dominated by males (66%) while females represented 34% as shown in Figure 4.1.

Figure 4.1: Gender of the Respondents (r=201)



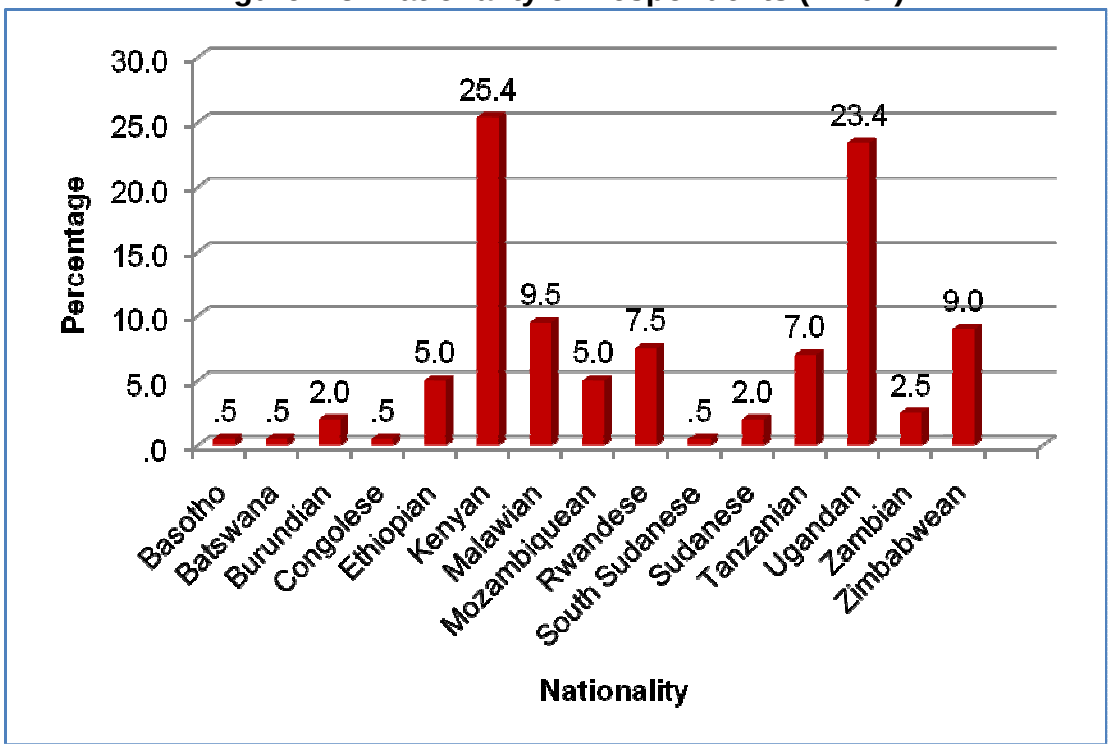
With regard to age, the study established that a majority 40.8% of the respondents were between 30 and 34 years of age as shown in Figure 4.2. The age groups: 25-29, 35-39 and 40-44 all recorded responses above 10% of the respondents.

Figure 4.2: Age of Respondents (r=201)



The respondents were also required to state their nationality which aided in establishing the geographic extent of RUFORUM alumni who responded to the online questionnaire tool. Figure 4.3 shows that Kenyans and Ugandans were the majority respondents; with 25.4% and 23.4%, respectively.

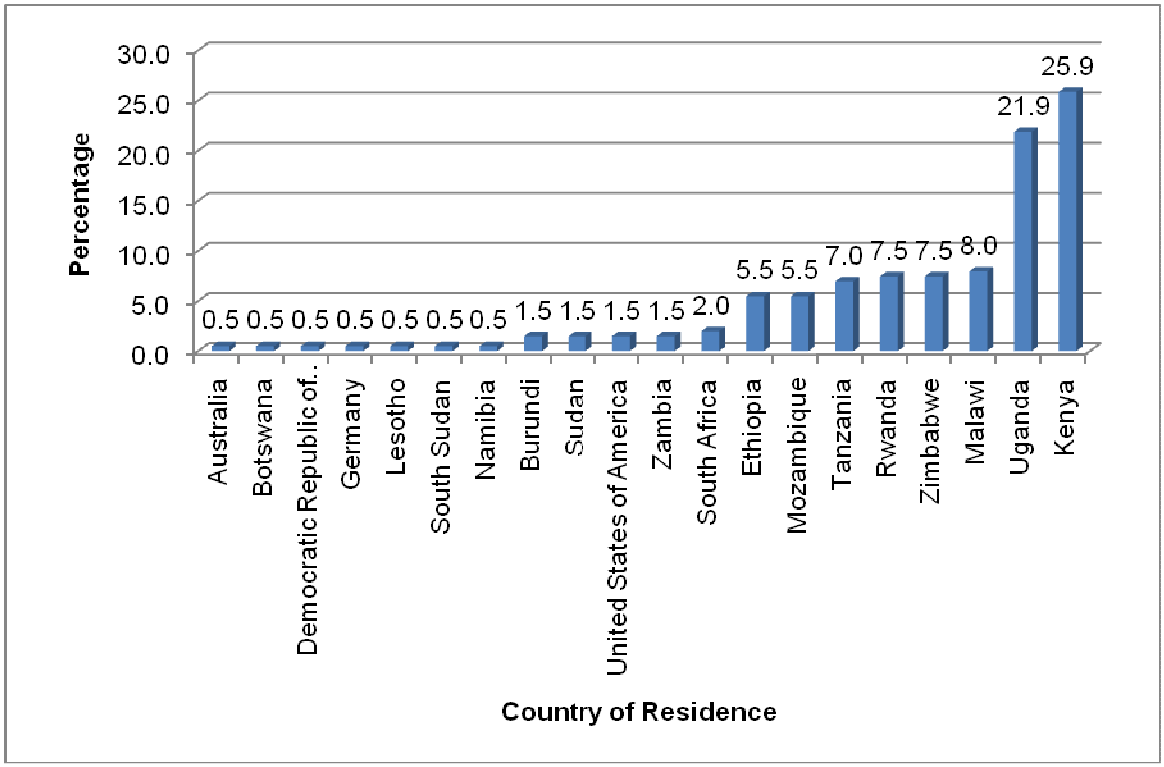
Figure 4.3: Nationality of Respondents (r=201)



4.1.2 Country of residence

The study also sought to establish the current country of residence and results in Figure 4.4 show that 25.9% were currently residing in Kenya followed by 21.9% in Uganda. Besides residents in African countries, 0.5% of the respondents indicated that they reside in Germany and 1.5% in the United States of America.

Figure 4.4: Country of Residence (r=201)



4.2 TRAINING AND STUDY EXPERIENCES

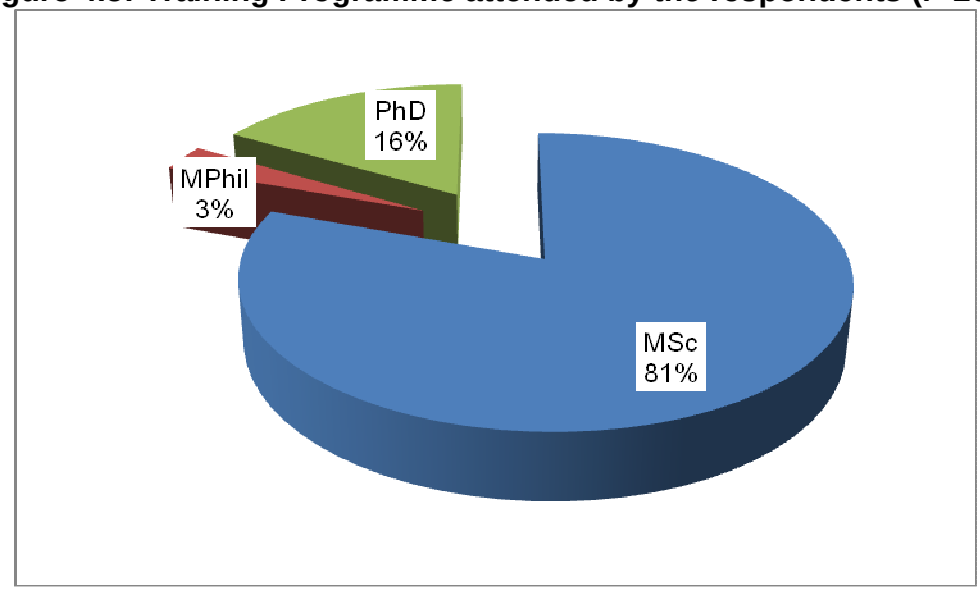
This section looked at the studies and experiences of respondents at the various training institutions. In particular, the study examined the following aspects: (i) type of training program(s) respondents undertook, (ii) which institution the respondents trained at, (iii) response rate to the online questionnaire tool by respondents affiliated to particular institutions of training; and (iv) study conditions and experiences by respondents at the respective training institutions and study funding opportunities. Details of these aspects are discussed below.

4.2.1 Training programmes undertaken

RUFORUM alumni undertook their training in the following categories of training programmes: Master of Science, MPhil. and Doctoral. Figure 4.5 shows that 81% of

the respondents studied Master of Science, 16% studied Doctoral and 3% MPhil degrees.

Figure 4.5: Training Programme attended by the respondents (r=201)



The study established the actual specific programmes the respondents trained in (Table 4.1). As indicated in Table 4.1, MSc Research Methods had the highest number of respondents (18.4%) followed by MSc Plant Breeding and Seed System (12.4%). In terms of PhD, Plant Breeding and Biotechnology had 6.0% and Dryland Management 5.5%.

Table 4.1: Specific Training Programmes Undertaken (r=201)

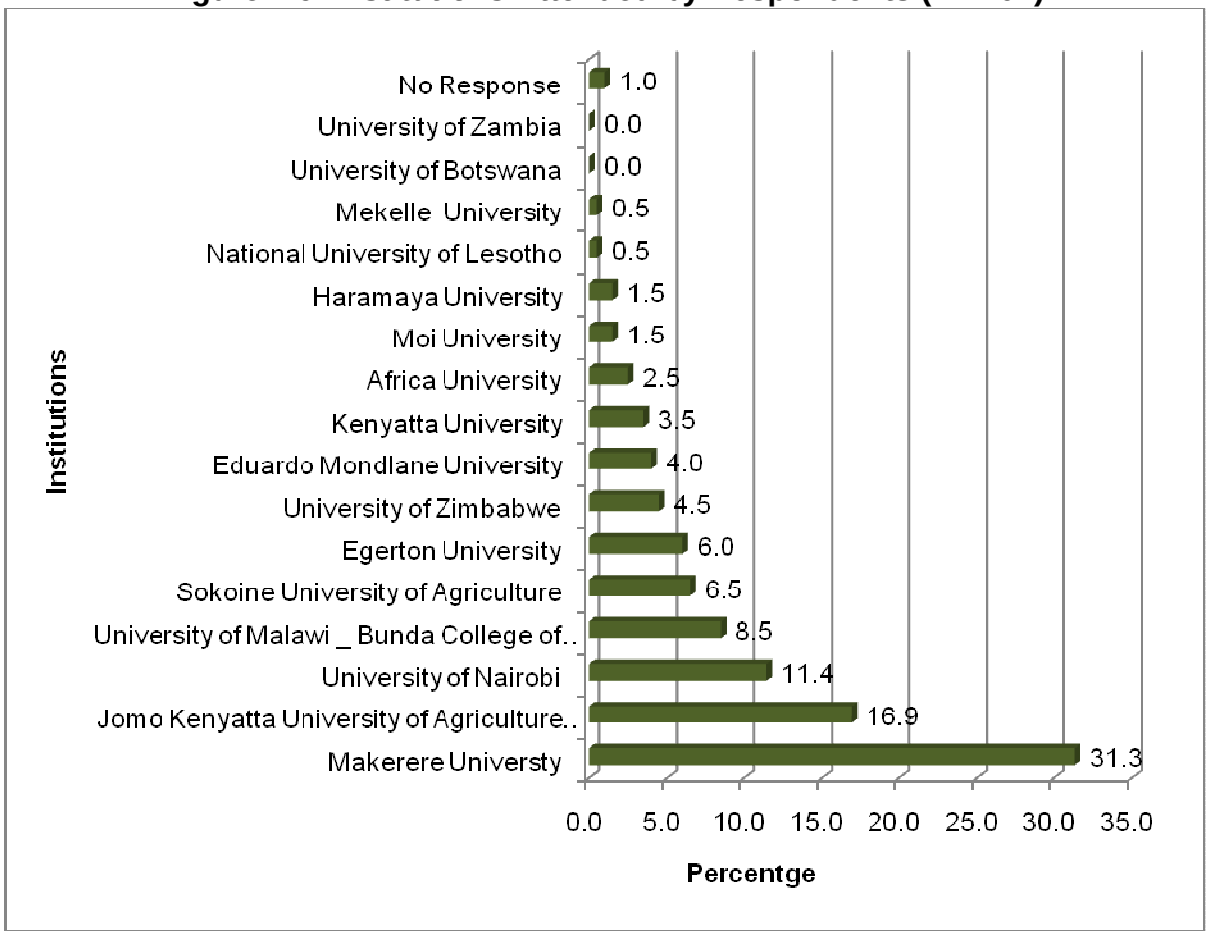
SN	Specific Programme Undertaken	r	%
1.	MSc Research Methods	37	18.4
2.	MSc Plant Breeding and Seed Systems	25	12.4
3.	MSc Agricultural Information and Communication Management	16	8.0
4.	MSc Soil Science	16	8.0
5.	PhD Plant Breeding and Biotechnology	12	6.0
6.	PhD Dryland Management	11	5.5
7.	MSc Environment and Natural Resources	8	4.0
8.	MSc in Agricultural Economics	8	4.0
9.	MSc Agronomy	6	3.0
10.	MSc Crop Production	6	3.0
11.	MSc Plant Protection	4	2.0
12.	PhD Agricultural and Resource Economics	4	2.0
13.	MSc Animal Science	4	2.0

SN	Specific Programme Undertaken	r	%
14.	MSc Soil and Environmental Management	4	2.0
15.	MSc. Agribusiness Management	4	2.0
16.	MSc Crop Science	3	1.5
17.	PhD Soil and Water Management	3	1.5
18.	PhD. Aquaculture and Fisheries Science	3	1.5
19.	MSc Agriculture Extension & Education	2	1.0
20.	MSc Natural Resource Management and Sustainable Agriculture	2	1.0
21.	MSc Horticulture	2	1.0
22.	MSc Agricultural and Applied Economics	2	1.0
23.	MSc Aquaculture and Fisheries Science	2	1.0
24.	MPhil Soil Science	2	1.0
25.	MSc. Biodiversity Management and Conservation	2	1.0
26.	MSc Climate Change and Agriculture	1	0.5
27.	MSc Climate change in Forestry	1	0.5
28.	MSc Applied Human Nutrition	1	0.5
29.	Msc Applied Microbiology	1	0.5
30.	MSc Agroforestry	1	0.5
31.	MSc Community Studies and Extension	1	0.5
32.	MSc Rangeland Management	1	0.5
33.	MSc Tropical Animal Production	1	0.5
34.	MPhil in Agriculture- Social Learning and Technology Uptake	1	0.5
35.	MPhil. Agricultural Resource Economics and Management	1	0.5
36.	MPhil. Integrated Soil Fertility and Water Management	1	0.5
37.	PhD. Veterinary Microbiology (Applied Virology)	1	0.5
38.	PhD. Agricultural and Rural Innovation Studies	1	0.5
	Total	**201**	**100.0**

4.2.2 Institution of Training

Premised on the fact that the capacity building for RUFORUM alumni was done in various academic institutions in the region, the study went a step further to establish the institutions attended by these respondents. Figure 4.6 shows that Makerere University had 24.9% of the respondents, followed by Jomo Kenyatta University of Agriculture and Technology (JKUAT) with 17.1%. The rest of other RUFORUM affiliated universities recorded responses below 10%.

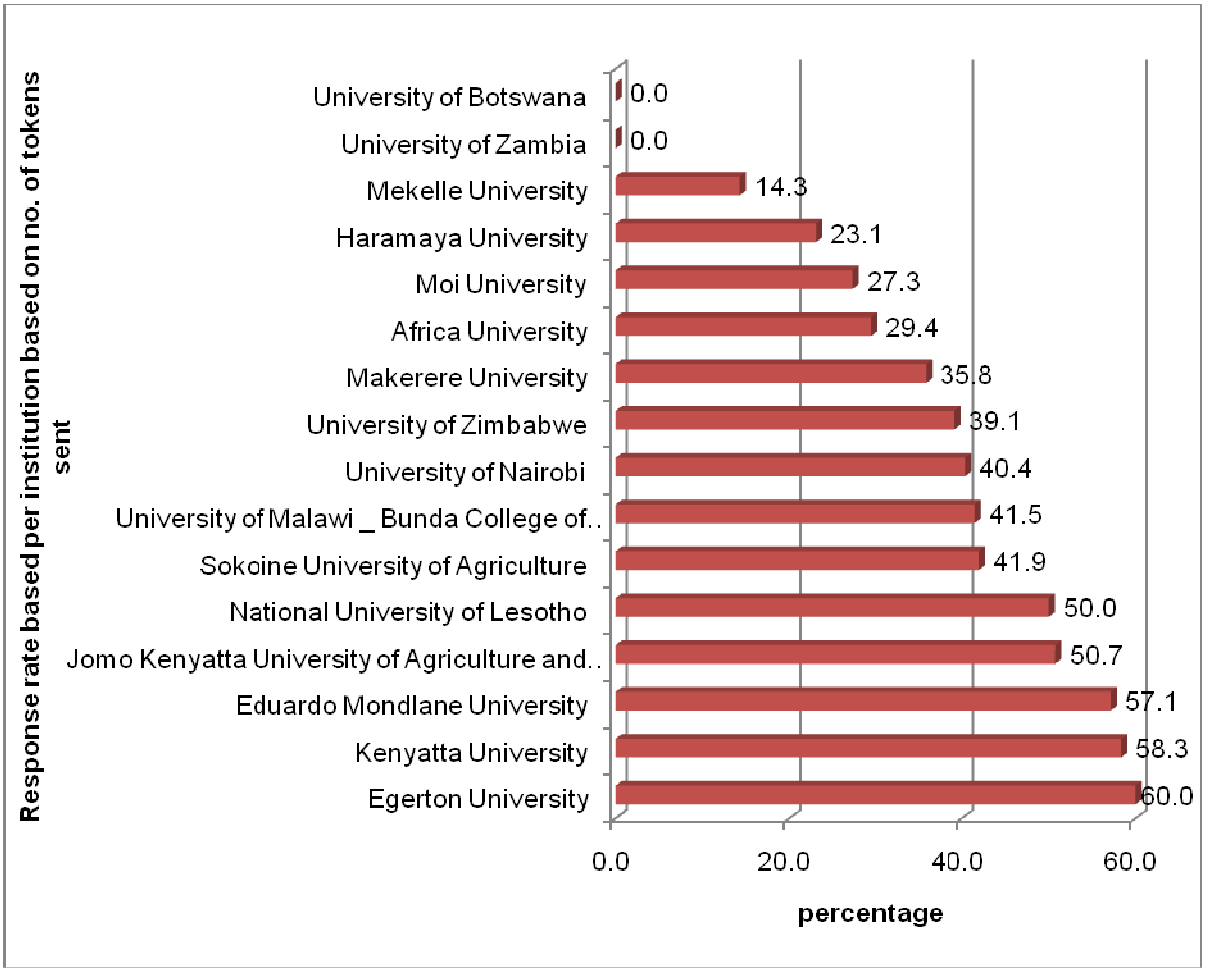
Figure 4.6: Institutions Attended by Respondents (r = 201)



4.2.3 Response Rate by Institutions and Nationality

The study as well ascertained the response rate per institution. This was achieved by comparing the responses received against the number of email addresses sent tokens (see the RUFORUM database in Table 3.2 above). This was done on the assumption that all tokens sent were received by the alumni. Thus, Figure 4.7 shows that Egerton University had a high response rate of 60%, followed by Kenyatta University at 58.3% and Eduardo Mondlane University at 57.1%. The University of Zambia and University of Botswana had no responses.

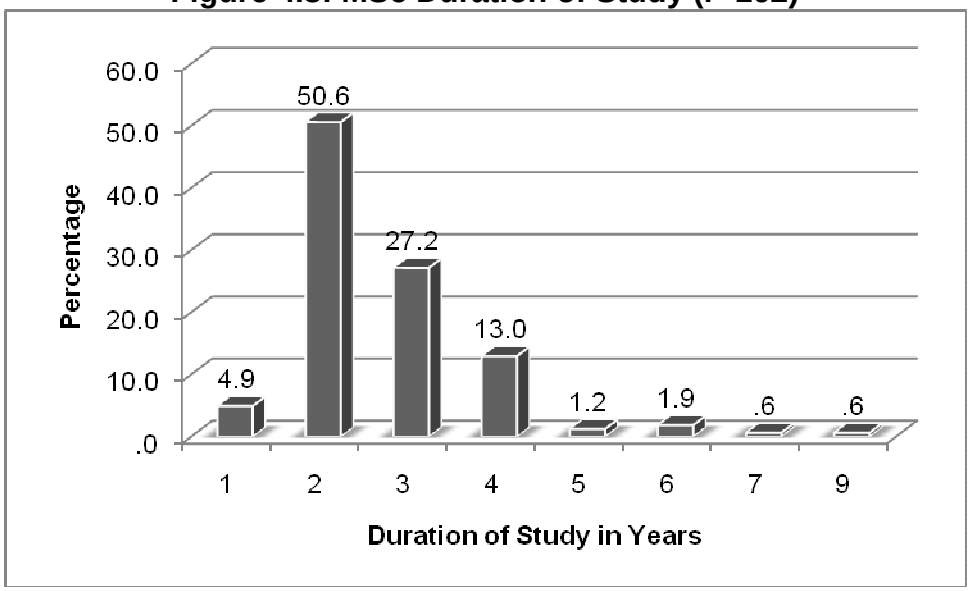
Figure 4.7: Response Rate by Institutions



4.2.4 Responses on Study Conditions and Experiences

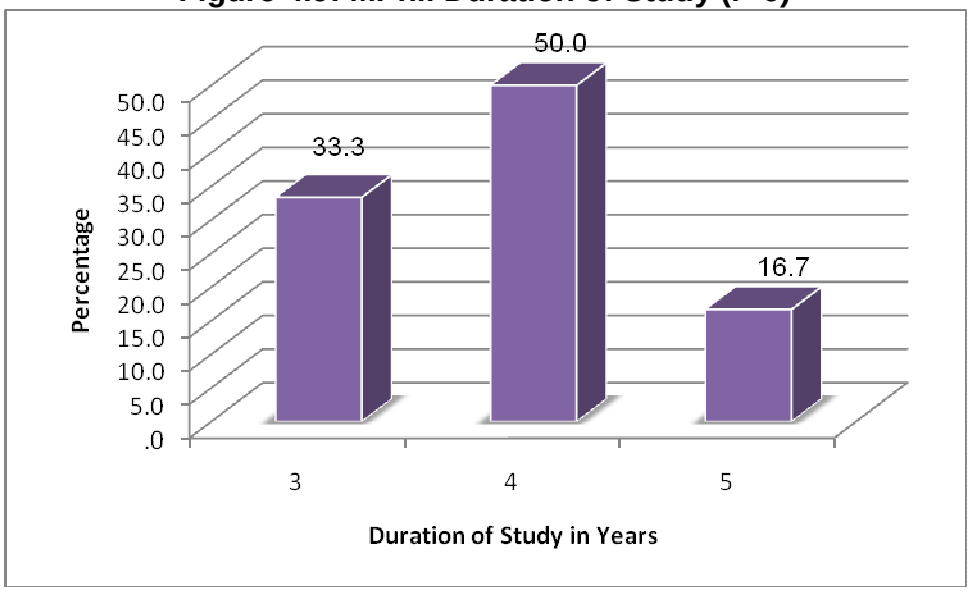
In the first instance, the study determined the time the RUFORUM alumni took to complete their study programmes. The MSc programmes that had a majority of alumni (50.6%) who completed their studies in the required time of 2 years. On the other hand 27.2% and 13.0% of these MSc alumni reported having taken 3 years and 4 years to complete their studies, respectively (Figure 4.8). There were exceptional cases of respondents who reported to have completed their studies in 5, 6,7 and 9 years.

Figure 4.8: MSc Duration of Study (r=162)



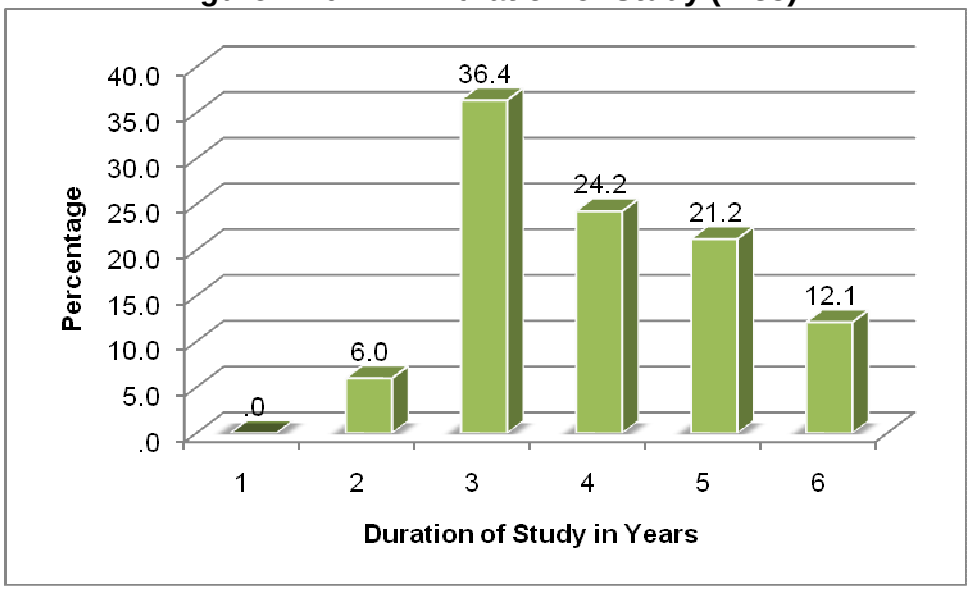
The MPhil programme alumni had 33.3% completing their studies in 3 years, 50% in 4 years and 16.7% in 5 years as shown in Figure 4.9.

Figure 4.9: MPhil Duration of Study (r=6)



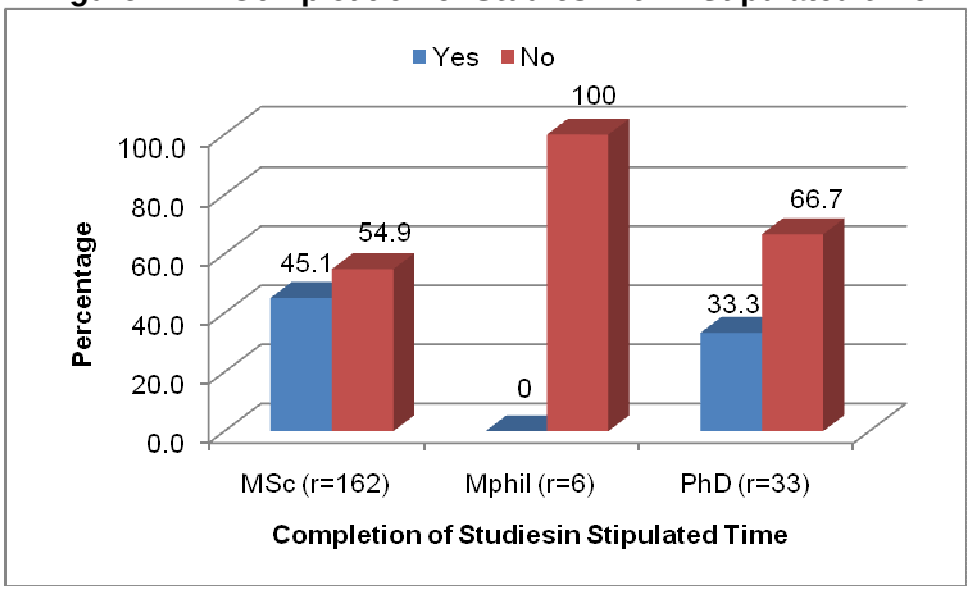
Under the PhD programme, 36.4% respondents reported having completed their studies in 3 years, 24.2% in 4 years and 21.2% in 5 and 12.1% in 6 years (Figure 4.10).

Figure 4.10: PhD Duration of Study (r=33)



The study further inquired whether the RUFORUM alumni completed their studies within the stipulated official timeframes. Figure 4.11 shows that 45.1% of the MSc and 66.7% of PhD graduates completed their programmes within the stipulated timeframe. Interestingly, none of the MPhil alumnies completed their studies within the stipulated timeframe.

Figure 4.11: Completition of Studies within Stipulated time



The results in Figure 4.11 prompted further inquiry into the reasons for their delayed completion and Table 4.2 summarizes the ranking of challenges that hampered the progess of grantees towards completing their studies within the given time limit. It is worth nothing that delay in final examination of thesis was ranked highly with 41.8%

ranking it as a very serious reason followed closely with 12.7% terming it a serious reason. Delays in field research (21.3%) and delayed feedback from supervisors (23.9%) were also ranked as very serious reasons (Table 4.2).

Table 4.2: Reasons for Delayed Completion of Studies within Stipulated Timeframe

	Reasons for Delayed Completion	**very serious**	**Serious**	**moderately serious**	**fairly serious**	**least serious**
1	Financial (r=75)	20.0	9.3	13.3	14.7	42.7
2	Failed examinations (r=52)	0	0	0	7.7	92.3
3	Took time writing thesis/dissertation (r=74)	13.5	16.2	14.9	20.3	35.1
4	Studying in a foreign country (r=51)	2.0	2.0	0.0	3.9	92.2
5	Delays in Field Research (r=75)	21.3	14.7	10.7	13.3	40.0
6	Family reasons (r=53)	5.7	5.7	9.4	5.4	73.6
7	Health (r=53)	1.9	1.9	1.9	3.8	90.6
8	Got busy with work / job (r=58)	10.3	10.3	21.1	6.9	60.3
9	Delayed examination of thesis (r=79)	41.8	12.7	51.0	11.4	29.1
10	Delayed feedback from supervisors (r=67)	23.9	14.9	13.4	17.9	29.9
11	Other (r=26)	26.9	3.8	3.8	7.7	57.7

Secondly, the study examined the modes of teaching and learning the RUFORUM alumni were exposed to during their studies. Table 4.3 shows that lectures, demonstrations, and participation in research and discussions/tutorials were ranked highly with over 65% of the responses in the two high ranks of very high extent and high extent. On the other hand, E-learning and field attachment were ranked poor with both recording over 40% in this lowest rank.

Table 4.3: Modes of Teaching and Learning During Study Period (r=201)

	To what extent were modes of Teaching and Learning emphasized in the study	Very high extent	High extent	Moderate extent	Low extent	Not at all
1	Lectures	69.7	17.4	6.5	2.5	4.0
2	Demonstrations	20.9	36.8	20.9	13.4	8.0
3	Participation in Research	39.4	29.4	10.4	9.5	10.9
4	Practical Exercises/Field work	28.4	38.8	13.9	13.4	5.5
5	Field Attachment	23.4	16.9	14.9	10.9	33.8
6	E-Learning	18.9	18.4	21.4	17.4	23.9
7	E-Resources	26.9	21.4	24.4	14.9	12.4
8	Information Literacy	22.9	30.8	21.4	16.4	8.5
9	Discussion/Tutorial	39.3	33.3	17.9	7.5	2.0

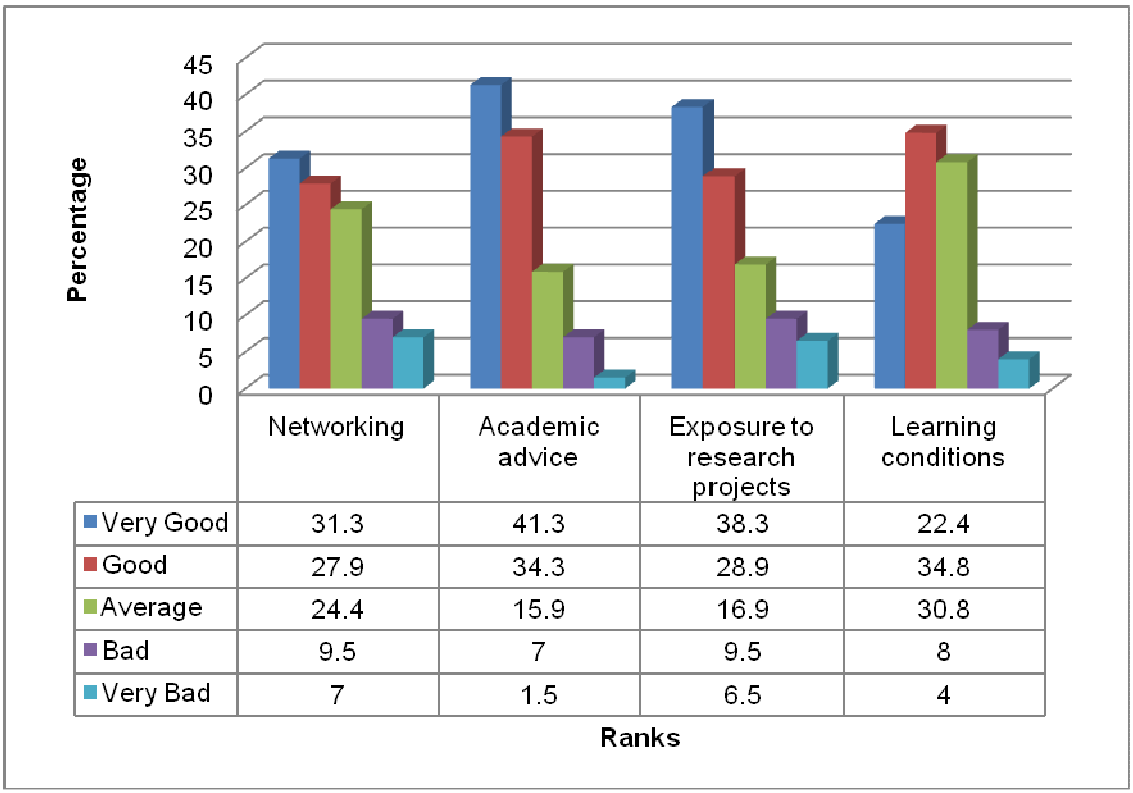
Thirdly, the study provisions at institutions the RUFORUM grantess attended were evaluated by the graduates. They were ranked as shown in Table 4.4. This result reveals that library, E-resources and learning space were ranked highly with over 50% in very good and good ranks. However facilities for family support provision were rank poor with over 60% in the bad and very bad ranks.

Table 4.4: Study Provisions at Institutions Attended (r = 201)

	How do you rate the following study provisions	Very Good	Good	Fair	Bad	Very Bad
1	Library	22.4	37.8	25.9	10.9	3.0
2	E-learning facilities	22.4	22.9	29.4	12.9	12.4
3	E-Resources	26.4	25.9	28.9	13.4	5.5
4	Information Literacy	17.9	33.8	29.9	14.4	4.0
5	Learning Space	25.9	42.3	19.9	9.0	3.0
6	Laboratories/Practicum	15.9	33.8	30.8	13.4	6.0
7	Recreational Facilities	10.4	24.9	39.3	15.9	9.5
8	Medical Facilities	16.9	31.3	23.4	17.4	10.9
9	Facilities for Family Support	7.5	8.0	16.9	24.9	42.8

Fourthly, the study considered the opportunities that were made avaialbe to RUFORUM alumni during their studies. Figure 4.12 shows these findings. Networking, academic advice, and exposure to research project, were the opportunities ranked highly by over 30% of graduates in the very good category.

Figure 4.12: Study Opportunities (r = 201)



The fifth aspect considered in this study was the RUFORUM alumni experiences during their study period. Table 4.5 shows the ranking of these experiences where classroom learning, conducting research and participation in conferences and seminars were ranked highly with over 50% of the responses in the excellent and good ranks. Community service and outreach, and student organization experiences were ranked as fair.

Table 4.5:Ranking of Experiences (r =201)

	Rating of study experiences by graduates	Very Good	Good	Fair	Bad	Very Bad
1.	Classroom learning	45.8	38.8	9.5	4.0	2.0
2.	Internship/field attachment	24.4	29.9	18.9	14.9	11.9
3.	Community service and outreach	10.4	22.9	31.3	21.4	13.9
4.	Conducting research/projects	38.8	41.3	12.9	4.5	2.5
5.	Research papers/articles	23.4	34.8	26.9	10.4	4.5
6.	Student organization	14.9	30.3	36.8	11.4	6.5
7.	Short skills enhancement events	17.9	28.4	27.9	16.4	9.5
8.	Conferences, seminars	32.8	26.4	24.9	12.9	3.0

The study also considered short skills enhancement courses and exposure events that the RUFORUM alumni attended during their period of study. Results in Table 4.6 shows that the biennial conferences 2008, 2010 and 2012, proposal preparation/writing, research design and data analysis, scientific data management, scientific writing and thesis research proposal development had significant attendance.

Table 4.6: Exposure Events of Alumni (r =152)

	Graduates participation in short skills enhancement courses and other exposure events provided by RUFORUM Secretariat	**MSc r=162**	**MPhil r=6**	**PhD r=33**
1.	Agricultural Science and Technology Innovations (ASTI)	6.2	16.7	6.1
2.	Biennial Conference 2008	10.5	16.7	12.1
3.	Biennial Conference 2010	21.0	66.7	78.8
4.	Biennial Conference 2012	34.0	33.3	45.5
5.	Climate Risk Assessment for Agriculture	8.0	0.0	21.2
6.	Communication in Science	3.7	16.7	12.1
7.	Developing E-learning Policies & E-Learning Strategies	3.1	0.0	6.1
8.	Content Development	3.7	0.0	3.0
9.	Information Literacy Workshop	4.9	0.0	12.1
10	Innovations Knowledge for Development (InK4DEV)	2.5	0.0	3.0
11	Integrated Pest Management	3.7	0.0	3.0
12	Leadership and Management	9.9	0.0	12.1
13	Mentoring & Coaching Orientation Workshop	8.0	0.0	18.2
14	Ministerial Conference on Higher Education in Agriculture in Africa (CHEA) 2010	1.9	0.0	12.1
15	Monitoring and Evaluation of Agricultural Training and Research	11.7	16.7	6.1
16	Open Educational Resources (OER)	1.2	0.0	3.0
17	Personal Mastery and Soft Skills	6.8	0.0	57.6
18	Proposal preparation/writing	35.8	33.3	75.8
19	Publishing in Journals	16.7	33.3	48.5
20	Quality Assurance Sensitization	1.9	16.7	3.0
21	Research Design and Data Analysis	32.1	33.3	60.6
22	Research Leadership, Management Development and Mentoring Learning Workshop	2.5	0.0	3.3
23	Scientific and Technical Writing	19.1	50.0	57.6
24	Scientific Data Management	29.0	33.3	63.6
25	Scientific Writing	28.4	50.0	42.4
26	Staff Retooling	1.2	33.3	0.0
27	Technicians Training	2.5	0.0	0.0
28	Thesis Research Proposal Development	42.0	33.3	45.5
29	WEB 2.0 Technologies for Research and Networking in Africa	8.0	0.0	8.5
30	ACSS Conference 2009	0.0	0.0	3.0
31	ACSS Conference 2011	0.0	16.7	0.0
32	ACSS Conference 2012	0.6	0.0	0.0

	Graduates participation in short skills enhancement courses and other exposure events provided by RUFORUM Secretariat	MSc r=162	MPhil r=6	PhD r=33
33	African Crop Science Society Conference	1.2	0.0	0.0
34	Bio-safety Workshop	0.6	0.0	0.0
35	Biennial Conference 2006	1.2	0.0	0.0
36	Biennial Conference 2007	1.2	0.0	0.0
37	Biennial Conference 2013	0.6	0.0	0.0
38	Statistical Analysis	0.6	0.0	0.0
39	Tanzania Society of Animal Production	0.6	0.0	0.0

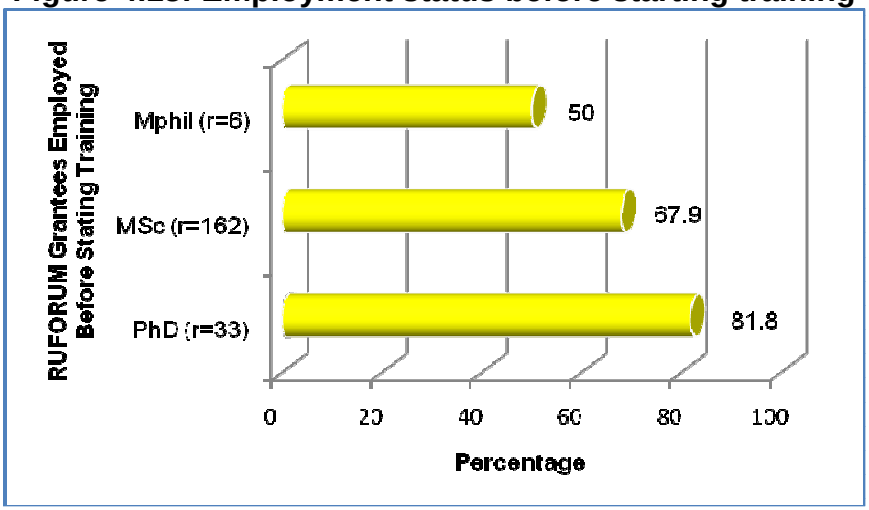
4.3 EMPLOYMENT AND WORK STATUS OF RUFORUM ALUMNI

In this subsection, the survey looked at employment and work related issues that comprise employment status before starting training, duration before getting employment, current employment status, work station and sector, and length of service with current employer.

4.3.1 Employment Status before Starting Training

On the basis of the programme undertaken, the survey established that a 81.8% of the PhD, 67.9% of the MSc, and 50% of the MPhil graduates were employed before starting the training (Figure 4.13).

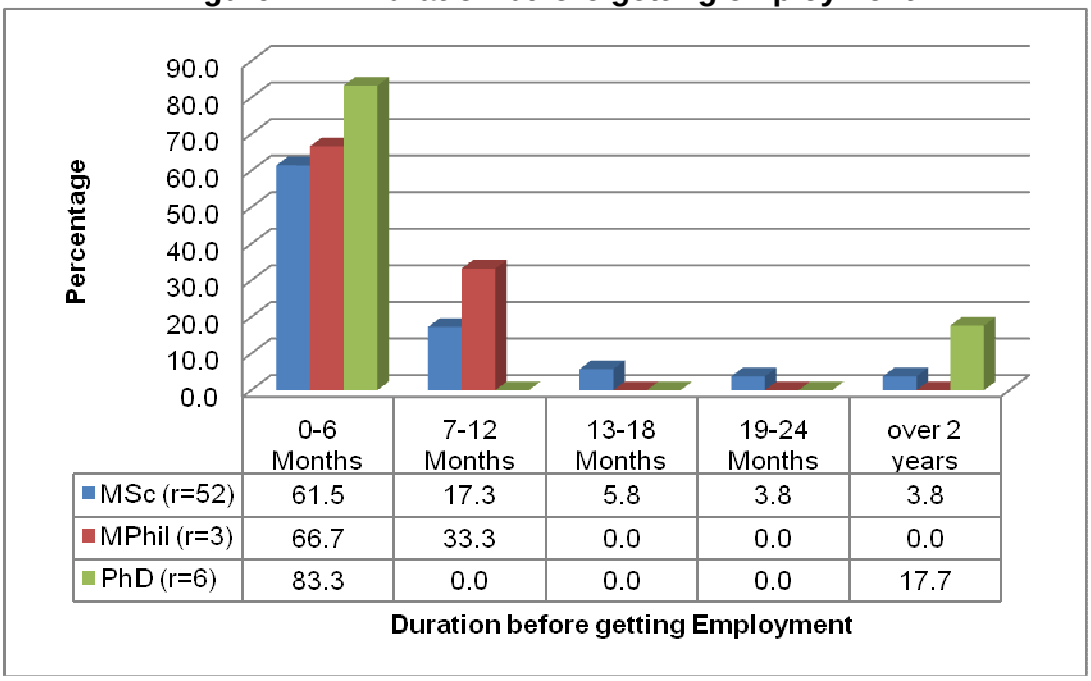
Figure 4.13: Employment status before starting training



The survey further established the time it took RUFORUM alumni who had no employment at the start of training before getting employed upon completion of their studies. Its worth recognising that there were only 2 PhD graduates who didn't have employment when they were concluding there studies. Thus, the findings presented

in figure 4.14 indicate that there were 61.5 % of MSc, 66.7% of MPhil and 83.3% of PhD graduates who secured employment in 6 months time.

Figure 4.14: Duration before getting employment

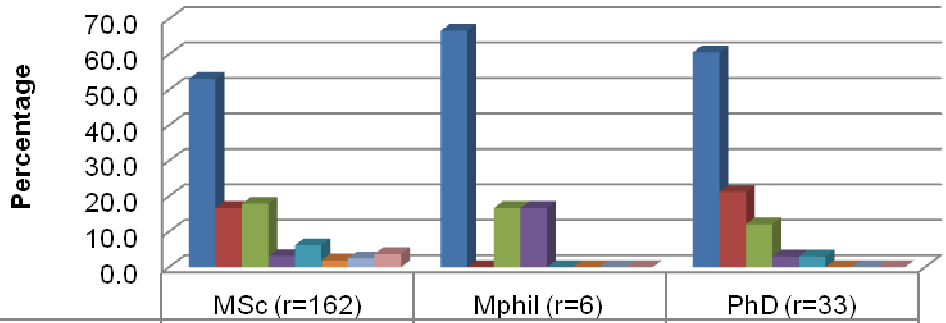


	0-6 Months	7-12 Months	13-18 Months	19-24 Months	over 2 years
MSc (r=52)	61.5	17.3	5.8	3.8	3.8
MPhil (r=3)	66.7	33.3	0.0	0.0	0.0
PhD (r=6)	83.3	0.0	0.0	0.0	17.7

4.3.2 Current Employment Status

The survey also determined the current employment status of the alumni. Figure 4.15 shows that across the programmes MSc, MPhil and PhD, a majorty of 53.1%, 66.7% and 60.6% have permanent employment, respectively.

Figure 4.15: Current employment status



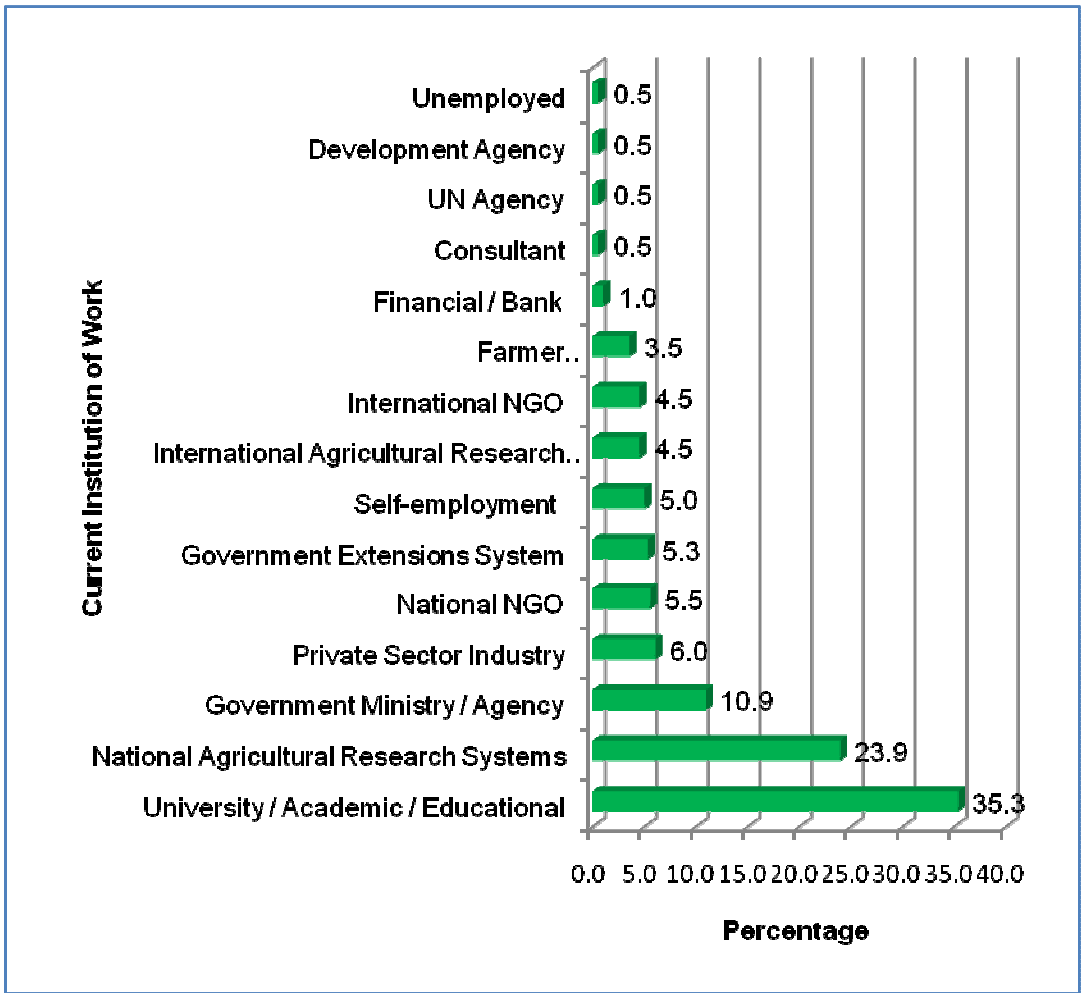
	MSc (r=162)	Mphil (r=6)	PhD (r=33)
Permanent	53.1	66.7	60.6
Long contract	16.7	0.0	21.2
Short contract	17.9	16.7	12.1
Temporary	3.1	16.7	3.0
Self employed	6.2	0.0	3.0
Volunteer	1.9	0.0	0.0
Consultant	2.5	0.0	0.0
PhD Student	3.7	0.0	0.0

Current Employment Status Based on Programme Undertaken

4.3.3 Work Institution and Sector of Employment

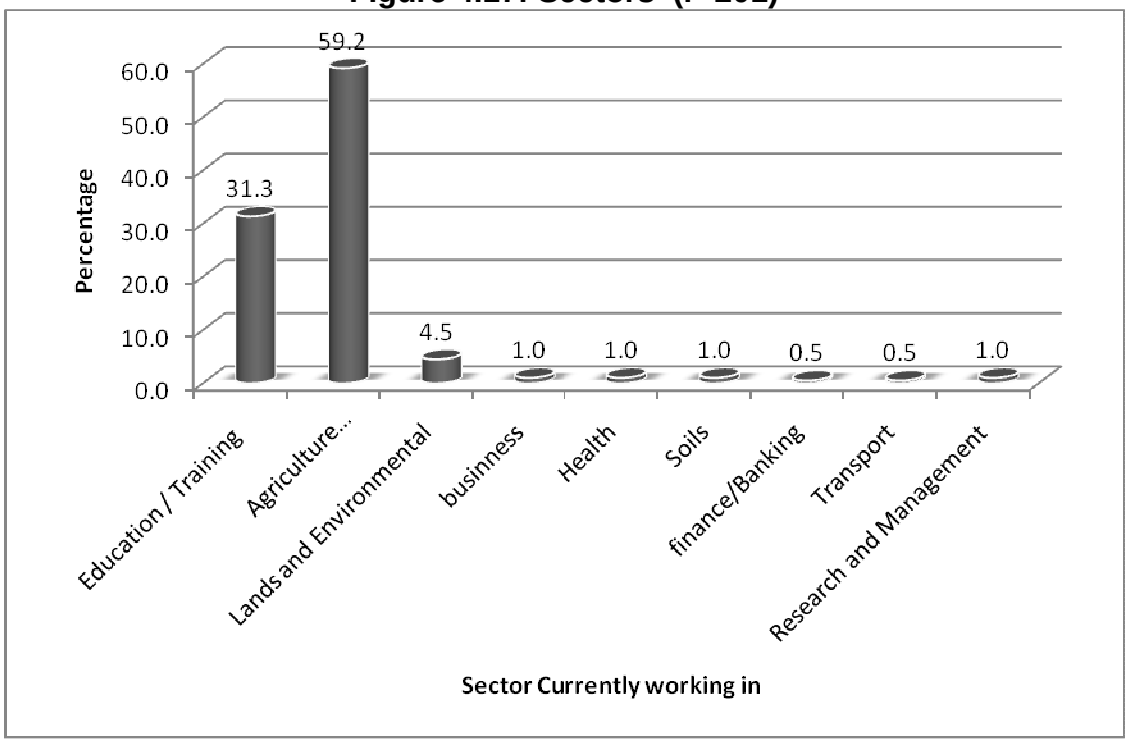
This study was also interested in finding out which employment sectors absorb the RUFORUM alumni. Figure 4.16 shows most of the graduates (35.3%) were working in University/Academics/Education institutions followed closely by the National Agricultural Research Systems (23.9%).

Figure 4.16: Work Institution (r= 201)



The study further established the specific work sectors the alumni are currently working in. Figure 4.17 shows that as expected majority (59.2%) of the graduates work in the agricultural sector, hence matching their training. Other graduates (31.3%) are engaged in education/training and 4.5% in lands and environment.

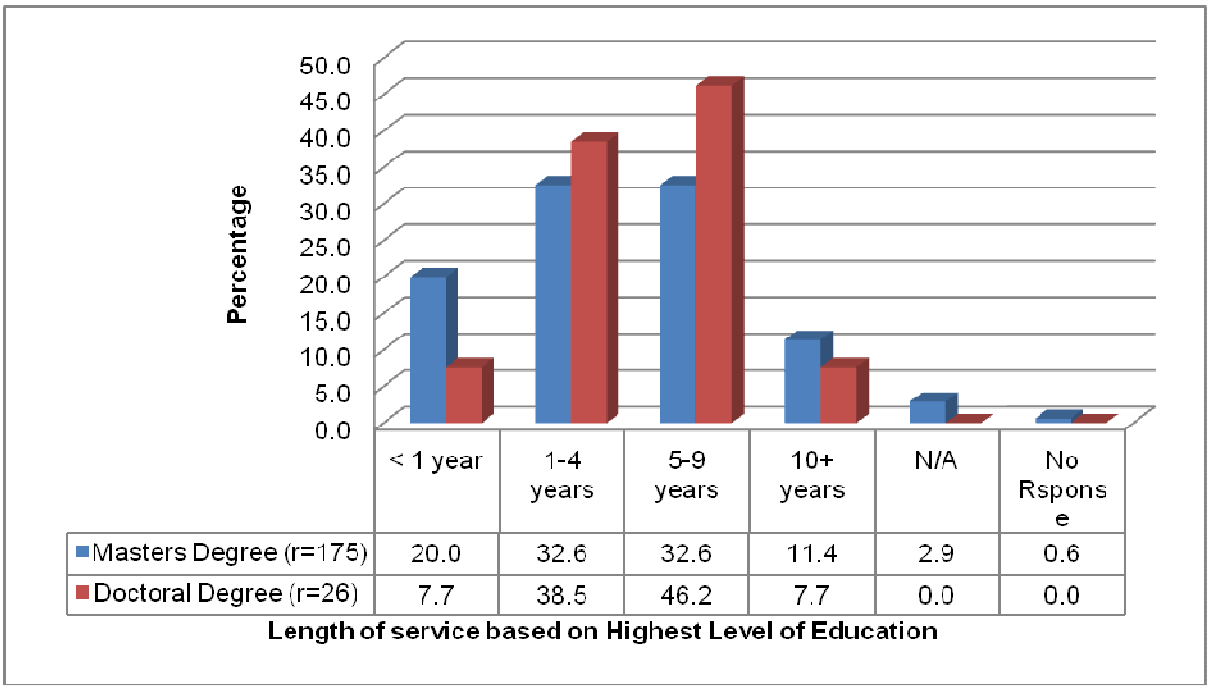
Figure 4.17: Sectors (r=201)



4.3.4 Length of Service with Current Employer

The duration of time the alumni have worked with the current employer was also ascertained. This was done by cross tabulating their length of services versus the highest level of education. Figure 4.18 depicts the spread on this aspect of the study. It is worth noting that a majority of 32.6% of those with Masters Degrees and 46.2% of those with Doctoral Degrees had been with their current employer between 5 to 9 years.

Figure 4.18: Length of time of work with current employer



4.4 RELATIONSHIP BETWEEN ACQUIRED COMPETENCIES AND WORK

In this section the survey looked at the relationship between studies taken and the work that the alumni are doing. The aim was to establish whether the skills acquired are being utilized. The specific areas captured are the: variety of competencies acquired through the short skills enhancement courses by being at particular University, relevance of studies to work, relationship between studies and the current work, additional professional training, and membership to a professional association.

4.4.1 Competencies Acquired from Shot Skills Enhancement Course and University

Varieties of competencies acquired by completion of the training as well as from the University or institution attended are ranked in Table 4.7. It is clear from the findings in this section that the Universities in partnership with RUFORUM are imparting knowledge and skills that are beneficial to communities and countries around Africa.

Table 4.7:Competencies acquired from shot skills enhancement course and University (r=201)

SN	Variety of Competencies Acquired		Very Competent	Competent	Uncertain	Somewhat Competent	Not Competent	No Response
1.....	Technical knowledge of your field(s) or discipline(s)	Enhanced by studied program	36.3	28.9	21.9	10.9	2.0	
		Enhanced by the University	53.2	32.8	9.0	2.5	2.5	
2.....	Ability to work with other disciplines	Enhanced by studied program	36.3	33.3	18.4	9.5	2.5	
		Enhanced by the University	45.8	30.8	16.4	5.5	1.5	
3.....	Ability to source and use e-resources	Enhanced by studied program	32.3	30.8	18.9	13.4	4.5	
		Enhanced by the University	39.3	33.8	18.9	5.0	3.0	
4.....	Information Literacy (searching, finding and using information)	Enhanced by studied program	35.8	28.4	23.9	10.0	2.0	
		Enhanced by the University	39.3	36.3	18.9	3.5	2.0	
5.....	Computer skills (word processing, spreadsheets, presentations and databases)	Enhanced by studied program	41.3	34.3	13.4	8.0	3.0	
		Enhanced by the University	39.3	34.4	13.9	9.5	3.0	
6.....	Critical thinking	Enhanced by studied program	32.3	34.3	22.4	10.4	0.5	
		Enhanced by the University	46.3	38.8	10.4	3.0	1.5	
7.....	Research skills	Enhanced by studied program	35.3	28.4	19.9	13.9	2.5	
		Enhanced by the University	58.7	31.8	5.0	3.5	1.0	
8.....	Ability to conduct research that merits publication	Enhanced by studied program	30.8	27.4	21.9	11.9	8.0	
		Enhanced by the University	54.2	30.3	10.0	4.5	1.0	
9.....	Presentation & Communication skills	Enhanced by studied program	37.3	28.4	21.9	9.5	3.0	
		Enhanced by the University	49.3	35.3	10.4	3.0	2.0	
10....	Working under pressure	Enhanced by studied program	40.8	32.8	17.4	6.5	2.5	
		Enhanced by the University	47.3	33.3	15.4	3.0	1.0	
11....	Time management	Enhanced by studied program	39.3	36.8	15.4	7.0	1.5	
		Enhanced by the University	42.3	31.8	16.9	7.5	1.5	
12....	Working independently / Self Initiative	Enhanced by studied program	43.8	35.3	12.4	6.0	2.5	
		Enhanced by the University	44.8	31.8	14.4	7.0	2.0	
13....	Team work ability	Enhanced by studied program	42.8	34.8	12.4	8.0	2.0	
		Enhanced by the University	44.3	33.3	13.9	7.0	1.5	
14....	Problem-solving ability	Enhanced by studied program	32.3	40.8	18.9	7.0	1.0	

SN	Variety of Competencies Acquired		Very Competent	Competent	Uncertain	Somewhat Competent	Not Competent	No Response
		Enhanced by the University	39.8	39.8	13.4	6.5	0.5	
15....	Negotiation	Enhanced by studied program	19.4	37.8	30.8	6.0	6.0	
		Enhanced by the University	26.4	34.3	23.9	10.4	5.0	
16....	Analytical ability	Enhanced by studied program	31.3	38.3	17.4	9.5	3.5	
		Enhanced by the University	44.3	34.3	13.9	6.5	1.0	
17....	Tolerance	Enhanced by studied program	29.4	39.3	20.9	9.0	1.5	
		Enhanced by the University	38.8	29.4	21.9	6.0	4.0	
18....	Adaptability / flexibility	Enhanced by studied program	40.8	35.8	16.4	6.0	1.0	
		Enhanced by the University	39.8	35.3	16.9	6.5	1.5	
19....	Ability to work with other disciplines and diversity	Enhanced by studied program	36.8	33.8	17.4	10.0	2.0	
		Enhanced by the University	40.3	36.3	18.4	5.0	0.0	
20....	Working with people of different cultures and backgrounds	Enhanced by studied program	42.3	32.8	15.9	7.0	2.0	
		Enhanced by the University	48.8	33.8	10.9	5.0	1.5	
21....	Leadership & Management skills	Enhanced by studied program	24.9	42.3	26.4	5.5	1.0	
		Enhanced by the University	29.4	38.3	21.4	8.0	3.0	
22....	Responsibility	Enhanced by studied program	46.3	33.3	15.4	2.5	2.5	
		Enhanced by the University	38.8	34.8	18.4	7.0	1.0	
23....	Self-learning	Enhanced by studied program	40.8	32.8	17.9	5.5	3.0	
		Enhanced by the University	48.8	24.9	19.9	5.0	1.5	
24....	Project/program management	Enhanced by studied program	27.9	34.3	21.4	10.4	6.0	
		Enhanced by the University	40.3	33.3	15.9	6.5	4.0	
25....	Ability to present ideas and information	Enhanced by studied program	33.8	34.3	21.4	8.0	2.5	
		Enhanced by the University	47.8	32.8	14.4	4.0	1.0	
26....	Ability to write reports and documents	Enhanced by studied program	33.8	34.3	21.9	7.0	3.0	
		Enhanced by the University	50.7	33.8	10.9	3.5	1.0	
27....	Ability to continuously learn	Enhanced by studied program	40.3	34.3	18.4	5.5	1.5	
		Enhanced by the University	43.3	39.8	11.9	5.0	0.0	
28....	Ability to use multi scale approaches	Enhanced by studied program	20.9	29.4	34.3	9.5	6.0	
		Enhanced by the University	31.3	38.3	22.9	5.0	2.5	

SN	Variety of Competencies Acquired		Very Competent	Competent	Uncertain	Somewhat Competent	Not Competent	No Response
29....	Ability to establish and maintain linkages and partnerships	Enhanced by studied program	22.4	35.3	26.9	10.9	4.5	
		Enhanced by the University	27.9	37.3	25.9	7.0	2.0	
30....	Scientific data management/ statistical tools/ programs	Enhanced by studied program	29.4	30.3	22.9	10.4	7.0	
		Enhanced by the University	52.2	28.9	14.4	2.5	2.0	
31....	Scientific writing, manuscripts preparation and publishing	Enhanced by studied program	26.9	32.8	14.9	16.9	8.5	
		Enhanced by the University	46.8	32.8	14.9	3.5	2.0	
32....	Reporting of findings from research for development	Enhanced by studied program	27.4	31.3	20.4	13.9	7.0	
		Enhanced by the University	42.3	31.8	17.4	7.5	1.0	
33....	Ability to synthesize / integrate ideas/information	Enhanced by studied program	27.9	35.8	21.4	11.9	3.0	
		Enhanced by the University	39.8	38.3	18.4	3.0	0.5	
34....	General reporting skills	Enhanced by studied program	29.9	35.8	23.4	9.5	1.5	
		Enhanced by the University	43.3	36.8	16.9	3.0	0.0	
35....	Proposal writing	Enhanced by studied program	32.3	29.9	18.4	12.9	6.5	
		Enhanced by the University	51.2	29.9	12.4	5.5	1.0	
36....	Effective involvement and engagement of stakeholders	Enhanced by studied program	19.4	33.3	29.4	10.9	7.0	
		Enhanced by the University	30.3	36.3	22.4	8.0	3.0	
37....	Public speaking skills	Enhanced by studied program	27.4	35.3	20.9	13.4	3.0	
		Enhanced by the University	37.3	35.8	18.9	5.0	3.0	
38....	Ability to facilitate interactions with stakeholders groups	Enhanced by studied program	24.4	31.3	28.9	11.4	4.0	
		Enhanced by the University	32.8	31.8	25.4	7.0	3.0	
39....	Ability to plan and execute complex projects / programs	Enhanced by studied program	21.4	30.3	25.4	15.4	7.5	
		Enhanced by the University	30.3	32.3	26.4	7.5	3.5	
40....	Ability to monitor and evaluate complex projects/ programs	Enhanced by studied program	19.9	26.9	29.4	16.4	7.5	
		Enhanced by the University	30.8	32,3	25.9	7.0	4.0	

The study established that competencies such as: working under pressure (10), Working independently / Self Initiative (12), work with people of diverse cultures and backgrounds (20), self-learning (23) and Ability to continuously learn (27) had of over 40% of the graduates saying these skills and competences were to a great extent resulting from the short skills enhancement courses and the university they attended. This notwithstanding, other competencies such as: Technical knowledge of your field(s) or discipline(s) (1), research skills (7), ability to conduct research that merits publication (8), ability to write reports and documents (26), scientific data management and applied statistical programs (30), and proposal writing (35), had over 50% of the graduates who said their skills and competency were enhanced only by the University they attended.

4.4.2 Relevance of Studies

This section looks at relevance of studies RUFORUM alumni undertook in relation to their fields of work as shown in Table 4.8.

Table 4.8: Relevance of Studies

Extent to which the study program was a good basis for:		**Course Undertaken**		
		MSc (r=162)	**MPhil (r=6)**	**PhD (r=33)**
1. Starting work	Very Relevant	53.7	33.3	48.5
	Relevant	27.8	50.0	30.3
	Averagely Relevant	4.9	16.7	6.1
	Fairly Relevant	7.4	0.0	3.0
	Not at all	6.2	0.0	12.1
2. Further learning on the job	Very Relevant	59.9	83.3	60.6
	Relevant	27.8	0.0	33.3
	Averagely Relevant	5.6	16.7	0.0
	Fairly Relevant	3.7	0.0	3.3
	Not at all	3.1	0.0	3.3
3. Performing your current work tasks	Very Relevant	59.3	66.7	60.7
	Relevant	29.6	33.3	33.3
	Averagely Relevant	4.9	0.0	3.0
	Fairly Relevant	2.5	0.0	0.0
	Not at all	3.7	0.0	3.0

Extent to which the study program was a good basis for:		Course Undertaken		
		MSc (r=162)	MPhil (r=6)	PhD (r=33)
4. Development of entrepreneurial skills	Very Relevant	33.3	16.7	33.3
	Relevant	31.5	33.3	30.3
	Averagely Relevant	21.6	16.7	18.2
	Fairly Relevant	11.1	33.3	9.1
	Not at all	2.5	0.0	9.1
5. Your personal development	Very Relevant	66.0	83.3	72.7
	Relevant	25.9	16.7	24.2
	Averagely Relevant	6.2	0.0	3.0
	Fairly Relevant	1.2	0.0	0.0
	Not at all	0.6	0.0	0.0

First, the survey established that 53.7% of the graduates trained for Masters, 33.3% for MPhil and 48.5% for PhD found their studies very relevant in starting of their job. The outstanding rating indicates how relevant the training was to the graduates in meeting their professional duties.

Secondly, the study investigated whether the studies undertaken by the alumni were a worthwhile background for further learning on the job. There were 59.9% for MSc, 83.3% for MPhil and 60.6% for PhD graduates attesting to the fact that they were very relevant.

Thirdly it considered whether the studies undertaken by the alumni were relevant in enhancing their performance their current work. The findings showed that 59.3% MSc, 66.7% MPhil and 60.7% PhD graduates deemed the studies very relevant.

Fourthly, the study looked into the relevance of studies in the development of the alumni entrepreneurial skill. It's unfortunate that for all the categories of graduates, MSc, MPhil and PhD, below 40% of graduates deemed their studies very relevant.

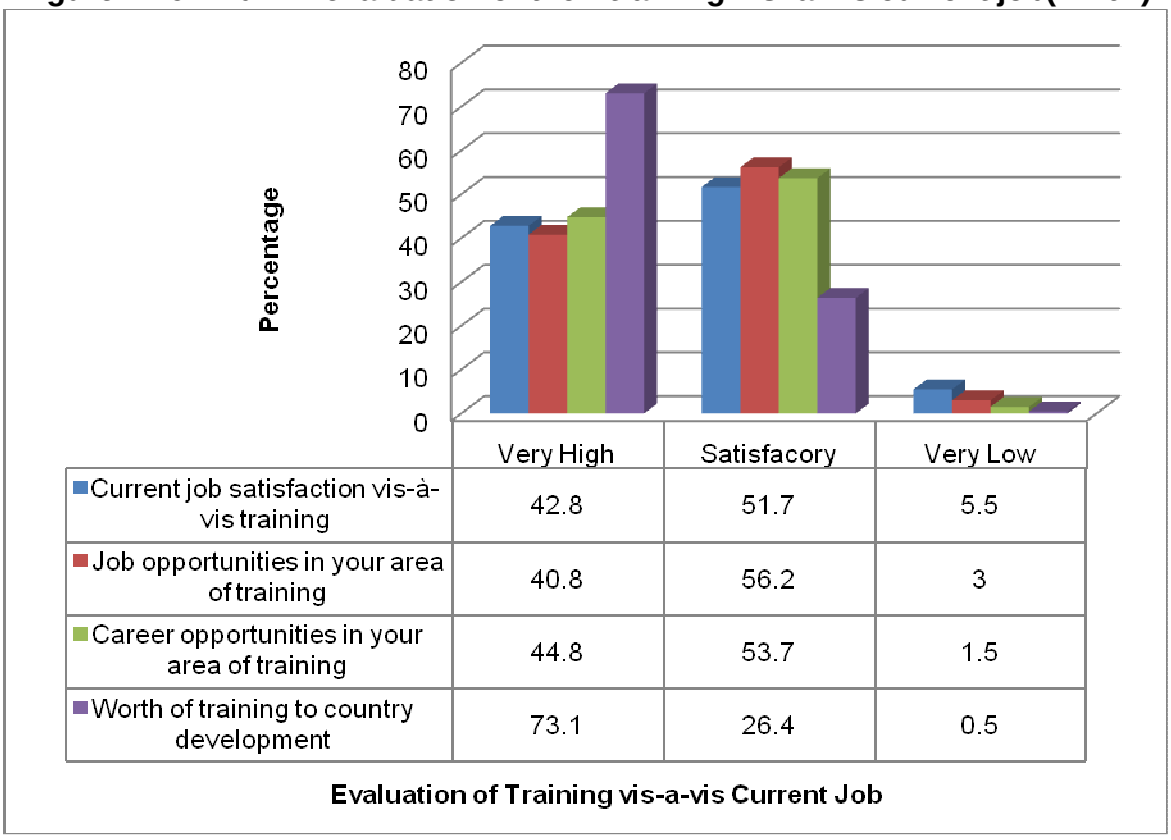
Finally, the study examined the relevance of studies in the alumni personal development. The outstanding rating where all MSc, MPhil and PhD had over 65%

indicates how relevant the training was been to the graduates in terms of personal development.

4.4.3 Evaluation of Studies

The survey also evaluated the RUFORUM alumni based on different aspects. Specifically the study considered current job satisfaction vis-à-vis training, job opportunities in their area of training, career opportunities in their area of training, and worth of training to country's development. Findings in Figure 4.19 show that worth of training to country's development was outstanding with 73.1% of the graduates regarded it to be very high. Current job satisfaction, job opportunities in your area of training and career opportunities in your area of training were regarded satisfactory with 51.7%, 56.2% and 53.7% respectively.

Figure 4.19: Alumni evaluation of their training vis–a-vis current job(r=201)



On the flip side the survey sought to ascertain if, after graduation, the alumni had to do additional training to consolidate their grip on their job and the results reveal that a majority of 65.2% had not but 34.8% had (Table 4.9). The higher percentage of

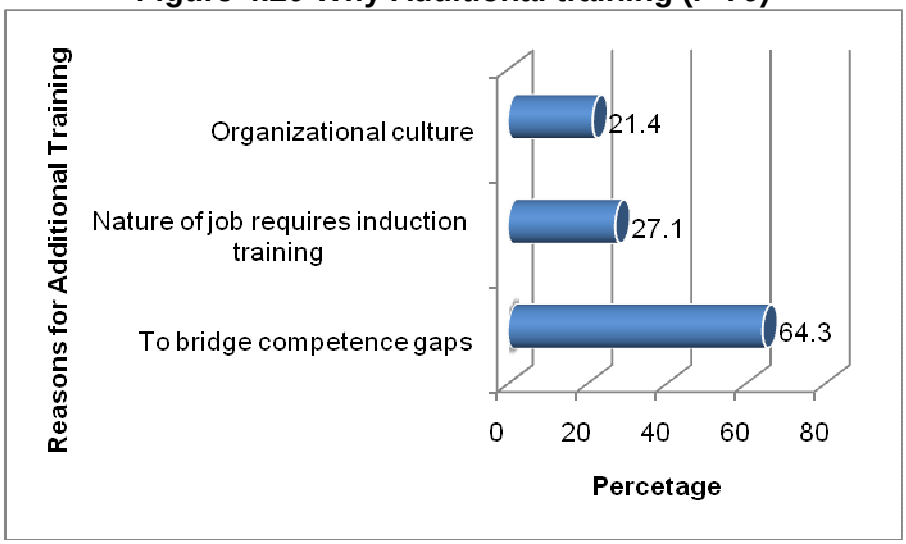
graduates not going for further training (65.2%) is a clear indication that the skills they acquired during training were adequate.

Table 4.9: Additional training after graduation

	Frequency	Percentage
Yes	70	34.8
No	131	65.2
Total	**201**	**100.0**

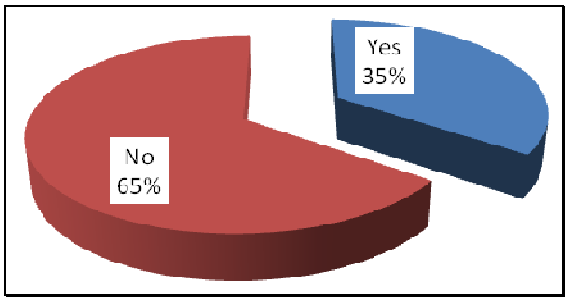
The study further explored from those alumni that did additional training and reasons thereof. Findings illustrated in Figure 4.20 reveal that 64.3% of the graduates did bridge the competence gaps, 27.1% because it was a job induction requirement, and 21.4% because it was a culture for the organization they work for.

Figure 4.20 Why Additional training (r=70)



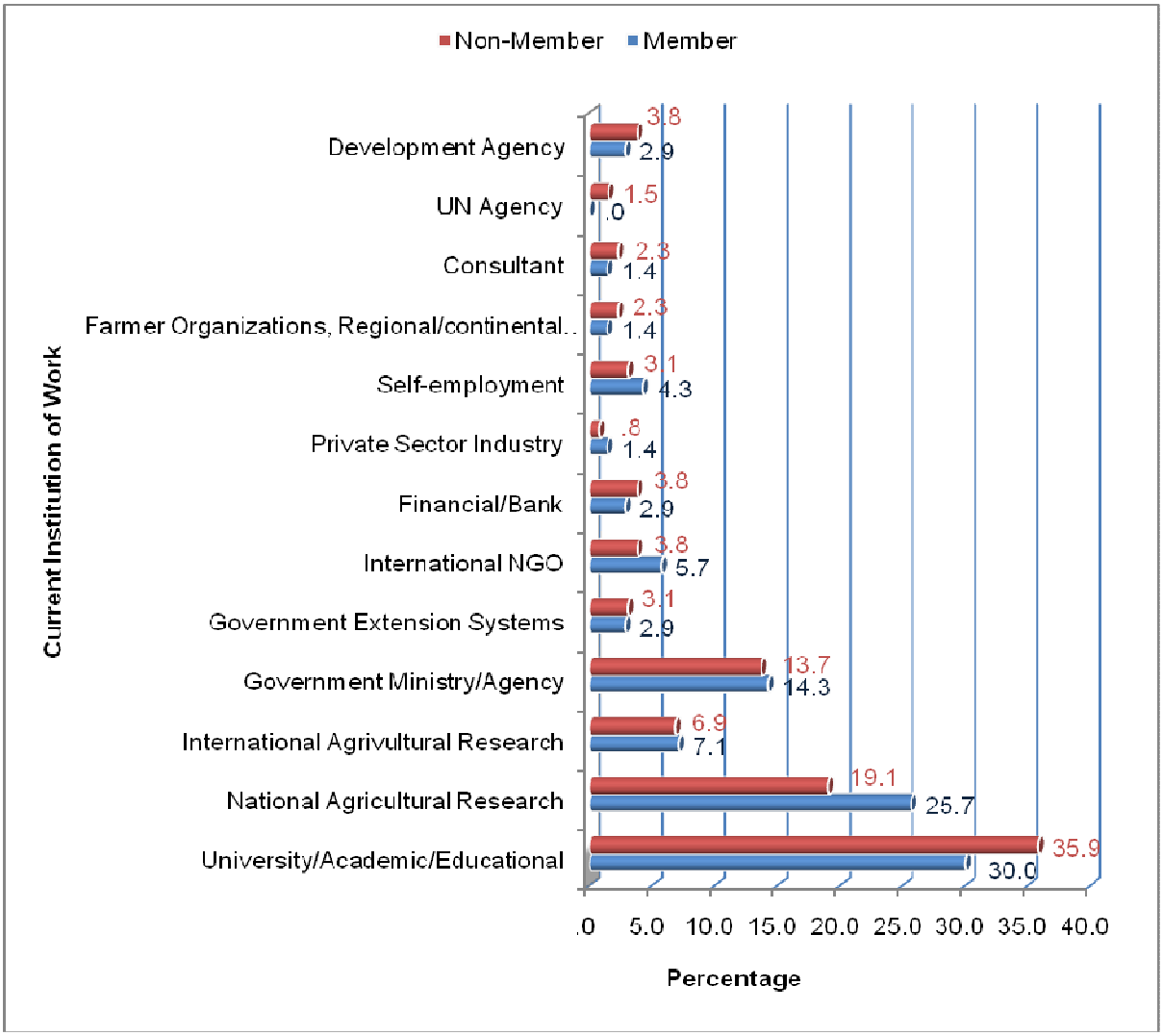
The study also established if the alumni where members of professional associations in line with their fields of expertise. The findings (Figure 4.21) indicate that only 35% of the graduates had such membership.

Figure 4.21:Professional Association(r = 201)



Based on the results in Figure 4.21 where 65% of the respondents were not members of any professional association, the study examined the relationship between the membership to a professional association and the current institution of work. Results in Figure 4.22 reveal that those working in Universities/academics (30%) and government ministries (25.7%) were the majority of those with membership in professional association. Similarly, those working in Universities/academics (35.9%) and government ministries (19.1%) were the majority of those with non-membership

Figure 4.22: Institution of Work and Membership to a Professional Association (r=201)

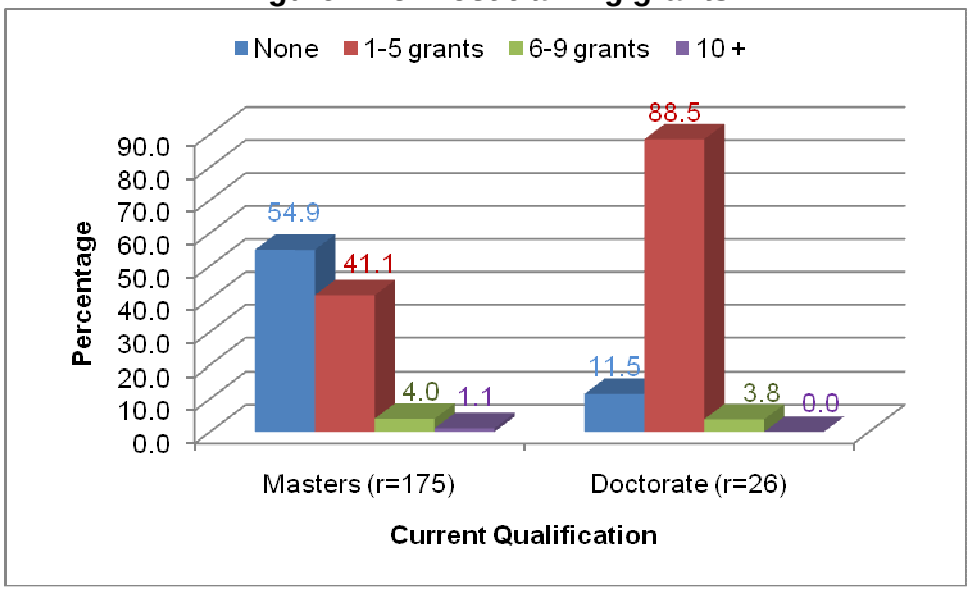


4.5 POST TRAINING ACHIEVEMENTS WHILE AT PLACE OF WORK

Under this section the study endeavored to quantify the post training achievements of the alumni. First it examined the post training grants they have won as

summarized in Figure 4.23. A majority of 54.9% of the alumni with Masters had won no grant, 41.1% had between 1 and 5 grants, and 4% had between 5 and 10, and 1.1% had won 10 or more grants. Those with Doctorate, 11.5% of the graduates had won no grant, 88.5% had between 1 and 5 grants and 3.8 had grants between 6 and 9.

Figure 4.23: Post training grants



Secondly the study sought the alumni post training publications and the results summarised in Table 4.9 are again categoried on the basis of the current highest educational qualification. The result show that graduates with doctarate degree had more pulications than those with the other qualifications

Table 4.9 Post training publication

Post training publication	Qualifications	Number					
		0	1	2-3	4-5	6-9	10+
1. Articles in referenced journals	**MSc (r=175)**	48.0	34.6	20.0	4.0	3.4	0
	PhD (r=26)	7.7	11.5	26.9	11.5	23.0	19.1
2. Conference papers	**MSc (r=175)**	44.6	14.3	29.7	8.6	1.7	1.2
	PhD (r=26)	11.5	23.1	34.6	15.4	7.6	7.7
3. Posters	**MSc (r=175)**	32.6	34.9	26.9	4.0	1.2	0.6
	PhD (r=26)	7.7	23.1	50.0	15.4	0.0	3.8
4. Conference / workshop presentations	**MSc (r=175)**	31.4	21.7	27.4	10.3	3.4	5.7
	PhD (r=26)	7.7	11.5	42.3	23.1	11.5	3.8
5. Book chapters	**MSc (r=175)**	86.3	8.6	4.0	1.2	0.0	0.0
	PhD (r=26)	76.9	11.5	11.5	0.0	0.0	0.0
6. Policy briefs	**MSc (r=175)**	80.6	12.0	5.7	1.1	0.0	0.0

Post training publication	Qualifications	Number					
		0	1	2-3	4-5	6-9	10+
	PhD (r=26)	92.3	3.8	0.0	3.8	0.0	0.0
7. Training guides for actors in the uptake pathways	**MSc (r=175)**	72.0	16.6	8.6	1.7	0.6	0.6
	PhD (r=26)	69.2	15.4	15.3	0.0	0.0	0.0
8. User guides/manuals for end user groups	**MSc (r=175)**	66.3	21.1	6.8	3.4	2.3	0.0
	PhD (r=26)	61.5	26.9	11.5	0.0	0.0	0.0
9. Leaflets/flyers/brochures	**MSc (r=175)**	62.3	14.9	9.7	8.6	1.7	2.9
	PhD (r=26)	61.5	7.7	23.1	0.0	0.0	7.7
10. Articles in Newspapers / Newsletters	**MSc (r=175)**	74.5	11.4	9.2	1.7	2.3	0.6
	PhD (r=26)	65.4	19.2	0.0	0.0	3.8	11.5
11. Documentaries	**MSc (r=175)**	86.3	8.6	4.6	0.0	0.0	0.6
	PhD (r=26)	76.9	19.2	3.8	0.0	0.0	0.0

4.10 PERCEPTIONS OF RUFORUM ALUMNI

The perceptions, views and opinions of the RUFORUM alumni were obtained through focus group discussions (Annex 9) held in the selected countries. The alumni who participated in the Focus Group Discussions (FGDs) ranged from 3 to 14 per country (Table 3.3). The countries for the FGDs and employer interviews were Kenya, Malawi, Rwanda, Tanzania, Uganda and Zimbabwe. A total of 47 alumni participated in the FGDs in the six countries.

The RUFORUM program is a pride of Africa….' Rwanda

This section highlights the strengths and positive impacts of RUFORUM as well as challenges identified by alumni. The alumni have also identified issues which they feel RUFORUM should address to enhance the training program. Details of the FGDs and employer interviews are provided in Annexes 11 and 12 respectively.

'I feel competent and knowledgeable and I am able to interact with researchers in other fields confidently', Kenya

4.10.1 Strengths and positive impacts

The RUFORUM alumni who participated in the Focus Group Discussions had the following points to note on the strengths of the RUFORUM - sponsored training:

- The alumni appreciated the initiative made by RUFORUM to train them. They stated that it was a pride of Africa which had come in at the right time.
- They noted that the training was good in that it had enabled them to improve their research and writing skills that has helped them to enhance their publishing skills. An alumnus expressed that he has been able to train other organizations to write proposals and get funding and also adopt their technology.
- The alumni's capacity in research methods and presentation skills was also noted to have been improved through the training.
- The alumni pointed out that the training in JKUAT was good and the learning environment had a kind and friendly atmosphere,

'The Masters training has enabled me to deliver more services to the farmers' Tanzania

- The alumni also noted that there was good interaction with foreign students and teachers. This interaction it was further noted had created other opportunities for them beyond the training period.
- The Tanzania alumni noted that the training had enabled them to address issues of fish farmers accordingly while also being involved in committees dealing with improvement of fish farming in the country. The Tanzanian alumni noted that there had been significant increase in terms of knowledge base after the training. For example, problem conceptualization and solving, setting up of complex field experiments and extension. That they are now using this for technology testing and transfer.

> *'Now we are able to speak English because of the RUFORUM Training' Rwanda*

- JKUAT alumni unanimously pointed out that as a result of the training they were able to secure employment, develop confidence, soft skills and writing skills.

4.10.2 Challenges Encountered

1. The alumni noted that completion time of the MSc in Makerere took much longer than the indicated two years. The same issue was pointed out in Malawi for the PhD students as well as Tanzania for the M.Sc. students whom by the time of the FGD had not yet graduated. On the contrary a JKUAT alumnus in Kenya indicated that that the MSc. Research course was a crash program and one year was not enough to grasp all the core courses taught especially those that involved software manipulation.

> *'Data analysis is still a challenge…'*

2. The alumni stated that Research Methods (JKUAT) and Statistics course (Makerere University) were not well conducted and this had posed various challenges at the current workplace as well as in conducting future research projects. Their main concern was that the some of the lecturers handling the course were ill equipped for the course. They further stated that data analysis was still a challenge and that for most of the alumni lacked practical skills of data analysis.

> *Some frustrations that we face are lack of mentorship from Senior Scientists. In this regard, RUFORUM should consider giving a special grant to help grantees kick start their careers, Malawi.*

3. The alumni noted that RUFORUM secretariat does not conduct close supervision or follow up of their students in the universities of study and therefore are little aware of the problems faced by the students while on study.
4. It was noted by the alumni that the funds are not sent to the respective universities in good time, consequently the students are not able to receive their support in time – sometimes they end up using their own personal funds to facilitate their studies. Financial support of training was not received in good time and this made them not able to carry out their field experiments within the rainy seasons, causing unnecessary delays. Indeed delays in fieldwork (Table 4.2), was cited as a serious concern, which is also linked to the financial aspects. For those who studied away from their home countries, they felt that the stipend was not enough.

> *'RUFORUM should stop issuing the funds to the 'wrong people' or universities and issue directly to the grantee and/or make a follow up to the alumni'.*

5. Alumni noted that regional programs are more academic and lack practical aspects. There are no practical sessions while some courses demand a lot of practical sessions to be done.

> *'Generally the graduates are very good at agricultural sciences but lack applied statistical knowledge', Kenya*

6. JKUAT alumni raised a concern that resource persons were not enough to step in cases of absenteeism and proposed provision of E-learning program to reach out to students at different regions not necessarily at the Centre.

4.10.3 What RUFORUM Should Know

From the Focus Group Discussions that were undertaken in the six countries, the following issues below were highlighted by the alumni as areas in which the various RUFORUM stakeholders could work on in order to improve their programs. The stakeholders include the RUFORUM Secretariat and Board, the Universities including supervisors and administrators; and the Students and wider network

1 RUFORUM Secretariat and Board

- ***Monitoring and Evaluation***: Alumni felt it was important for RUFORUM Secretariat to conduct monitoring and evaluation for students while in the course of study. The M&E can include surveys for student-lecturer evaluations.
- ***Mentorship programs***: It was pointed out by the alumni in Malawi that RUFORUM Secretariat and universities should introduce mentorship programs that could, link junior researchers to senior researchers.

> *"I am classified as an early career expert at my workplace thus not easy to approach and engage other seasoned scientists", Kenya*

- ***Special grant scheme***: Alumni in Malawi suggested that RUFORUM Secretariat could help establish a special grant scheme for fresh graduates. These would be research grants to help them start their career.
- ***Increasing grant amount***: It was proposed that RUFORUM Secretariat should consider increasing the amount of FAPA grant given to M.Sc. Students as it is not enough to get the research done effectively.
- ***Dissemination fora***: RUFORUM Secretariat should consider sponsoring more fora where dissemination of studies done by alumni take place.
- ***Communication***: It was pointed out that RUFORUM Secretariat has not been doing a very good job at communicating to their students. They should improve on their communication. In terms of giving feedback and getting back to students in a timely manner. They noted that RUFORUM Secretariat should be open and truthful in communicating especially in regards to delays of funds so that the students can look for alternative funding so that their research work is not delayed.
- ***PhD programme***: JKUAT alumni strongly recommended PhD in Research Methods since MSc. Research Methods is a terminal course that is not being appreciated as a stand-alone Masters.
- Revision of training program: That needs of institutions are evolving and therefore training content should be matched with revised programs preferably in areas of innovation, climate change and GIS.

> *The skills I have applied are mostly from the short trainings sponsored by RUFORUM. These trainings included Research Methods and Proposal Writing." Malawi*

- A Ugandan JKUAT alumnus indicated that Ruforum graduates from other countries are not able to secure jobs locally except with international organizations that are available locally.

2 Universities

> *'Ruforum has huge opportunities for Agriculture in Africa', Kenya*

- ***Sensitizing Lecturers***: RUFORUM alumni felt that the university lecturers should be sensitized in order to be part of the change. The alumni said that this could be done by lecturers being up to date with information and not teach using outdated information.
- ***Signing agreements with Supervisors***: Supervisors should sign an agreement with RUFORUM Secretariat and/or universities so that they must be available to supervise the students. Supervisors are often mostly busy with other things and often cause unnecessary delays in supervision of the students.
- ***Staff capacity at universities***: While selecting universities to host students for the RUFORUM scholarships, RUFORUM should look at teaching staff capacity within the universities instead of focusing only on the infrastructure.
- ***Monitoring and evaluation***: There is need for monitoring and evaluation of the grantees as they undergo research in terms of financial and technical support that is to be done by the university on behalf of RUFORUM to ensure that the grantee and RUFORUM receive the best services from the university.

3 Students and wider network

- ***Networking***: Alumni felt that RUFORUM Secretariat should create a point of connection with other RUFORUM students so that they may interact often for purposes of networking and change of ideas. Upon completion of their studies, RUFORUM Secretariat can follow up and connect alumni

through such a network. In addition, interaction among students in other universities should be promoted.

> *It would be nice if RUFORUM could facilitate trainings whereby we can be taught how to interact with and manage the people we would work with after graduation so that we do not miss out on research opportunities, Malawi*

- ***Delay in funds***: It was noted by the Uganda and Tanzania alumni that university procedures of receiving money takes too long!
- ***Separate funds Disbursement:*** The alumni in Tanzania wanted to know if in the future it would be possible for RUFORUM Secretariat to separate funds that should go directly to the university and those that should be given to the students. On this note, the alumni noted that the university did not give them a good exchange rate for the dollar to Tanzanian shillings.

> *The world is changing so should the alumni - web2 training and ICT - to deal with the current changes,* Malawi

- ***International Scholarships***: Participants would like the scholarship opportunities to be extended for study in universities beyond Africa.
- ***Complaints mechanism:*** There should be a beneficiary accountability system – a place to complain or query in event of problems relating to students.

> *Alumni are not able to interact with clientele to deliver their research output because of lack of skills to communicate with the community, Kenya*

4.11 PERCEPTIONS OF FROM EMPLOYERS

The perceptions, views and opinions of the employers of RUFORUM alumni were also obtained through interviews (Annex 10) held in the selected countries. A total of 24 employers were interviewed in the six countries (Table 3.3). The details of the employers who participated in these interviews are listed in Annex 12. The employer categories of organizations of employers include the agricultural sector and the academic departments of Agriculture in universities. Their clientele include; Small holder farmers in sub-Saharan Africa growing food crops, students from regional and International universities), researchers from national agricultural research systems/Institutions, CGIAR centers, NGO's in the agricultural sector; Private sector agricultural industries.

4.11.1 Competencies of RUFORUM Alumni

The employers noted that the alumni have the capacity to manage and oversee research projects and have generally acquired the right skills. The alumni are now confident and can express themselves to the audience. They have enhanced the presentation skills. These alumni have now been given more responsibilities at the place of work and often are left in charge in absence of the immediate supervisors.

RUFORUM provided a great platform to facilitate interaction with the students from the region – Southern, Eastern region, Rwanda

The positive impacts as captured from employer interviews regarding the alumni include:

- Enhanced organizational skills
- Ability for independent research
- Comprehensive reporting that goes the extra mile in reporting.
- Good communication skills
- Ability to network

I am using the skills I acquired from my training to educate the fishermen on how to conserve water catchment areas for better fishing, Tanzania

It was pointed out by one employer that applied statistics, statistical computing, monitoring and evaluation, and GIS, are strengths in his employee's work performance, whereas the weaknesses relate to little attention that was given on advanced training in database design and management. In addition there is need to emphasize on imparting practical skills, Critical thinking and innovation.

Even within a project whereby we are able to get to the farmers, it becomes quite frustrating because the farmers become dependent on us, such that once a project wraps up, the farmers are not quite able to stand on their own since there was not enough time for them to master the farming skills taught, Malawi

For us at the University of Nairobi and Makerere University, we were able to attend many short training courses which have given us relevant professional skills, Malawi

4.11.2 Developmental needs and improvement areas for RUFORUM

In order to improve the RUFORUM program the employers proposed training needs including the following:

- Capacity building in public private partnerships
- Workshops and short trainings as refresher courses
- Participation in conferences and workshops
- Platforms for networking to build partnerships
- Tailor made courses that target identified concepts and specific principles
- Field practical's to be allocated more time
- Entrepreneurial skills

Key areas which should be considered in future training from the employer point of view include:

- Biotechnology and food sciences
- Value addition in the agricultural systems.
- Data management
- Monitoring and evaluation
- Impact assessment
- Spatial statistics
- Bio-informatics
- Mathematical biology.
- Econometrics too should be incorporated
- Information communication Technology skills should be made an integral part of the training.
- Gender issues should be captured.
- Climate change issues should be catered for.

Detailed responses during the in depth interviews of the employers are provided in Annex 10.

CHAPTER FIVE

5.0 SUMMARY OF KEY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Key Findings

5.1.1 Socio biographic characteristics of the surveyed graduates

- The largest percentage (40.8%) of respondents was between 30 and 34 years.
- Kenyans and Ugandans were constituted the largest percentage of the respondents; with 25.4% and 23.4%, respectively

5.1.2 Training/studies experiences

- With regard to training program undertaken 81% of the respondents studied Masters, 16% studied Doctoral and 3% MPhil. MSc Research Methods had the highest number of respondents (18.4%).
- The top three highest response rate universities were: Egerton University, Kenya had 60%, Kenyatta University, Kenya 58.3% and Eduardo Mondlane University, Mozambique 57.1%.
- In terms of completion of studies, 45.1% of the MSc and 66.7% of PhD completed their work within the stipulated time.
- Lectures, demonstrations, participation in research and discussions/tutorials were the modes of teaching and learning ranked highly.
- The outstanding RUFORUM alumni' experiences during their study period where classroom learning, conducting research, research papers/articles and participation in conferences and seminars, with over 50% of the responses in the excellent and good ranks.
- Biennial conferences 2008, 2010 and 2012, proposal preparation/writing, research design and data analysis, scientific data management, scientific writing and thesis research proposal development are the significant exposure events had attendance.

5.1.3 Employment and work status of RUFORUM alumni

- There were 81.8% of the PhD, 67.9% of the MSc RUFORUM alumni who were employed before starting the training.

- With regards to employment the RUFORUM alumni who did MSc, MPhil and PhD, a majority of 53.1%, 66.7% and 60.6% have permanent employment, respectively.
- Most of the alumni (35.3%) were working in University/Academics/Education institutions followed closely by the National Agricultural Research Systems (23.9%).
- In connection with the sectors in which the alumni work, a majority (59.2%) of them are agriculture, (31.3%) are engaged in education/training and 4.5% in Lands and Environment.

5.1.4 Relationship between acquired competencies and work

- Competencies like technical knowledge of your field(s) or discipline(s), presentation & communication skills, working under pressure, team work ability, work with people of diverse cultures and backgrounds and self-learning had of over 40% of the alumni who were very competent as a result of both the program they studied and the University they attended.
- A majority of 53.7% of persons trained for Masters, 33.3% for MPhil and 48.5% for PhD found their studies very relevant in starting of their job.
- There were 59.9% for MSc, 83.3% for MPhil and 60.6% for PhD attesting to the fact that the studies they undertook were a worthwhile background for further learning on the job.
- There were 59.3% for MSc, 66.7% for MPhil and 60.7% for PhD who deemed the studies very relevant in enhancing their performance in their current work.
- More than half of the respondents were doing jobs linked to their training.

Post training achievements while at place work

- On post-training research grants, 41.1% of alumni with Masters degree had won between 1-5 grants while 88.5% with Doctorate had won a similar number of grants.
- With regards to alumni post training publications, those with doctorate degree had more publications than those with the other qualifications.

5.2 Conclusions

The existence and establishment of regional such as Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), is instrumental in fostering the

strengthening of postgraduate training in the mandate region (Lynam et al., 2013). In line with recommendations by many experts on Higher Education Institutions (Diao et al., 2006; Johnson and Hazell, 2002; Rosegrant et al., 2005; Sherrard, 2003), RUFORUM is reorienting and transforming postgraduate training at the regional level by encouraging member universities to reform the student recruitment process, plan of study, organization of the programme, nature and content of curriculum and engages in multi-dimensional approaches to integrated capacity development.

RUFORUM is also working with the member universities to foster more engagement with stakeholders, and established National Forums as an interactive platform for obtaining feedback with key stakeholders, and generating demand agenda for university services at the postgraduate level. RUFORUM uses these fora to facilitate field attachment of students and for building experiential learning teams of university lecturers, students and other stakeholders. RUFORUM hopes in this process, not only to produce more entrepreneurial graduates, but also faculty and graduates more responsive to especially rural communities. RUFORUM has identified three priority areas for the postgraduate programmes:

a) Focus on increasing agricultural productivity while enhancing natural resource sustainability: Examples include the *Regional PhD Programme in Plant Breeding and Biotechnology* with focus on African neglected crops, especially the *PhD in Soil and Water Management and PhD in Dryland Resource Management*. These programmes place great emphasis on responding to emerging environmental challenges, such as climatic change and variability, and prepare students to work in multi-stakeholder platforms. A major thrust in the training is to instil not only technical but also social and professional skills. Thus, the Plant Breeding PhD students work in National or CGIAR Plant Breeding Programme, undertake internship in seed companies (and also spend time in community based seed systems). They take courses in Programme Management and Personal Mastery/Soft Skills. Students and lecturers are drawn from the different RUFORUM universities and beyond.

b) Enhancing research quality and information management and sharing: A study by The Forum for Agricultural Research in Africa (FARA) in 2006, established that in most African National Agricultural Research Systems (NARS), there were no research methods specialists to guide research. At the same time, there were concerns that the current training in Statistics and Biometrics does not address well agricultural research issues and take into account emerging frontiers such as tracking development challenges and participatory approaches. Because this is also a weak area in most universities in the region, RUFORUM, in partnership with the University of Reading, UK and Technical Centre for Agricultural and Rural Cooperation (CTA), is running a regional MSc Programme in Research Methods that draws lecturers from several universities and students from across Africa. Emphasis is on practical orientation of the training, making mathematics and statistics related to practical issues. Two main innovative features are that it is a professional training, and it links methods to the context of research. The quality and reach of this initiative is further enhanced through linkage to research systems in the region, and utilizing a pool of trained experts to train across the region.

c) Building capacity for policy analysis through a Regional PhD Programme in Agricultural Resource Economics at the University of Malawi: The students undertake internships at national and regional agencies such as Ministries of Finance, National Planning Authorities and NEPAD Secretariat.

'The RUFORUM initiative is a pride of Africa which has come in at the right time' - this sums up the feeling of the alumni in terms of the positive impact of the programme. This tracer study of RUFORUM alumni was noted as important in sharing the issues that affect the programme so as to improve it but also to celebrate the success stories of the programme. The RUFORUM graduates are more than willing to be part of an Alumni Professional Association/Network through which they can interact and enhance their expertise as well as build a network of partnerships.

5.3 Recommendations

5.3.1 Future Training Programmes

In future training programmes of RUFORUM should:

- Avoid replication of foreign training programmes but instead, re-align visions and mandates driven not by predictable, top down priority-setting exercises, but by consultative processes that rely on inputs from user communities, the small holder farmers, private agribusinesses, rural producer associations, research organizations, extension services, non-governmental organizations and other sources of demand for post graduate level training in agriculture. Such consultative processes are backed by the labour market and graduate tracer studies to gauge demand for particular skills, and routine priority-setting exercises.
- Integrate Personal Mastery and Soft Skills, and Leadership and Management enhancement in the training programmes and inclusion.
- Integrate new interventions designed to further develop the innovative capabilities of the graduate geared towards specific needs of different actors in the agricultural innovation systems of the region rather than on traditional benchmarks set by standards of public service or academia.
- Diversify away from well-structured degree programs centered solely on traditional disciplines, and move into in-building a wider variety of programs, ranging from short, applied courses to short-term professional training into long-term interdisciplinary degree programs.
- Design regional PhD and MSc programmes that are less encyclopedic and more strategically attuned to the different needs of social and productive actors.
- Integrate topical courses such as agribusiness, project management, social research approaches, social organization; leadership, conflict management, and human resource management; and information and communications technologies (ICT).
- Advocate for change management and induce change in organizational cultures, behaviours and practices.
- Enhance research methods topics and applied statistics
- Include database design and management training - including programming (VBA and SQL).

- Continuously review curriculum to address emerging issues
- Communication skills and public relations

5.3.2 Future RUFORUM Investments

RUFORUM investments in future training programmes and research grant schemes should:

- Come up with innovative models of capacity building that link especially postgraduate training and research to increased productivity of small-scale farmers and agribusiness.
- Establish Networks of Specialization to marshal existing capacity to produce quality graduates and research products, in line with Comprehensive Africa Agricultural Development (CAADP) and sub-regional and national priority needs.
- Institutionalize support for publications in African universities.
- Support global projects in data management and analysis in African universities.
- Support the role and impact of public private partnerships sector and participate effectively in it.
- Introduce open and competitive innovative research grants in its mandate region.
- Encourage and cultivate an African tradition for African scholars.
- Support the institutionalization nd broadening of research assessment exercises in African universities and research institutions.

5.3.3 Enhancing the RUFORUM brand

Practical Field modules

The RUFORUM model can be improved through modules that have a full practical training in the field with actual solutions and innovations relating to the agricultural sector. These modules can be offered in areas where the students will be engaged with the farmers/communities in solution of existing problems. The modules can be intensive 2-3 week courses.

Workshops for Lecturers

The lecturers/instructors should also be engaged in workshops that horn their skills and bring them up to date with the current information.

5.3.4 Return to investment of RUFORUM programme

It is recommended that RUFORUM as a next step should look at the value of the programmes and funding. What value does each trainee have once they join the job market? Is the cost of funding the grantee able to have returns through the participation in the agricultural sector and beyond?

5.3.5 Modular programmes

RUFORUM can use the modular approach in the short courses which should be tailor made for specific needs. Such programmes should have specific instructors/lecturers who concentrate on delivering within a given period possibly as guest lecturers so that they target the specific program.

5.3.6 Monitoring and Evaluation

RUFORUM should continuously monitor and evaluate the alumni during the course of the study thus dealing with student problems particularly in relation to funds disbursement that has led to delays in completion (see also Lynam et al., 2013).

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