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**HUMAN CAPITAL DEVELOPMENT PROGRAMME FOR MID-CAREER
AGRICULTURAL EXTENSION WORKERS: THE CASE OF SOKOINE
UNIVERSITY OF AGRICULTURE BSc. AGRICULTURAL EXTENSION AND
EDUCATION TRAINING PROGRAMME**

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ABSTRACT

Of recent, there is changing work environment for agricultural extension workers as they operate under the multi-stakeholders' phenomenon. This increasingly poses a challenge to frontline extension workers trained on linear model (extension-researcher-farmer linkage) in extension services delivery. This is because, facilitating the multi-stakeholder processes requires competent agricultural extension workers well-versed in human relations. In recognizing the importance of human capital development for agricultural extension service delivery in Tanzania, Sokoine University of Agriculture established a mid-career agricultural extension training programme in 1998. Informed by the human capital theory, this study employed an evaluative study design to assess the impact of the Sokoine University of Agriculture (SUA) mid-career BSc. Agricultural Extension and Education training programme on human capital development. The study was conducted in five agro-ecological zones, that is, Eastern, Western, Central, Southern Highlands and Lake zones in Tanzania. The development of the sampling frame was done in collaboration with the Ministry of Agriculture (MoA), Ministry of Livestock and Fisheries (MLF) and President's Office-Regional Administration and Local Government (PO-RALG). A total of 200 respondents-100 alumni and 100 farmers were sampled proportionately. A snowball sampling technique was used to replace the respondents who were selected randomly but could not be reached for interview. Data were collected from respondents through a questionnaire that covered a set of competences through analysis of the mid-career agricultural extension curriculum and consultations with public and private employers. In addition, literature review and observations were also used to supplement the collected information. The findings indicate that the agricultural training programme at Sokoine University of Agriculture (SUA) equipped graduates with appropriate knowledge, competencies and skills that improved their job performance and productive capacities that enabled them to interact with various stakeholders and facilitate multi-stakeholders' processes. This is in line with the purpose of establishing the programme. Hence, this points to the need for continuous human capital building and motivations of agricultural extension workers for the improvement of their performance.

Key words: Mid-career, Agricultural extension workers, Curriculum, Human capital, Multi-stakeholder processes



INTRODUCTION

The economic prosperity and functioning of a nation's sector depend on its physical and human capital stock. Human capital represents the investment people make in themselves that enhance their economic productivity. Thus, human capital is seen as the education that increases the productivity and efficiency of workers by increasing the level of their cognitive skills [1]. The notion of education as a capital good is rooted in this concept of human capital, which attaches high quality to human skills as a factor of production in the development process [1,2,3,4,5,6]. The provision of education is, therefore, seen as productive investment in human capital, an investment in which proponents of the human capital theory consider to be equally worthwhile than that in physical capital. In that context, education is as deemed an investment, equipping individuals with knowledge and skills that improve their employability and productive capacities, thereby leading to higher earnings in the future [7]. Therefore, education as an investment in human capital is considered an engine of growth and key to development in every society.

The rationality behind investment in human capital is based on the argument that the new generation should be taught how existing knowledge should be used to develop new products, to introduce new processes and production methods and social services. In addition, people must be encouraged to develop entirely new ideas, products, processes and methods through creative approaches [7]. Thus, the importance of human capital development in socio-economic development and transformation [8]. In order to make a significant contribution to economic growth and development, high-quality education is required. This kind of education deserves to be the one that equips employees to attain society and organisation goals. If well planned, capacity building enables the employees to achieve organization goals [9,10].

In the context of agriculture sector, many developing nations, have been reforming their agricultural extension systems to allow involvement of multiple stakeholders in extension services delivery [11]. Therefore, capacity building should focus on equipping extension workers with appropriate knowledge, competencies and skills to enable them interact and facilitate multi-stakeholders' processes. This is because majority of frontline extension workers were trained on linear model (extension-researcher-farmer linkage) in extension services delivery.

It is from this milieu that in November, 2018 the study was conducted to analyse the impact of a mid-career training programme in Agricultural Extension and Education (B.Sc AEE). The programme was launched at Sokoine University of Agriculture in Tanzania (SUA) in 1998 to improve the performance of frontline extension workers. The launching of the programme was a product of the



resonation of states of the Government of the United Republic of Tanzania through the Ministry of Agriculture Food Security and Cooperatives (MAFC). The Ministry looked to it as a tailor-made programme that would be more responsive to the needs of the farmers and various stakeholders in the agricultural sector. The programme aimed at addressing the extension workers' knowledge and skills required for them to be effective in their works [12].

This study sought to find out the impact of the B. Sc in Agricultural Extension and Education training programme of Sokoine University of Agriculture (SUA) on alumni's knowledge, attitudes and skills and employers' perception of the graduate level of technical and professional competencies. Lastly, it draws conclusions and implication of the findings.

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Human Capital Theory

The study is based on the Human Capital Theory developed by Becker [9,10]. The Human Capital Theory attempts to prove that formal education is highly instrumental in imparting useful knowledge and skills for enhancing workers' efficiency, thus improving the productive capacity of a population. For instance, agricultural development in Africa does not only depend on technology, science, research, infrastructure and finance but also, and most importantly, human capital.

In this context, human capital entails well-equipped and prepared individuals with appropriate knowledge, skills, right behaviours and attitude for work [1, 10, 11, 12, 13]. The human capital is needed to identify, define and deal with the issues confronting the agricultural sector. That is, human capital directly influences agricultural productivity by affecting the way in which inputs are used and combined by farmers. It is undoubted that improvements in human capital affect acquisition, assimilation and implementation of information and technology and also affects one's ability to adapt technology to a particular situation or to changing gender needs [4, 8, 11, 14].

In recognizing the importance of formal agricultural education in agricultural development, agricultural colleges and universities have been at the forefront in the development of human capital. Hence, the human capital theory was chosen as a theoretical lens in this study. This is because, the theory emphasizes how education increases the productivity and efficiency of workers by increasing the level of cognitive stock of economically productive human capability, which is a product of innate abilities and investment in human beings.



The linkages between formal education and improvements of workers' productivity and efficiency

Few studies have been conducted in different countries on investments in human capital and indicated a linkage between formal education and improvements in productivity and efficiency of workers. A 1982 study in Thai, Korea and Malaysia explored the role of farmer education and extension on-farm efficiency [15]. They found that farmer education and extension were not only important to enhancing production on Thai, Korean and Malaysian farms, but that there was an interaction effect between education and extension. In contrast, they found physical capital had an insignificant impact on production and profits. In addition, a 1994 study found that human capital formation was three to four times more important than raw labour in explaining output growth [12]. The provision of formal education is seen as a productive investment in human capital, which the proponents of the human capital theory have considered as equally or even more worthwhile than that of physical capital [10, 13, 16].

Operational Framework for Analyzing of SUA Mid-career Programme for Agricultural Extension Workers

This study employed pillars for Demand Driven Agricultural Curriculum as a framework for analyzing Sokoine University of Agriculture (SUA) mid-career programme for agricultural extension workers. This framework was selected because the fundamental to development of human capital is an effective and demand-driven agricultural curriculum that meet the goals of agricultural development. These goals include, food security, poverty reduction, production and value addition, climate smart agriculture, and rise in household incomes of smallholder farmers. Therefore, the curriculum for the training of mid-career agricultural extension workers should be demand-driven. The term "Demand-Driven" implies the need to focus on the 'interests of people on certain products or services. Hence, a Demand-Driven Agricultural Curriculum (DDC) is defined as an academic content developed as a collaborative effort between academics and experts from private and public industries, founded in customer demands for quality content, delivery, and service that lead to desired learner outcomes [2].

Pillars of the Demand-Driven Curriculum (DDC) involve lifelong learning, student-centered experiential learning, and leadership development. The DDC should be based on identified needs and designed to run as a partnership by employers and universities /colleges. In addition, the DDC should be developed jointly with partners and stakeholders. Lastly, the DDC should lead to the professional advancement for the graduates to assume leadership in the communities or workplace for enhanced growth and development of the society. At Sokoine University of Agriculture (SUA), the mid-career BSc. in Agricultural Extension and



Education demand-driven curriculum has been described as collaborative development and progresses in stages of planning, preparation, designing, developing, implementing, evaluating, revising and improving the curriculum for human capital development (Fig. 1).



Figure 1: The Sasakawa Africa Fund for Extension Education (SAFE) Demand Driven Curriculum Development Process

Operationalizing the pillars of the Demand-Driven Curriculum in this study, the following were identified in analyzing the impact of the B. Sc in Agricultural Extension and Education training programme: Access to relevant and quality agricultural education, and acquisition of desired appropriate knowledge, skills and competencies as an important pre-condition of human capital development for improved work productivity of agricultural extension workers. As described earlier, human capital is the product of well-equipped and prepared individuals with appropriate knowledge, skills, right behaviors and attitude for work [1].

In this context, skills can variably be defined. The Longman Contemporary English Dictionary [17] defines skill as ‘an ability to do something well, especially because you have learned and practised it’. Skill is also defined as “a combinatory form of knowledge that makes use of theoretical, procedural and environmental knowledge, or learning, know-how and life skills, to solve problems, make decisions, carry out plans, et cetera” [18, 19, 20]. Skill includes “competencies, attitudes, beliefs, and behaviours that are modifiable across development and can be learned and improved” [6]. Human skills have been found just as an important input in the process of development as finance and or natural wealth [1]. In

addition, competencies are equated with a set of skills, knowledge and behaviours to perform tasks associated with an occupation [4].

MATERIALS AND METHODS

The study employed an evaluative study design. It was conducted across the country where the alumni are employed. An effort was made to cover various agro-ecological zones such as Eastern, Western, Central, Southern Highlands and Lake Zones with a higher concentration of alumni who graduated from the year 2001 to 2013. This was considered as an adequate duration for the programme to have an impact. The development of the sampling frame was done in collaboration with the Ministry of Agriculture (MoA), Ministry of Livestock and Fisheries (MLF), and President’s Office-Regional Administration and Local Government (PO-RALG).

The multi-stage sampling technique was adopted to purposively select a sample size of 200 respondents (40 respondents per agro-ecological zone). The sample size of 40 respondents per zone were proportionately grouped into alumni and farmers in each zone. The formula used to calculate proportional number of respondents per agro-ecological zone is as described below:

$$n/Z \times 20=C \dots\dots\dots(1)$$

Number of alumni respondents= $200/40 \times 20=100$
 Number of farmer respondents= $200/40 \times 20=100$
 Where: C=number of alumni or farmers that were randomly sampled per agro-ecological zone; Z= the total number of beneficiaries in the agro-ecological zone; n= the number of alumni or farmers per agro-ecological zone.

A total of 100 alumni and 100 farmers were selected by using a simple random sampling technique. The sample size was thought to be enough to serve the study purpose. This is because, a sample of 30 respondents is the bare minimum for statistical analysis [21]. A snowball sampling technique was used to replace the respondents who were selected randomly but could not be reached for interview. In addition, other stakeholders who were selected for an interview were 30 employers.

The development of a set of competencies was undertaken through analysis of the mid-career curriculum and consultations with public and private employers. The following competencies were identified: general knowledge of extension, basic administration knowledge and skills, programme planning skills, programme implementation, monitoring and evaluation, leadership skills, communication skills, leading discussions and advocacy skills, interpersonal skills, professional ethics, information communication technologies (ICT), gender issues in extension, food processing and storage skills, health and livelihoods, entrepreneurship skills,



business skills, value chains skills, skills in handling climate change issues, environmental conservation, livestock husbandry, crop husbandry, fisheries and land resource management.

Then followed by the development of tools including open-ended questionnaires and checklists to measure the job performance based on the identified competencies: job satisfaction and career advancement after graduation. The tools were administered to selected graduates and employers. Then data were entered in the Statistical Package for Social Sciences (SPSS) Computer programme and analysed to yield descriptive statistics such as frequencies and percentages. Tables and figures were used to summarize and present the study findings.

RESULTS AND DISCUSSION

Agricultural Extension Workers Access to Agricultural Education

Graduation trend as from 2001-2014 for the mid-career Programme
Initially, the programme was offered to a heterogeneous group with different orientations which included agricultural teachers from secondary schools and tutors from agricultural training institutes, as well as extension agents from the field and high school direct entrants. Although the programme was meant to cater for the mid-career professionals, for certain reasons beyond the Department's control, the programme enrolled even direct entrants. The enrolment of direct entrants from high schools increased the complexity of handling the programme. Figure 2 shows the way enrolment to the mid-career programme has been evolving since 1998. The enrolment rate to the mid-career programme has been progressively increasing though the number of females enrolling has always been far less than men (Fig. 2). Unfortunately, it was beyond the scope of this analysis to establish reasons for the variation. However, this is an observed worldwide trend as women extension agents occupy only 15% of the workforce [14].



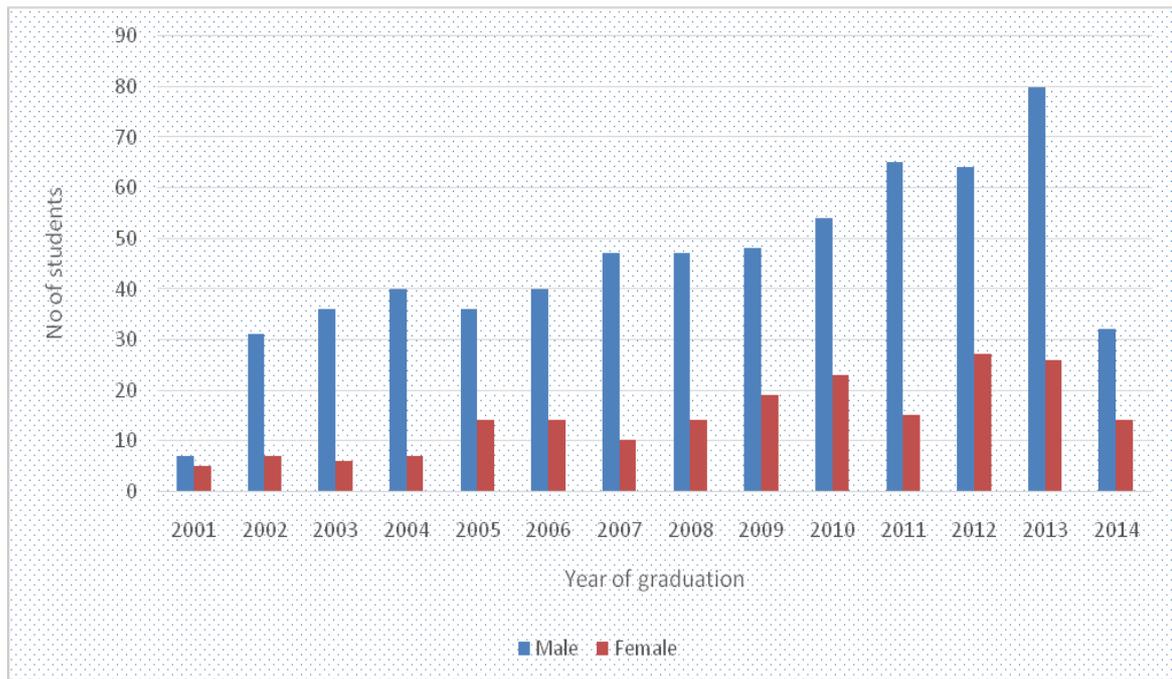


Figure 2: Trend of the graduates of the mid-career programme since its initiation

Quality of agricultural knowledge provided by Sokoine University of Agriculture Job position before and after training

Before joining the BSc. Agricultural Extension and Education training programme the respondents held various positions in their respective organizations but about half of them worked as agricultural extension staff at different administrative (district, ward and village) levels, and the rest worked as secondary school teachers and subject matter specialists (Table 1). This is very much in line with the philosophy of the programme which is to cater for the mid-career professional staff who are working in the field. Under Tanzania's decentralized extension system as per the country's decentralization by devolution policy of 1997, the majority of extension professionals are found at the district, ward and village level, and very few remain at the regional and national levels. This implies that the BSc training undertaken at SUA has led to the professional advancement of the alumni which is in line to establish the programme in the first place.

However, as shown in Table 1, over the years after graduation the alumni have progressed up the professional ladder most of the graduates now work at the district level as District Agriculture Irrigation and Cooperative Officers (DAICO) (25%), District Extension Officers (13%), District Subject Matter Specialists (8%) and Agricultural and Livestock Officers (19%). Others are now Lecturers at the university (11%) as well as project managers (5%).

Undoubtedly, the mid-career programme enabled graduates to secure new jobs, and those who went back to their former jobs were promoted to higher-level positions such as District Agricultural and Livestock Development Officers (DALDO), currently known as District Agricultural Irrigation and Cooperative Officers (DAICO). This is one way to signify the need for employers to substantially engage with in- job training of their workers while learners are required to have realistic expectations about the market and develop self-learning skills to make themselves desirable to employers [1]. The argument is supported by a 2019 International Labour Organisation (ILO) study that jobs of tomorrow require new skills, and that some existing skills will become obsolete [1]. Confidently, confirming that trainees joined the BSc. Agricultural Extension and Education training programme to acquire new skills desirable for their employers. It is only in the informal economies where workers with low levels of education acquire most of their skills informally through interaction and observation both on and off the job [22].

Change in major responsibilities after completing the training programme

The findings indicate that the roles of graduates changed after they completed their BSc training programme. The responsibilities of the respondents before joining the B.Sc training programme were a provision of extension services (51%), and for teaching secondary school students (25%). The rest were responsible for supervision and coordination of extension activities (7%) and conducting research (5%), as well as a variety of other activities. However, in their current positions, the alumni have supervisory responsibilities (68%), teaching (15%), administrative and management responsibilities (7%) and a variety of other responsibilities (Table 1). This means that most of the employers recognized the quality of agricultural knowledge provided by Sokoine University of Agriculture to the alumni after graduation.

Employment status

Alumni of the mid-career programme stated that their employment status had advanced after the completion of the training. They said that Government Ministries and Local Government Authorities (LGAs) were the main employers before alumni joined the programme at 13% and 77%, respectively (Table 2). Fortunately, those who were not employed before training got employed after training. Again, even after graduation the major employer has continued to be the Local Government Authorities (LGAs) (54%) and Government Ministries (14%). Others are employed by the university (11%), and a variety of other organizations (Table 2). The advancement in employment after graduation was expected, confirming that investment in education leads to the future earnings or benefits that will result [7]. Such benefits would include increased earnings, heightened social



status or higher economic prestige, and improved performance in the workplace associated with higher educational qualifications.

Relevance of Agricultural Education Provided by Sokoine University of Agriculture to The Needs of Agricultural Extension Workers Impact of the B.Sc in Agricultural Education and Extension programme on knowledge, attitudes and skills of graduates

Acquired competencies or skills

It was necessary to trace the impact of the B.Sc training on improving graduates' competencies/skills in some areas that were covered by the programme. Among the measured variables as described in the methods and materials section, findings indicate that the competence improvements were observed in general knowledge about agriculture in terms of handling various agricultural activities; knowledge and skills in administration especially in managing agricultural programmes as well as managing the resources such as human resource (Table 3). Most of the candidates expressed ability to better plan for extension programmes as well as increased skills in implementing such programmes. Monitoring and evaluation was another area that the candidates acquired knowledge and were able to apply in their extension programme. Improved managerial skills were accompanied by improvement in leadership skills and communication skills. This is also an important skill for graduates to actively frame and lead debates, establish background information, and develop alternative courses of action in any raised issues in the agricultural sector. Thus, they are currently able to lead discussions and it has improved their interpersonal skills and advocacy skills. Other areas where significant improvement was noted included observation of professional ethics in their work, consideration of gender issues in extension work as well as handling crop husbandry activities.

Areas with moderate to lower impact on competencies included the use of ICT in extension work, food processing and storage skills, health issues as related to livelihoods, entrepreneurship skills and business skills especially in establishing viable economic projects, the concept of value chains and value additions to various commodities, climate change and its effects to agriculture, environmental conservation especially under rain-fed agriculture, livestock husbandry. This is because some of these aspects like value chain and use of ICT were not covered in the curriculum that calls for the incorporation of value chain-oriented courses in the curriculum and the need of professional development courses to fill the graduates' competence, knowledge and skills gap.

However, although the programme did not adequately impart competencies in some areas like value chain and use of ICT, over 80% of the alumni were generally satisfied with the way BSc Agricultural Extension and Education training



programme was conducted (Table 4). Some of the competencies that they acquired were actually in line with their objectives for joining the programme, that is, to be competent in extension service delivery, to advance academically and in the process increase their incomes, to be competent in crop and animal husbandry practices as well as to acquire research knowledge and skills (Table 4).

An overwhelming majority (88%) said they would encourage their colleagues to join the BSc (AEE) programme (Table 5). Reasons for encouraging others to join the programme include the fact that the programme offers appropriate courses for in-service staff on cross-cutting issues while the Supervised Enterprise Projects (SEPs) component in the programme facilitates learning by doing and at the same time it improves employability (Table 5).

Employers' assessment of the mid-career programme in terms of helping in mobilizing farmers, institutional innovations and linkages with actors

Employers of the BSc Agricultural Extension and Education (BSc. AEE) alumni including both the Central Government and the Local Government comprised of high-level staff like the Director of Crop Development, District Agricultural Extension Officers, District Agricultural Irrigation and Cooperatives Officers and District Livestock and Fisheries Officers were asked to rate the extent of improvement in their employees' knowledge, skills and attitudes. Most of them were very positive they observed changes in the graduates in terms of knowledge, attitude and skills ranging from moderate improvement to major improvement (Table 6).

Similarly, most employers noted the mid-career programme to have helped in professional and skill development of extension staff in mobilizing farmers for technology adoption, introducing organizational and institutional innovations and in initiating or establishing structural and functional linkages of relevant actors for agricultural development (Table 7).

Generally, most employers favorably rated the ability of graduates in most aspects of their professional skills as related to extension work. Aspects and areas that they found the candidates to be strong included, their ability to articulate general knowledge of extension, ability in basic administration knowledge, and skills in handling administrative aspects. They also found them to be fairly good in programme planning and its implementation and the ability to monitor and evaluate those programmes. They were also found to have good leadership skills and ability in communication skills. The candidates were also rated well in their ability to lead discussions and advocacy skills, ability in interpersonal skills and high professional skills. They were also good in information and communication technology and able to take into consideration the question of gender in their extension work (Table 8).



This sounds to be very positive concerning the programme since it was initiated specifically to address those aspects which were found to be lacking or weak among the mid-career professionals. Results confirm the pillars for demand-driven curriculum [22, 23].

Employers' were positive with the technical competencies of the alumni. Most employers found the alumni to have fair to good competencies including: ability in food processing and storage, health and livelihoods, entrepreneurship, business skills, handling of value chains, addressing climate change and environmental conservation. Similarly, they had fair technical competence in handling livestock husbandry, crop husbandry, fisheries and in-land resource management (Table 8). These are aspects that the programme needs to be strengthened to equip the candidates with sufficient skills. Studies have indicated that technical competencies in handling livestock husbandry, crop husbandry, fisheries, and in-land resource management are important skills especially for extension staff dealing with livestock keepers and fisher folk [24, 25, 26, 27, 28, 29, 30].

However, in the 21st Century, an extension agent can hardly succeed without being skilful in the use of ICT facilities. It was observed that about a third of respondents were unskilful in using ICT. It is much more important to deploy ICT facilities for positive and profitable ends. The importance and role of Information and Communication Technology (ICT) can never be over-emphasised in the training of the modern extension agents. Thus, adequate provisions must be made for the facilities in the department or university at large.

CONCLUSION AND RECOMMENDATIONS FOR DEVELOPMENT

Generally, B.Sc graduates in Agricultural Extension and Education were found to have better employment than those who had lower qualifications. In that context, the agricultural training programme at Sokoine University of Agriculture is deemed an investment, equipping graduates with appropriate knowledge and competencies/skills that improve their leadership skills, employability and productive capacities. The findings provide a strong basis for government and individuals to invest substantial portions of their resources in studying the programme. It is recommended that the Sokoine University of Agriculture (SUA) should strengthen the value chain aspects, Information and Communication Technology (ICT), lobbying and advocacy skills its current mid-career agricultural extension programme.



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Table 1: Work position and change in responsibilities before and after graduation

Position Before joining the BSc Programme	Frequency	Percent
Agricultural Officer	2	2
Livestock Officer	1	1
District Subject Matter Specialist	7	7
District Extension Officer	2	2
Divisional Extension Officer	2	2
Ward Extension Officer	45	45
Village Extension Officer	6	6
Education Officer	2	2
Secondary school teacher	22	22
Unemployed	3	3
Total	100	100
Positions of respondents after they have graduated	Frequency	Percent
Agricultural Officer	15	15
Livestock Officer	4	4
Research Officer	4	4
DAICO	25	25
District Subject Matter Specialist	8	8
District Extension Officer	13	13
Ward Extension Officer	7	7
University lecturer	11	11
Secondary school teacher	4	4
Project coordinator/manager	5	5
Not indicated	3	3
Total	100	100
Major responsibilities before joining the programme	Frequency	Percent
Provision and coordination of extension activities	58	58
Teaching secondary school students	25	25
University teaching, research and consultancies	0	0
Teaching Diploma students	1	1
Undertaking research activities	5	5
Administration and management	0	0
Seed inspection and certification	0	0
Project coordination, monitoring and evaluation	0	0
Unemployed	3	3
Others	8	8
Total	100	100
Major responsibilities after joining the programme	Frequency	Percent
Provision and coordination of extension activities	68	68
Teaching secondary school students	3	3
University teaching, research and consultancies	11	11



Teaching Diploma students	1	1
Undertaking research activities	2	2
Administration and management	7	7
Seed inspection and certification	2	2
Project coordination, monitoring and evaluation	3	3
Unemployed	0	0
Others	3	3
Total	100	100

Table 2: Employment status when joining and after completion of the Programme

Employing organization when joining the programme	Frequency	Percent
Government ministry(ies)	13	13
Local Government Authority	77	77
Research Institute	1	1
University	1	1
Secondary School	2	2
Seed Agency	1	1
NGO	2	2
Unemployed/ Private practice	3	3
Employing organization after graduation	Frequency	Percent
Government ministry	14	14
Local Government Authority	54	54
Research Institute	2	2
University	11	11
Seed Agency	4	4
Others	6	6
No response	9	9
Total	100	100

Table 3: Alumni's opinion on the impact of the BSc training on various competencies

Competence area	High impact	Average impact	Low impact
General knowledge of extension	74	8	17
Basic administration knowledge and skills	67	19	13
Programme planning	56	29	14
Programme implementation	50	37	12
Monitoring and evaluation	55	29	13
Leadership skills	62	24	13
Communication skills	70	15	13
Leading discussions & advocacy skills	54	32	11
Interpersonal skills	56	27	14



Professional ethics	63	25	10
ICT	48	41	7
Gender issues in extension	52	38	9
Food processing and storage skills	38	43	18
Health and livelihoods	29	56	11
Entrepreneurship	38	53	5
Business skills	32	58	8
Value chains	30	54	11
Climate change	29	50	18
Environmental conservation	35	43	17
Livestock husbandry	38	51	10
Crop husbandry	56	34	9
Fisheries	21	40	31
Land resource management	29	50	16

Table 4: Reasons for joining BSc AAE degree program and extent of satisfaction after graduation

Reason	Frequency	Percent
To be competent in extension service delivery	63	63
To be competent in crop and animal husbandry practices	19	19
To be competent in crop and animal husbandry practices	8	8
To acquire research knowledge and skills	3	3
Not mentioned	7	7
Total	100	100
Degree of satisfaction	Frequency	Percent
Highly dissatisfied	4	4
Dissatisfied	7	7
Neutral	1	1
Satisfied	31	31
Highly satisfied	49	49
No opinion	8	8
Total	100	100

Table 5: Respondents' opinions whether they would encourage a colleague to join the BSc (AEE) programme with reasons

Response	Frequency	Percent
Definitely no	6	6
Probably no	0	0
Not sure	0	0
Probably yes	11	11
Definitely yes	77	77
No response	6	6
Total	100	100
Reason	frequency	percent
Appropriate course for in-service staff	18	18
Supervised Enterprise Projects (SEPs) component in the programme facilitate learning by doing	12	12
Programme is cross-cutting	22	22
Allows provision of extension services to farmers	23	23
Offers employment opportunities	7	7
Total	100	100

Table 6: Employers' rating of mid-career graduates in terms of improving knowledge, attitude and skills (n= 30)

Knowledge Change	Frequency	Percent
Moderate improvement	18	60.0
Major improvement	12	40.0
Total	30	100.0
Attitude Change		
Slight improvement	1	3.3
Moderate improvement	19	63.7
Major improvement	10	33.0
Total	30	100.0
Skill Change		
Slight improvement	2	6.7
Moderate improvement	13	43.3
Major improvement	15	50.0
Total	30	100.0

Table 7: Employers assessment of the mid-career programme in terms of helping in Mobilizing farmers, institutional innovations and linkages with actors (n=30)

Mobilizing farmers for technology adoption	Frequency	Percent
Not at all	1	3.3
To a small extent	4	13.3
Not sure	1	3.3
To a reasonable extent	9	30.0
To a large extent	15	50.0
Total	30	30.0
Introducing organizational and institutional innovations		
Not at all	1	3.3
To a small extent	4	13.3
Not sure	5	16.7
To a reasonable extent	17	56.7
To a large extent	3	10.0
Initiating or establishing structural and functional linkages of relevant actors for agricultural development		
Not at all	1	3.3
To a small extent	7	23.3
Not sure	5	16.7
To a reasonable extent	11	36.7
To a large extent	6	20.0
Total	30	30.0

Table 8: Employers ranking of staff (graduates of BSc AEE) professional competencies in their work

Competence	Poor		Fair		Good		Very Good	
	F	%	F	%	F	%	F	%
Ability in general knowledge of extension	0	0	2	6.7	16	53.3	12	40
Administration knowledge and skills	1	3.3	3	10	20	66.7	6	20
Ability in programme planning	1	3.3	7	23.3	16	53.3	6	20
Ability in programme implementation	2	6.7	5	16.7	17	56.7	6	20
Ability in monitoring and evaluation	0	0	6	20	15	50	9	30
Ability in monitoring and evaluation	0	0	6	20	15	50	9	30
Ability in leadership skills	0	0	6	20	12	40	12	40
Ability in communication skills	1	3.3	3	10	14	46.7	12	40
discussion and advocacy skills	2	6.7	7	23.3	16	53.3	5	16.7
Ability in interpersonal skills	1	3.3	3	10	19	63.3	7	23.3
Ability in professional skills	1	3.3	3	10	20	66.7	2	20
Ability in ICT	1	3.3	8	26.7	14	46.7	7	23.3
Ability in gender issues in extension	0	0	6	20	18	60	5	16.7

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