

Research Application Summary

Transforming African Agricultural Universities to meaningfully contribute to Africa's growth and development (TAGDev) Program implementation at Egerton University

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Abstract

TAGDev is a scholarship program in partnership with MasterCard Foundation and Regional University Forum for Capacity Building in Agriculture (RUFORUM). The Program is implemented at Egerton University, Kenya and Gulu University, Uganda. The eight years (2016-2018) program focuses on experiential learning, community engagement and entrepreneurship and supports students who are bright but economically disadvantaged or from conflict regions of Africa. The percentage of female applicants for 2017 and 2018 was 36% (of 196) and 33% (of 424) respectively. In 2017, 15 students were recruited from Kenya, Uganda, Malawi, Ghana and Tanzania. These students are in three programmes, namely, Master of Science in Community Studies and Extension, Master of Science in Agri- enterprise Development and Bachelor of Science in Agriculture. The 2018 cohort comprise of 25 undergraduates and 5 masters students drawn from Kenya, Uganda, Malawi, Lesotho, Somalia, Nigeria, Rwanda and Ghana. The eligible programmes in 2018 are Bachelor of Agribusiness Management, Bachelor of Science in Horticulture, Bachelor of Science in Environmental Sciences, Bachelor of Science in Food Science and Technology, Bachelor of Science in Agricultural Education and Extension and Master of Science in Agronomy. Transformation as a result of the TAGDev program is evident at student/staff, institutional and targeted community levels. To ensure sustainable outcomes, the implementing team recommends systematic andragogical training, facilitation and psycho-social support for staff at the institutional level automation, computer based tests for large classes, routine maintenance and projected Infrastructural support, plus institutionalization of TAGDev generated frameworks. In the next five years of the project life, TAGDev will facilitate the implementation of these recommendations to bring about the change envisioned in African agricultural universities.

Key words: Community engagement, entrepreneurship, experiential learning, rural agriculture

Résumé

TAGDev est un programme de bourses d'études de partenariat entre la Fondation MasterCard et le Forum universitaire régional pour le renforcement des capacités en agriculture (RUFORUM). Le programme est mis en œuvre à l'université d'Egerton, au Kenya, et à l'université de Gulu, en Ouganda. Le programme, d'une durée de huit ans (2016-2024), est axé sur l'apprentissage expérientiel, l'engagement communautaire et l'entrepreneuriat et appuie les meilleurs étudiants économiquement défavorisés ou originaires de régions de conflit en Afrique. Le pourcentage des candidats en 2017 et 2018 était respectivement de 36 % (sur 196) et 33 % (sur 424). En 2017, 15 étudiants ont été recrutés au Kenya, en Ouganda, au Malawi, au Ghana et en Tanzanie. Ces étudiants ont été inscrits dans trois

programmes, à savoir, le Master en Vulgarisation et études communautaires, le Master en Entreprise agricole et la Licence en Sciences agronomique. La cohorte de 2018 comprend 25 étudiants de premier cycle et 5 étudiants de deuxième cycle provenant du Kenya, de l'Ouganda, du Malawi, du Lesotho, de la Somalie, du Nigeria, du Rwanda et du Ghana. Les programmes éligibles en 2018 étaient les suivants: Licence en gestion d'entreprises agricoles, Licence en horticulture, Licence en sciences de l'environnement, Licence en sciences et technologies alimentaires, Licence en éducation et vulgarisation agricole et Master en Agronomie. La transformation résultant du programme TAGDev est évidente au niveau des étudiants/du personnel, des institutions et des communautés ciblées. Pour garantir des résultats durables, l'équipe recommande une formation andragogique systématique, une facilitation et un soutien psychosocial pour le personnel. Au niveau institutionnel, il faudra l'automatisation, les tests informatisés pour les classes à grand effectifs, l'entretien de routine et le soutien en infrastructures, ainsi que l'institutionnalisation des cadres de travail générés par TAGDev. Au cours des cinq prochaines années du projet, le projet TAGDev facilitera la mise en œuvre de ces recommandations afin d'apporter le changement envisagé dans les universités agricoles africaines.

Mots clés : Engagement communautaire, esprit d'entreprise, apprentissage par l'expérience, agriculture rurale

Introduction

Rural agricultural transformation in Africa is one of the contemporary issues in development paradigm. Institutions of higher learning have to become a vital part of this transformation through committed partnerships with government, communities, businesses and civil society focusing on producing hands on graduates who are able to give back to their communities. This is particularly after the realization that graduating from an academic programme is not an equal measure of student success. Thandi and Monica (2014) reported that success could be attributed to the quality of the programmes and the teaching of these programmes, the kinds of skills and attributes with which students leave university, including their preparedness for the world of work and their ability to enter employment as successful graduates. However, universities cannot impact on all the factors influencing student success but they can pay keen attention to the quality and status of teaching and learning. Transforming African Agricultural Universities to meaningfully contribute to Africa's growth and development (TAGDev) program implementation at Egerton University focus on strengthening the capacity of African agricultural universities and their graduates to better respond to developmental challenges through enhanced use of Science, Technology, Business and Innovation for rural agricultural transformation.

TAGDev is a scholarship program in partnership with MasterCard Foundation and Regional University Forum for Capacity Building in Agriculture (RUFORUM). The Program is implemented at Egerton University, Kenya and Gulu University Uganda. The eight years (2016-2018) program focuses on experiential learning, community engagement and entrepreneurship and supports students who are bright but economically disadvantaged or from conflict regions of Africa. Studies show that addressing student poverty and funding needs are crucial in improving access and success in universities (Letseka *et al.*, 2010; van der Berg, 2013). Within the implementation period, the program aims at training 110 undergraduate and 110 masters' scholars, half of these at Egerton University, and transform them into innovative leaders who will catalyze Africa's Growth and Development.

The program is nested around four broad objectives: i) Pilot a new model of agricultural education

at early adopter universities that connects tertiary agricultural education to rural communities, with an emphasis on smallholder farmers; ii) Strengthen agribusiness/ entrepreneurship at two universities and selected TVET institutions; iii) Scale the new model for agricultural education to other agricultural universities and TVET institutions; and, iv) Increase collaboration and mutual learning among institutions and agencies implementing and influencing innovative Tertiary Agricultural Education for rural transformation in Africa. These objectives are focused on bringing transformation at individual students and staff, institutional, community and collaborators levels. Objective one focuses on students' recruitment and support and increasing the capacity of university staff in their teaching methodologies through staff retooling workshops. Objective two aims at bringing institutional transformation through review of curriculum and development of strategies and framework documents. Objective three and four are aimed at reaching out the community and agricultural stakeholders which is mainly achieved through Community Action Research Projects plus (CARP+). Through CARP+ projects there is training of students jointly with private sector organizations, research institutions and farmers among other actors to nurture practical oriented graduates who have an appreciation of entrepreneurship for community transformation. This paper therefore seeks to highlight the experiences of TAGDev Program implementation at Egerton University for the period between 2017 and 2018 and provide strategies that can be adopted to accelerate Africa's growth and development.

Methodological approach

Recruitment of students. The recruitment process starts with opening of call to apply for the MCF@RUFORUM scholarships a process initiated by RUFORUM through print and social media. Egerton University then make its individual advertisements through social media, radio, sharing with institutions that work with vulnerable groups, school visits and other possible ways of reaching the target group of applicants. The advert usually contains information on eligibility criteria, eligible programmes, and minimum requirements per programme, deadline for submission of application, contacts and any other information useful to the applicant. The call is normally open for at most 4 months. Following the close of the call, both the admission and scholarship applications received at Egerton University are converted into a database using predetermined templates. TAGDev program through the relevant departments and Faculties compile a list of all admissible to various programmes and submit this to RUFORUM where based on analysis of information on scholarship form, a shortlist of applicants is shared. The shortlisted applicants are then visited at their homes to verify households' information. It is during this time that the applicants' psychometric data is taken and put into account during the selection for scholarship award. The successful applicants are selected by the RUFORUM Technical Committee. They then participate in a joint orientation programme at Egerton University after which the students report to their host universities to commence their studies. At Egerton this is followed with an orientation to help the students settle in the university and remain focussed to academic excellence for them to continue benefitting from the program.

Institutional transformation. Contribution of the TAGDev program in development and improvement of curricula on entrepreneurship and experiential learning is key focus in successful implementation of the program at Egerton University. The program in collaboration with the various departments appointed university staff to spearhead identification of curriculum review gaps and the need for staff retooling in entrepreneurship and experiential learning in the faculty of agriculture. The first team was tasked with documentation of areas for curricula review for entrepreneurship courses, proposing implementation strategies for courses identified in view of students numbers, evaluation of course effectiveness and sustainable implementation of the course. The team also highlighted the need for staff retooling in entrepreneurial mindset and effective implementation of reviewed courses.

The second team explored the ways of enhancing effectiveness and implementation of field/ livestock/ factory practical course units as part of experiential learning course unit(s). The main task was to document field/livestock/ factory practical course units within the faculty of agriculture, propose implementation strategies for courses identified in view of students numbers, timing of when the courses are offered, evaluation of course effectiveness and sustainable implementation of the courses and eventually highlight areas for staff retooling for field practical course units. The third team explored on ways of enhancing effectiveness and implementation of field attachment (FA) as an experiential learning course unit across the university. The deliverables included documentation and proposal of approaches for preparing students for FA, appraisal of FA placement and assessment procedures in view of growing student numbers, evaluation of institutions involved in hosting students for FA in terms of appropriateness for each diploma/degree programme, Learning environment, Supervision and Skills transferred and wrap these up through provision of a strategy paper for the future management of FA.

Staff retooling workshops. TAGDev at Egerton in its focus on entrepreneurship, experiential learning and community engagement, held 3 staff retooling workshops namely; Experiential Learning and Community Engagement, Use of Case Studies in Teaching and Agripreneurship and Innovation Delivery Methodologies. The program engaged experts in these areas to facilitate the trainings where on average 20 university staff benefitted from each of the trainings. The retooling workshops were addressing the gap highlighted in framework documents developed to strategize experiential learning, community engagement and entrepreneurship learning at Egerton University.

Community engagement and students farm attachment. The two CARP+ projects under TAGDev program at Egerton University namely; The Seed Potato Value Chain (SPVC) and Cassava Value Chain (CVC) seek to strengthen the university community linkages. The CARP+ projects participated in different activities such as Trade fairs, Exhibition, Field days, and Training on Data Management and Analysis. The two projects also established demos in various sub counties in Nakuru for SPVC and in Nakuru and western Kenya for CVC CARP+ in preparation for farmers' trainings. All the fifteen TAGDev students participated in CARP+ projects activities.

With regard to students' attachment on farms, the Master of Science in Agri-enterprise Development (AGRD) students started their attachments in September 2017. This is a requirement for AGRD curriculum. Industrial attachments are aimed at equipping the students with practical skills in their fields of study. The MSc. AGRD students go for their attachments every Friday. These visits are facilitated by the TAGDev program. The department is facilitated to ensure students are supervised at the farms where they are attached. The TAGDev students then submit their end of semester reports to the program office documenting their experiences with farm attachment.

A team of five faculty staff were commissioned by the Egerton University Division of Research and Extension in November 2017 under the facilitation of the TAGDev Program to develop a University-Community Engagement Strategy (UCE). The framework strategy was developed in a process of internal consultations with several directors, deans and chair of departments, and administration of a questionnaire. These were complemented with desktop reviews of how other Universities have developed and implemented their community engagement activities. The team members used the information from the questionnaires for stakeholder analysis of actors and their spheres of influence in the University-Community Engagement framework and to carry out situational analysis to identify assets, needs, problems and threats. The situational analysis informed formulation of strategic goals, strategic actions, resources and organizational implications

Collaborations. To increase collaboration and mutual learning between institutions, the program held a National Forum of key agricultural and university stakeholders on 12th to 13th February 2018 at Naivasha, Kenya. The theme, enhancing University- Industry linkages for Agricultural Growth and Development, was in line with the TAGDev program mission of training a generation of Agleaders for Agricultural Transformation in Africa. The overall objective of the meeting was to contribute to the national dialogue on the role of universities and industry players in enhancing agricultural growth and development. Specifically, the meeting explored transformative education approaches that will develop leaders and innovators to drive sustainable and inclusive economic growth in Africa. Thus, emphasis was laid on critical thinking and analysis, confidence to try new things/approaches, safeguarding the integrity of data and creativity; Seeking opportunities for universities to work with TVETS for transformative agricultural education; Receiving feedback from stakeholders on university and TVET programmes; Identifying agricultural industry innovations for incorporation into students' learning; Expose students and faculty members to national agricultural innovation system actors and entrepreneurs; and Seek areas of influencing higher agricultural education policies. The discussions focused on how stakeholders in the agricultural sector can provide valuable extension services to farmers, make agriculture attractive to the youth and how industrial attachment can be used to produce graduates who are well prepared for the job market.

TAGDev also entered into memorandum of understanding (MoU) with Baraka Agricultural College, a Technical and Vocational Education Training Institute and a non-Governmental Organization named Farming Systems Kenya. The MoUs were nested around the following thematic areas: Soil, water and crop science, Livestock and veterinary sciences, Environmental science and sustainability, Research dissemination and outreach, Training and capacity building, Curriculum review and staff retooling and Agri-entrepreneurship. More MoUs with other TVET institutions like Dairy Technology Institute and Rift valley institute of science and Technology (RVIST) are being developed.

Results

Recruitment of students. TAGDev program at Egerton University first Cohort of students reported for orientation program in July 2017. These were selected from a total of 196 applications received at the close of the call for application in March 2017. These students are drawn from five nationalities namely; Kenya, Uganda, Malawi, Ghana and Tanzania. The students are in three programmes, that is, Master of Science in Community Studies and Extension, Master of Science in Agri-enterprise Development and Bachelor of Science in Agriculture. Each programme has 5 students who are trained and mentored to be the change agents in their communities. In 2018, the number of applications received was more than double the number received in 2017 (Fig. 1). This could be attributed to increased program visibility and better strategy for reaching the target groups. However, gender-wise the number of females applying for the scholarships were lower than for males in both 2017 and 2018 (Fig. 2). This calls for innovative approaches to reach out to more female applicants who are competing poorly with the male counterparts

The second Cohort comprise of 25 undergraduates and 5 masters students drawn from Kenya, Uganda, Malawi, Lesotho, Somalia, Nigeria, Rwanda and Ghana. The eligible programmes in 2018 include Bachelor of Agribusiness management, Bachelor of Science in Horticulture, Bachelor of Science in Environmental Sciences, Bachelor of Science in Food Science and Technology, Bachelor of Science in Agricultural Education and Extension and Master of Science in Agronomy.

Curriculum review, strategic and framework documents. During the course of review of the entrepreneurship courses, it was observed that there are deficiencies particularly in inculcating the

entrepreneurial mind-set, ideation and innovativeness among learners as well as instructors in economic and non- economic courses. It was also realized that the course delivery methodologies currently in use do not utilize modern entrepreneurial techniques and tools that enhance effectiveness of learning. In addition, the course delivery fell short of relevant applications and practicality, particularly at the undergraduate level. The report recommended a realignment of the current AGBM 102 (a unit titled “Principles of Entrepreneurship” which is a required course for 80% of all undergraduate programmes) in terms of content and delivery so that the course is delivered on a programme specific basis. In addition, the report recommended an additional advanced entrepreneurship unit be introduced during the next curriculum review cycle for students taking Agricultural Economics and Agribusiness Management at the undergraduate level. The execution of reviewed course units required a reorientation of the staff mind-set through a continuous retooling programme with more emphasis on instructors of the course and subsequently radiating to instructors in non- economic programmes. The main focus of the retooling exercise should be on entrepreneurial and innovative course delivery systems.

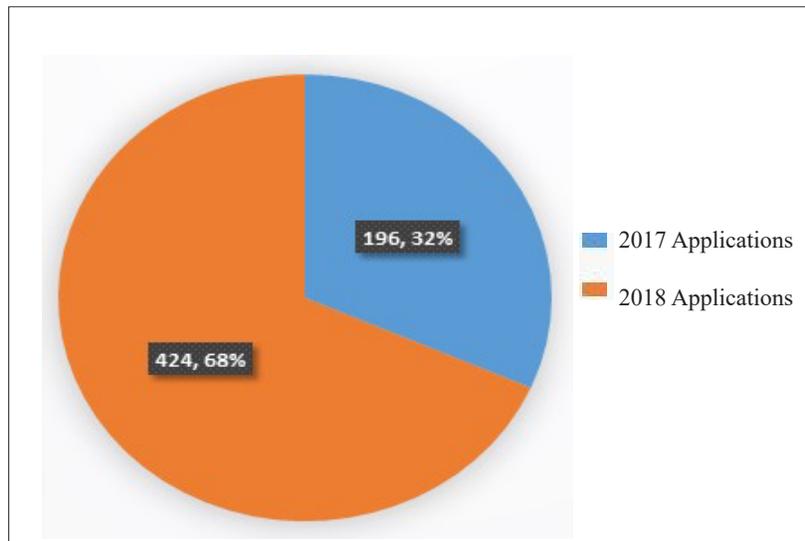


Figure 1. The total number of applications received in 2017 and 2018.

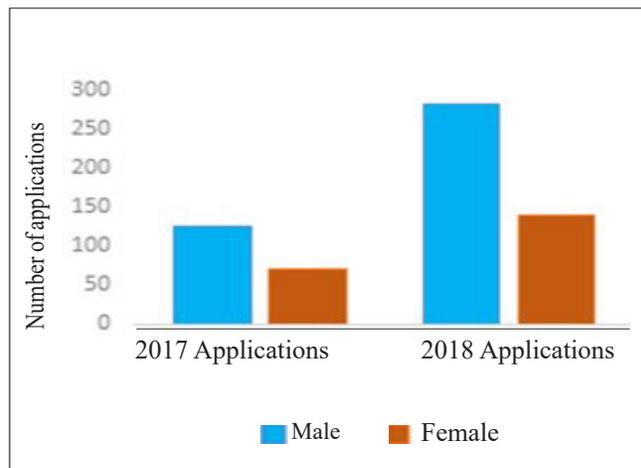


Figure 2. Analysis of Applications by Gender 2017 and 2018.

The key finding on practical course units offered in the Faculty of Agriculture showed that over 60 hands-on course units across four departments in the faculty of agriculture are being implemented. A good number of these course units were recently introduced following Egerton University staff interactions with counterparts at EARTH University in Costa Rica. As newly introduced courses, there is need to ensure that the theoretical basis for such courses is clearly articulated and that required institutional changes are put in place to ensure effective and sustainable implementation. The report documented development of course outlines for these course units as a first step to creating the necessary conceptual framework, and also proposed strategies for sustainable management of the units

The Field Attachment (FA) report highlights some of the challenges to effective implementation of FA which include student numbers, number of programmes with FA component as well as the fact that Universities and Colleges have tremendously increased in the last few years. All are competing for the few and never increasing attachment opportunities. The issue of limited financial resources and the increasing cost of managing FA programmes was also highlighted. The team proposed 28 strategies to ensure students get benefits accruing from FA programmes. These strategies were categorized into; improvement of curriculum delivery, retooling of staff involved in FA, enhancing partnership with FA host institutions and resource mobilization for supporting FA programmes.

Industrial attachments are aimed at equipping the students with practical skills in their fields of study. While Mungai *et al.* (2016) reported that field attachment is a mandatory course in 60 of the 88 undergraduate programmes at Egerton University; this is not the case with postgraduate programmes. Only a few postgraduate programmes require students to undertake FA. Such programmes include MSc. in Agri-enterprise Development (AGRD) and Community Studies and Extension (COSE) the two programmes with students supported through TAGDev. The AGRD TAGDev students namely Redempter Mbula, Geoffrey Ngenoh, John Agbolosoo, Gad Sambrumo and Mercyline Jerusa started their attachments in September 2017. Redempter who is attached to Pokea Dairy farm has been able to gain skills on dairy cow management practices such feeding, milking, deworming, record keeping, marketing among others. The student has appreciated that diversification of farm enterprises can help boost the farm income. Redempter is determined to start up her own dairy farm following the experiences gained during the farm attachment period. Geoffrey and John are attached at Tatton Agricultural Park, Egerton University. The farm is dedicated in rearing numerous types of farm animals both ruminant and non-ruminant as well growing cereal crops such as maize, wheat, legumes. Vegetable crops are also cultivated. During the attachment period, the students were engaged in various activities in piggery, poultry and rabbitry units in the farm. They gained the skills on animal husbandry and daily routine. Mercyline and Sambrumo do their field attachment sessions at Mrs. Esther Kungu farm, a contracted farmer by Njoro canning company to supply variety of farm produce. Mrs Kungu does her crop production on over seventy three acres of leased land which are dispersed within Njoro sub-location. The students work closely with the farmer on weekly basis for five months. The learning module involves hands-on engagement in the day to day activities as scheduled by the farmer. The activities keep on changing since agricultural production is seasonal and dynamic. However, the students have gained skills in crop planting, management practices, harvesting, post- harvest management and marketing, casual labour supervision, allocation of duties, risk mitigation and management of farms to ensure continuous supply. The students have been able to identify challenges faced in the various farm and continue working closely with the farmers to identify the most appropriate and achievable intervention measures that will help to mitigate the potential risks.

Community Action Research Projects plus at Egerton University has been pivotal in reaching out the smallholder farmers and training them on best agricultural practices. In collaboration with their partners,

CARP+ projects provide a learning opportunity for the students and farmers through farmer's field days, trade fairs, and field trips among others. Engaging the students in CARP+ has turned out to be useful in development of their research proposals that seek to address most of the challenges in agricultural value chains. Farmers indicated that access to clean planting materials, pests and diseases, exploitation by middlemen are among the major challenges they face. Students proposed research will therefore contribute to streamlining of bottlenecks in the Seed Potato and Cassava value chains in Kenya.

On the other hand the farm attachment sessions has equipped the students with knowledge and skills on how agricultural challenges can be turned into business opportunities where most of them now have business start-ups. Out of the 15 TAGDev students 6 are already engaged in agribusiness either as sole or partnership businesses.

TAGDev Program initiative of supporting the development of University-Community Engagement (UCE) 2018-2023 strategy will play a key role in ensuring CARP+ project activities are well delivered and are sustainable. The strategy highlights the five main goals that any project in the university working with the community should strive to achieve as a means of successful engagements with the community. The five goals include i) Strengthen coordination mechanisms in University-Community Engagement activities (UCE) since UCE activities were found to be uncoordinated, undocumented and their value to the society and University not made visible; ii) Strengthen communication with the stakeholder communities due to inefficiencies, lack of accessibility, and concerns about a myriad of ongoing communications between the University and the stakeholder communities; iii) Engage with communities in non-political interventions and align to enabling policies through forums every semester to educate faculty, students and staff and the community on the mutual benefits of community-university partnerships; iv) Invest in acquisition, generation and adaptation of innovation for local needs where engaging students with communities helps the University to address this concern by exposing students to labour market requirements early in their education and training; and v) To ensure sustainability plans and exit strategies in UCE interventions since communities have raised complaints about lack of follow ups and duplication of efforts.

Conclusion

General strategies for transformation. Following the experiences in recruitment process, the programme suggests targeted advertisement to minimize the level of disappointments on the admissible applicants. There is also the need to predetermine the number of slots based on regional differences within the host countries and for the rest of African countries. Self-declared data also require verification in addition to development, testing and validation of home grown indicators of poverty. Academic and psycho-social support programmes are pivotal for academic and social excellence. Allocation of academic advisors and counselors has proved to be a useful tool in mentoring and guiding the students accordingly to ensure a balance between social life and academic success.

Staff retooling workshops have proved to impact on the teaching methodologies where the lecturers are able to deliver student centered teaching making learning interesting and hands-on. However, the program has identified that facilitation of experiential learning materials has been reported as the main setback in implementation of the skills learnt in the retooling workshops. More financial support is necessary to facilitate experiential learning in institutions of higher learning. Need for staff psychosocial support also cropped up where most staff are under immense workloads that affect their effectiveness in course delivery.

Institutions of higher learning should consider automation of some academic programmes. This is in the interest of growing number of students taking a course unit and hence individual attention becomes limited. Computer based tests for large classes could help improving the assessment of students' progress. However, this calls for extra infrastructural support from relevant ICT-based organizations and other funding agencies.

With regard to community engagement, development of strategy documents for community based activities such as field attachment, university community engagement among others, serve as important tools for benchmarking and identifying the bottlenecks in implementation of experiential learning and community engagement. This information is very important in ensuring that strategies are well laid out on how best to engage with the community as well as produce graduates who have practical and change agents. Experiences gained through the implementation of strategy documents should then be published in open access journals as a means of scaling out to other institutions. There is also the need to develop platforms where farmers can access information they need and have their queries responded to with uttermost expertise and urgency.

To increase collaboration and mutual learning between universities and TVET institutions, there is the need for innovative ways of dealing with competition between the two in terms of programmes offered. Such innovative ways will include engaging policy makers at the national level and all key stakeholders to create guidelines that delineate TVETs and universities niche discipline areas.

Acknowledgement

The authors acknowledge the financial support from MasterCard Foundation through the Regional Forum for Capacity Building in Agriculture (RUFORUM), Egerton University for hosting the program and all other stakeholders for successful implementation of program's activities. This extended abstract is part of the TAGDev Program at Egerton University contribution to the 6th Biennial Conference and African Higher Education Week 2018, KICC, Nairobi, Kenya, 22nd - 26th October 2018

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