

Performance of Emerging Service Agri-Enterprises Supporting Entrepreneurial Dairy Producers in Kenya– An Exploratory Case Study of a Youth-Led Extension Business Model

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Abstract: The role of agriculture as a source of livelihood and employment for youth in Sub-Saharan Africa is receiving increased attention. There are new opportunities for engaging youth as agri-entrepreneurs not only as producers but also as service and input providers, especially along emerging high-value agri-value chains. The expanding Kenya dairy sector is an example of such value chains. The growth of the dairy sector has triggered demand by enterprising smallholder producers for various external inputs and services in order to meet growing demand for more and better quality milk delivered at low costs. We present a case study of Service Providers Enterprise Network (SPEN), a youth-led group business in Kenya focussed on enhancing feed access and feeding practices of the smallholder dairy enterprises by delivering various services and inputs. Using secondary data we investigate the technical (addressing farmers' needs) and entrepreneurial (business) performance of this innovative business model that includes 12 active SPEN groups with a total of 55 members. Results indicate good technical performance of groups in enhancing their clients' feed access. The groups supported production and preservation of about 9,300 tons of silage alone from over 2,600 known farmers in 2016 compared to 4,600 tons from 1,500 farmers in 2015. The groups' performance is challenged due to limited access to equipment. The entrepreneurial performance is still not clear at the group and individual levels due to limited data. Further analysis is needed to understand this aspect in order to show the business case of such models.

Key words: Entrepreneurship, youth, private-sector, business models, performance, capacity

Introduction

The role of agriculture as a source of livelihood and employment for youth in developing countries is receiving increased attention. While it is noted that rural youth are ambivalent toward agriculture and their role as farmers is declining due to various factors, opportunities for engaging youth as agri-entrepreneurs in various advisory and innovation support services along the agri-value chain offers new avenues for youth to engage in the agricultural sectors (FAO and IFAD, 2014).

The opportunities for enlisting youth as service providers in the agricultural sector is linked to the growing drive toward sustainable intensification and commercialization of small and medium scale farmers in SSA (African Union, 2014; UNECA, 2009). The dairy sector in Kenya provides a good example of this push for sustainable intensification and more market integration of smallholder producers. The growing demand in Kenya for

more and better quality milk sustainably delivered at low costs has triggered smallholder demand for various external inputs and services, in order for them to sufficiently participate in the expanding market opportunities (van der Lee et al., 2016). This trend is occurring in a context of a shifting landscape toward pluralistic advisory and innovation support service delivery, with an increasingly private sector or market driven approach to providing agri-inputs and services (Kilelu et al., 2011; Omedo et al., 2016). As a result, various business opportunities related to extension and advisory services and inputs delivery have emerged along the dairy value chain, attracting many entrepreneurs. Increasingly these opportunities are attracting youth who are seeking to venture into various agri-businesses either individually or as groups (Kilelu et al., 2013; Linguli and Namusonge, 2015)

From a policy perspective, the drive to involve youth in agricultural sub-sectors such as dairy, beyond their role as producers, is to tap into the potential of a young educated population that can be trained to meet input and service delivery gaps in such knowledge intensive high-value chains. This is because such value chains are noted to use services and inputs more intensively and can create employment opportunities for those who can provide such services. Thus, investing in youth to establish viable agro-based enterprises, including input and service provision, is a key pathway to generating youth employment and enhancing their livelihoods (FAO and IFAD, 2014; Filmer and Fox, 2014).

We present a case study of Service Providers Enterprise (SPE) groups, a Kenyan youth-led group business model focussed on enhancing feed access and feeding practices for smallholder dairy enterprises. They do so through delivering various services and inputs. The model was developed between 2010 and 2012, with the support of SNV's core subsidy funded dairy program (SNV, 2013) and continued with SNV Kenya's Market-led Dairy Program (KMDP). The study seeks to investigate the performance of this innovative business model and its related outcomes in enlisting youth participation in agri-business.

This exploratory research aims to understand the SPEN business model from two dimensions i) the technical dimension of how they provide adequate technical (innovation) support to target dairy producers with the goal of enhancing their milk productivity to meet the growing milk demand consistently throughout the year; ii) the entrepreneurial dimension of how the SPEN groups are establishing viable agro-enterprises as agricultural support service providers. The specific research questions are:

- a) How are the SPE members performing as extension and input service providers and what factors influence their performance?
- b) How are the SPE providers performing as agri-entrepreneurs and what factors influence their performance?

Conceptual Framework – Emerging agri-enterprises in agricultural services and inputs delivery and their performance

Accelerated agricultural growth in Kenya, like in many other SSA countries, will be driven by the technical dynamism and intensive-knowledge application of entrepreneurial producers who are at the centre of developing sustainable agri-value chains and food systems. This is recognized as the pathway through which the agricultural sector can be the driver of economic growth, employment creation and improved livelihoods (Filmer

and Fox, 2014). Providing technical and business support to these entrepreneurial producers through what is referred to as demand-driven extension and advisory systems has seen an increase in private sector services emerging in numerous SSA countries (Birner et al., 2009; Kilelu et al., 2011; Rivera and Rasheed Sulaiman, 2009).

As Anderson and Feder (2003) note, the efficiency gains of agricultural extension and advisory services can come from locally decentralized delivery systems with an incentive structure largely based on private provision. Private companies are now recognized to have potential to fill in gaps of limited government extension support in many developing countries and seem to have potential to enhance the cost-effectiveness and quality of service. As a result many agri-enterprises focussed on providing a suite of extension services and inputs are emerging in these countries (Birner et al., 2009; Kilelu et al., 2011; Rivera and Rasheed Sulaiman, 2009). Understanding the performance of such enterprises requires looking at both their technical and entrepreneurial performance (see figure 1).

Performance of extension services and inputs delivery in supporting entrepreneurial farmers

Building on insights from Birner et al., 2009 and Ragasa et al. (2016) we note that service delivery performance of extension services and accompanying inputs relates to technical soundness, quality, timeliness, efficiency and effectiveness of the service being delivered. This means looking at how responsive the advisory services and accompanying inputs are addressing the technical and business challenges faced by the producers (clients) they serve and their reach to various types of clients. As Kilelu (2014) has shown, support to smallholders with ambitions for sustainable commercialization requires a broad range of advisory services and inputs that are better characterized as innovation support. This support ranges from accessing knowledge and technologies, enhancing entrepreneurial capacity, to creating linkages with other actors. Delivery of these services and inputs ideally integrates decision making support and learning at farm level as part of building producers' capacity to innovate, which is needed to enhance productivity and optimize the farming enterprise (Birner et al., 2009; Kilelu et al., 2016; Kilelu, 2014).

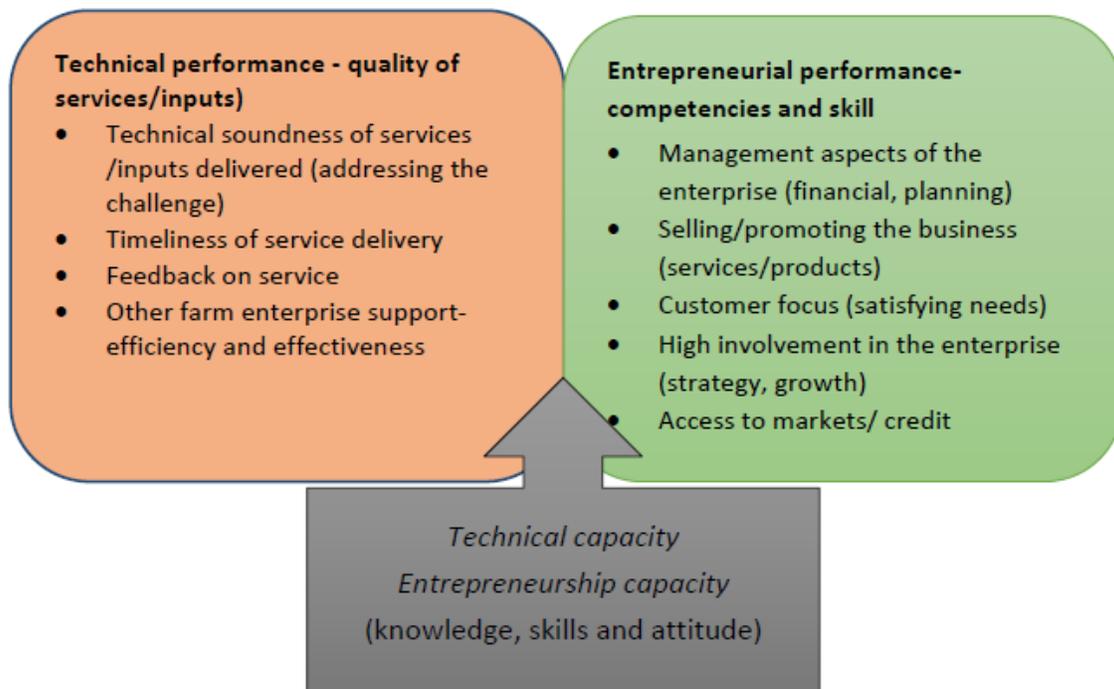
Due to limited market power of smallholders, private enterprises that deliver extension services and inputs face challenges of lack of consistent demand for those services, which affects profitability (Poulton et al., 2010). Additionally, extension services are generally viewed as a public good, thus many smallholders are unwilling to pay directly for such services. In the dairy sector, which is particularly inputs and knowledge-intensive, appropriately designed collective approaches of bundling services and inputs are shown to enhance access to agricultural technologies and application of improved practices to enhance productivity (Jaleta et al., 2013; Kilelu et al., 2013; Rao et al., 2016). Thus, assessing the performance of emerging agri-business models that are providing extension services and inputs needs to use an integrated approach to understand what Poulton et al. (2010) have referred to as the complementarity of service delivery.

Entrepreneurial performance of the service and input delivery agri-businesses

Agriculture, a dominant sector in many SSA countries is uniquely positioned to absorb the many youth that come out of the education institutions annually. With limited opportunities for employment, the potential has been shown in the agriculture sector for

youth to be self-employed by establishing agro-enterprises, including those that provide inputs and services to farmers. Involving youth in such agri-ventures is therefore part of broader inclusive development approaches necessary in SSA countries (Filmer and Fox, 2014). Therefore it is important to understand the entrepreneurial performance and business viability of such agri-business and how they contribute to income generation for youth. As Ochieng (2007) noted, there is need for competitive entrepreneurial approaches as an integral part of the reforms to stimulate African agricultural productivity and development. An enterprise is viewed as a bundle of internal and external resources that enable the venture to become competitive (Penrose 1959 in Linguli and Namusonge, 2015). According to Linguli and Namusonge (2015), who looked at the entrepreneurial factors that influence the performance of youth-run agro-based enterprises, the focus of the analysis on these resources is to look at entrepreneurial competencies and skills.

Figure 1: Analytical framework for analysing SPE as a youth-focused service provision agri-enterprise (Source: Authors elaboration)



Research methodology

This is a case study that explores SPEN as a youth-led business model that has emerged in selected milk rich rural regions in Kenya with the aim of offering services to dairy farmers, including extension and agri-inputs. The data used for the article was mainly from secondary sources and include project progress and evaluation reports. The secondary data provided an understanding of how the model emerged and its structure. The data analysis focussed on identifying the technical and entrepreneurial performance of aspects of SPEN group members related to services and input delivery as an agro-enterprises. In addition, we analysed how farmers as the focus clients of SPEN groups assess the quality and effects of SPEN groups as agri services and input providers. The technical performance analysis focused on how the groups are meeting service and input

needs of dairy producers, including supporting knowledge application and learning that is necessary to enhance sustainable productivity. The entrepreneurial performance looks at the business case of the SPEN as agri-enterprises the contribution to incomes and livelihoods of the members.

RESULTS AND DISCUSSIONS

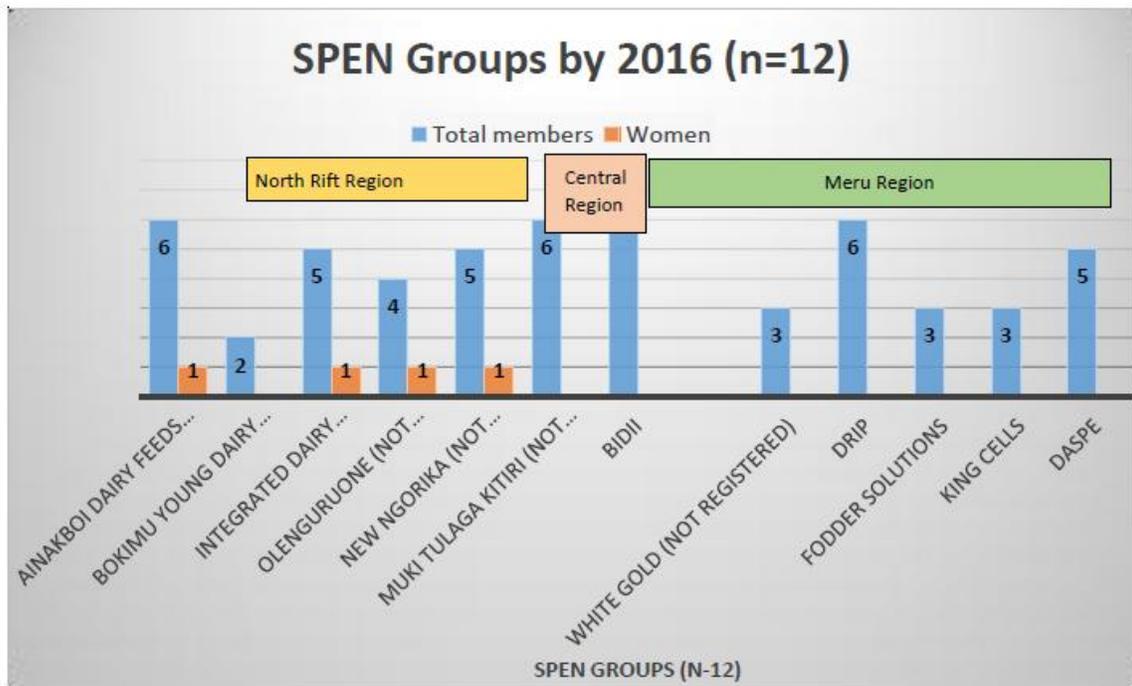
Case description: The SPE model and structure

The SPE model comprises and number of youth-managed service providers groups based in the rural areas of Kenya that offer various agricultural advisory and support services and some inputs to farmers on a commercial basis. The founding SPE groups formed a service provider enterprises network (SPEN) of four SPE groups that become registered as SPEN Kenya Limited Company (SPEN website). The SPEs are embedded within vibrant dairy value chains in target regions in Kenya where small and medium scale farmers are engaging in market-oriented production and are demanding various contracting and advisory support services. The regions include Meru, Central and North Rift. Most of the SPEN groups supplement local extension services by supplying various agri-inputs and provision of other advisory services.

SPE members are strategically positioned allocated production areas that the groups have zoned. Through this zone approach different teams become the next door solution in fodder preservation, fodder establishment, dairy management, as well as supply of fodder seeds and silage preservation materials. This strategy enables them to grow their business, expanding as service providers into other value chains

There are a total of 12 active SPE groups with a total of 55 members, the majority of whom are young men, as shown in figure 2. Additionally, the SPEN Company comprises 3 active SPEs out of four of the original group. One of the groups disbanded because they had no producer group to anchor them in their operating region. It has been noted that young men tend to get more involved in providing agricultural services and inputs delivery in various high value agri-value chains (Kilelu et al., 2013). More generally, it is noted that although women, including those who are considered youth, are actively engaged in agricultural production, their engagement and visibility diminishes in other nodes of the agricultural supply chain (Heinrich-Böll-Stiftung, 2015). This points to importance of applying a gender analysis to the question of youth and agri-entrepreneurship. It is important to understand what entry points can facilitate the inclusion of more young women in emerging services and input delivery agribusinesses

Figure 2: Overview of SPEN groups and the membership



Technical performance of SPE Groups

The SPEN model is targeted at youth who are interested in providing support services to entrepreneurial farmers (such as silage making, hoof trimming, fodder establishment). Through support of the KMDP program, the SPEN groups have undergone short-term practical training that enabled them to offer the various support services and inputs. According to project reports (Katothya and van der Lee, 2016; SNV, 2017, 2013), the groups are part of an ecosystem of innovation support services offered to farmers within their regions of operation. The SPEN groups offer complementary services to those offered by public extension agents or agri-input enterprises (Table 1).

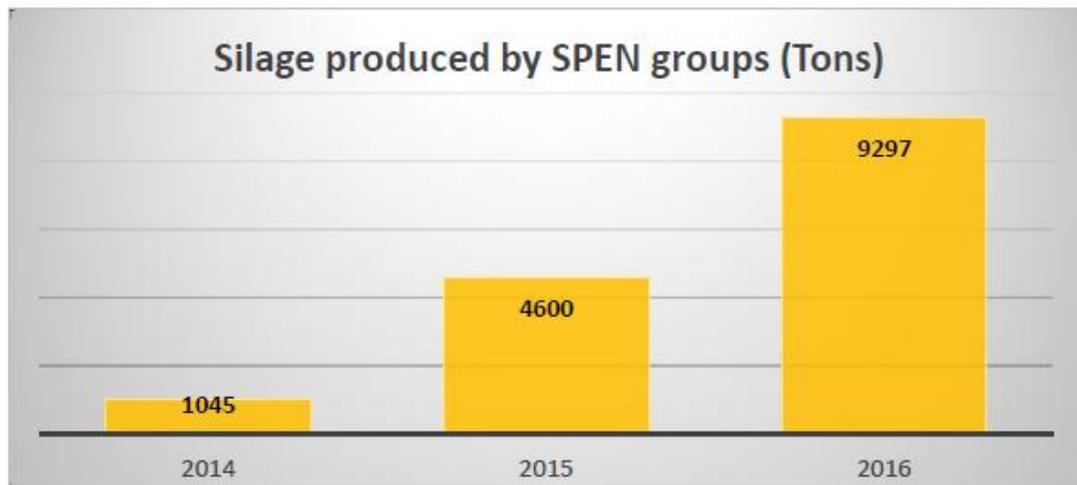
Table 1: Variety of services offered by SPEN groups

Types of services
Fodder establishment and preservation (including silage making)
Farmer training (feeding and feed management)
Selling fodder seeds
Providing fodder making equipment
Advising farmers on dairy management practice (as service bundled with silage making)
Conducting farmer training demonstrations

Silage is the main entry point for SPEN groups as access to feed year round remains a limiting factor for the majority of dairy farmers in Kenya. With the help of SPEN groups, a total of about 9,300 tons of silage from over 2,600 known farmers were preserved in various regions in 2016, following 4,600 tons from 1,500 farmers in 2015 and 1045 tons in 2014, as shown in figure 3 (SNV, 2017). This is indicative of the technical soundness

of the services offered, which are geared toward addressing a main challenge faced by the clients of SPEN groups.

Figure 3: Trends in silage production by SPEN groups



The trend in silage production over the years denotes increasing farmer adoption levels of what is as a new practice in the various regions where growing maize for silage was not common. There were notable regional differences in this adoption levels. In 2016, the Meru Region SPEN groups supported in making a total of over 5,400 tons of silage (mainly maize silage). The North Rift SPEN made a total of over 2,900 tons of silage. In Central Kenya, a total of over 800 tons of maize silage were made. Of the total silage tons made, maize silage represented 95% while 5% represented other fodder types such as Napier, Oats and Sorghum silage (SNV, 2017). These regional differences could be explained somehow by the role of CBEs in anchoring the SPEN groups within their broader training and extension models that we discuss further in the next section on entrepreneurial performance. To support adoption, it was also noted that some of the SPEN groups were involved in establishing fodder demonstration plots for practical training and learning with farmers, though the ownership of these plots was not clear from the secondary data. However, we note that the SPEN groups worked closely with different CBEs that bring farmers together. There is also mention in SNV (2017) that the SPEN groups supported model farmers who are seen as important platforms for engaging with farmer-to farmer learning to enable adoption of agricultural technologies and improving farmers' practices, e.g. fodder preservation as confirmed in various studies (Kiptot and Franzel, 2015; Lukuyu et al., 2012). Such learning processes can be useful in providing feedback to the SPEN groups that can enhance their service delivery, however this was not clearly explained in the report.

Other aspects of SPEN groups' technical performance such as providing enterprise support to farmers were not clear from the reports; these could include influencing the technical efficiency and effectiveness of farming enterprises, e.g. by enhancing supply of high quality fodder seeds and record management. A big challenge facing the SPEN groups was access to appropriate machinery; instead of current manual and slow compacting practices, machinery could help them and the farmers prepare and compact silage faster; this would reduce the inefficiency on farm (SNV, 2017). The technical

quality of their services was sometimes questioned. . Katothya and van der Lee (2016) noted that some technical knowhow of SPEs was questioned, raising a concern about their technical capacity. It was indicated that some of the medium scale farmers questioned the narrow list of recommended forage materials for silage making, e.g. advice by SPEN to farmers that sunflower is not suitable for silage making. This suggests that such groups need to have a strong foundation about broader dairy management skills and understanding of a wider array of technology options to be able to provide adequate technical support to farmers. While such models of providing complimentary services and inputs offers an easy entry for youth as service providers as it requires short-term practical training, there is need for rigorous assessments on the effectiveness of the short training modules in equipping the youth with the knowledge to adequately meet farmers demands.

Entrepreneurial performance of SPEN groups

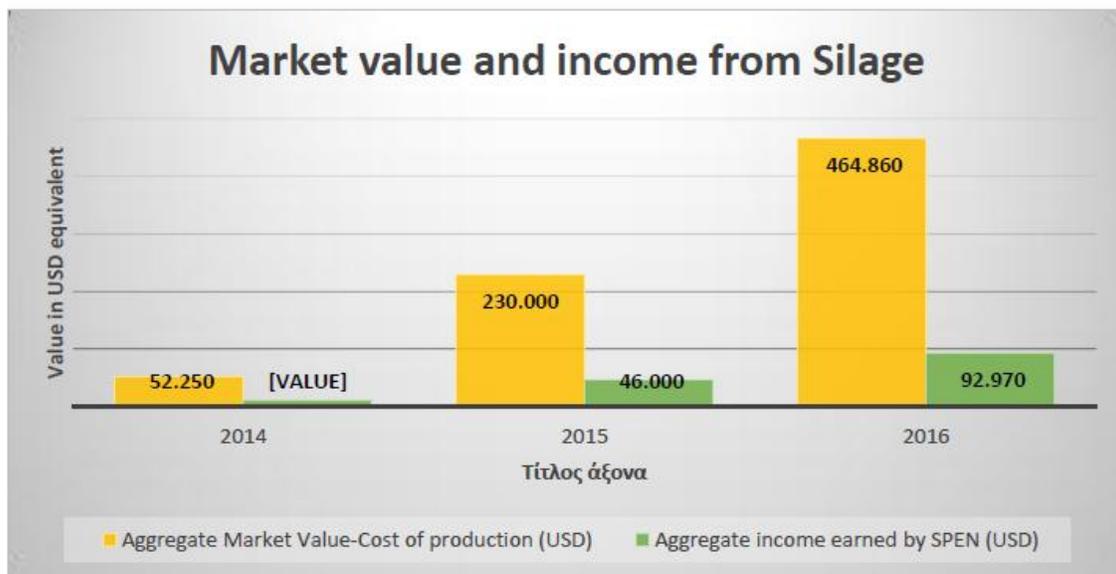
The results show that the SPEN group business approach is to be anchored with dairy cooperatives, which are also referred to as Collection and Bulking Enterprises (CBE) in the KMDP program (Table 1). The CBEs provided the business linkage for the SPEN groups and their members. This is key to the entrepreneurial performance of the groups, and illustrated by the volume of business of the Meru groups. According to some information in report and from discussions with the project implementers, it was noted that Meru Dairy Farmers Cooperative Union, the apex secondary cooperative that is formed by 29 member CBEs (i.e. Mbwinjeru, Muthuri, ..., Naari) provided higher prices as incentive for its members to produce more milk. Production of more milk was dependent on access to good quality feeds and feeding practices in the dry season. This demand for more milk required that farmers enhance their feed quality and quantity, hence the demand for silage increased. Meru region SPEN groups produced 58% of the silage made in the regions in 2016 as noted in the section above (SNV, 2017). This shows that the SPEN groups were able to sell their services well, an indication of good entrepreneurial performance.

Table 2: The CBEs and the linked SPEN groups

North Rift	CBEs linked to SPEs	Name of Group
	Anaikboi CBE	Ainakboi dairy feeds enterprise
	Mumbenes	Bokimu Young dairy service providers
Central Region Meru Region	Kiplombe	Integrated Dairy Management Enterprises
	Olengurone	Olenguruone (not registered)
	New Ngorika	New Ngorika (not registered)
	Muki Tulaga Kitiri	Muki Tulaga Kitiri (not registered)
	Mbwinjeru	Bidii dairy promoters enterprise
	Muthiru	White gold (not registered)
	Nkuene/Uruku	DRIP
	Githongo	Fodder solutions
	Kithirune	King Cells
		Naari

Most (8 of the 12) of the SPEN groups have formerly registered as business entities (Table 2). This indicates that they are now legally recognized as business and have a structured way of operating as agro-enterprises. The SPEN groups did generate substantial incomes, as shown in Figure 4, reaching close to an aggregate of USD 93,000 in 2016. However more data would be needed to understand the average incomes at group and individual level.

Figure 4: Aggregate Market value of silage produced and related income of SPEN groups



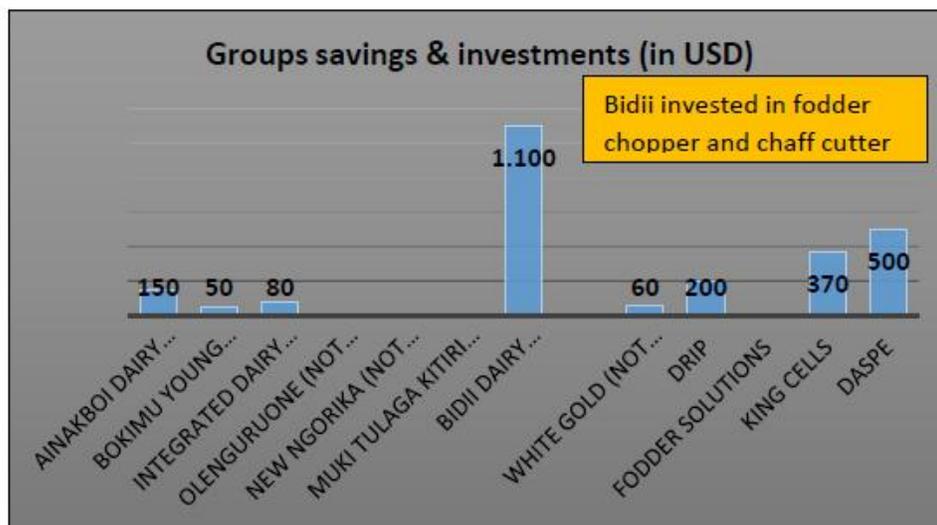
According to a recent progress report, the registered groups opened bank accounts that enable them to save from the income attained from their services. Registration is noted to

be an important factor that enable such groups to save, as is shown in Figure 5. This could be a result of legal formalization, which would be indicative of building trust relations among the members. According to SNV (2017) the registered SPENs meet on a monthly basis, where they plan and review their support services to farmers. They also use the meetings to collect their savings and most importantly share their experiences - successes and challenges for mutual benefit.

The saving were mainly geared toward making investments in the group business. The main investment ideas were related to the groups seeking ways to overcome the main challenge they face in their operations - lack of proper machinery and equipment to enhance their productivity. Through their monthly group savings most groups indicated plans to borrow top up loans from SACCO's and MFIs in their area to buy machines (SNV, 2017). In Meru, Bidii enterprise already has made an investments in machinery worth USD 1100, with an additional grant support of about USD 750 from the KMDP program.

According to an assessment conducted in the North Rift region, it was found that 59% of the original 37 SPE members in the 5 CBEs were active (22 members, of whom 18 males and 4 females). This implies 41% of the group members' dropped out of the business. While the report does not give reasons for this attrition, it is not surprising since other studies have shown that about 40% of youth businesses fail within the first five years (Linguli and Namusonge, 2015)

Figure 5: SPEN groups' savings and investments



Conclusion

This exploratory study provides some insights on the technical and entrepreneurial performance of the SPEN groups as agri-enterprises offering dairy farming services and inputs. There are three key insights that we reflect on in the conclusion. One, is that while the technical performance of these groups is achieved in some respects, there are some technical capacity issues that need to be addressed. This relates mainly to access to equipment to enhance proficiency in silage making and the adequacy of the short-term training that is provided to the group members. It is not clear if this is sufficient or

whether the group members would need to continually seek new knowledge to augment their technical performance. Two, the entrepreneurial performance of such groups requires collecting more specific data that can enable one to understand better how the business contributes to individual incomes. This also relates to the need to better understand why some groups have thrived and others have not done well, and relatedly is to look into the issue of drop-outs from the groups. Third, the study's novelty comes from looking simultaneously at the technical and entrepreneurial performance of the business. Most of the studies on extension and service provision including through private-sector enterprises have focussed more attention on the technical performance (Birner et al., 2009; Ragasa et al., 2016) and less on the business dimension of these models. This bias on the technical performance has given us a limited understanding of the viability of the businesses that offer the technical services. As Ochieng (2007) rightly mentions, a focus on the business dimension of supporting African agricultural development merits high-level attention. This is particularly paramount in the push toward attracting more youth to agriculture with the promise of attractive incomes and livelihoods. To fill this knowledge gap, the authors of the paper are embarking on a further study that will collect detailed primary data related to the case study in order to provide more rigorous analysis of the business case.

References

- African Union 2014. Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods. https://www.au.int/web/sites/default/files/documents/31247-doc-malabo_declaration_2014_11_26.pdf.
- Anderson, Jock R. and Gershon Feder 2003. Rural Extension Services. . World Bank, Washington D. C.: For full text: <http://econ.worldbank.org/view.php?type=5&id=24374>.
- Birner, Regina , Kristin Davis, John Pender, Ephraim Nkonya, Ponniah Anandajayasekeram, Javier Ekboir, Adiel Mbabu, David J. Spielman, Daniela Horna, Samuel Benin and Marc Cohen 2009. From Best Practice to Best Fit: A Framework for Designing and Analyzing Pluralistic Agricultural Advisory Services Worldwide. *The Journal of Agricultural Education and Extension* 15: 341-355. doi: 10.1080/13892240903309595
- FAO and IFAD 2014. Youth and agriculture: key challenges and concrete solutions. In *Youth and agriculture : key challenges and concrete solutions*.
- Filmer, Deon and Louise Fox 2014. Youth employment in Sub-Saharan Africa. Washington, D.C: The World Bank.
- Heinrich-Böll-Stiftung 2015. Gender Forum on Women in Agribusiness: Synthesis Summary of Proceedings of the Multi-stakeholder Technical Workshop and Public Forum. In *Gender Forum on Women in Agribusiness: Synthesis Summary of Proceedings of the Multi-stakeholder Technical Workshop and Public Forum*. Nairobi, Kenya.
- Jaleta, Moti, Berhanu Gebremedhin, Azage Tegegne, Samson Jemaneh, Tesfaye Lemma and Dirk Hoekstra 2013. Evolution of input supply and service hubs in dairy development at Ada'a milk shed in Ethiopia. *Development in Practice* 23: 249-263. doi: 10.1080/09614524.2013.772119
- Katothya, Gerald and Jan van der Lee 2016. Status Report KMDP Training and

Extension Approaches- Integrate and connect: Recommendations for KMDP's approach and role in knowledge exchange and skills development in the Kenyan dairy industry

In Status Report KMDP Training and Extension Approaches- Integrate and connect: Recommendations for KMDP's approach and role in knowledge exchange and skills development in the Kenyan dairy industry

Kilelu, Catherine W., Laurens Klerkx and Cees Leeuwis 2016. Supporting Smallholder Commercialisation by Enhancing Integrated Coordination in Agrifood Value Chains: Experiences with Dairy Hubs in Kenya *Experimental Agriculture* 53: 269-287. doi: 10.1017/S0014479716000375

Kilelu, Catherine W., Laurens Klerkx and Cees Leeuwis 2013. Unravelling the role of innovation platforms in supporting co-evolution of innovation: Contributions and tensions in a smallholder dairy development programme. *Agricultural Systems* 118: 65-77. doi: <https://doi.org/10.1016/j.agsy.2013.03.003>

Kilelu, Catherine W., Laurens Klerkx, Cees Leeuwis and Andy Hall 2011. Beyond knowledge brokering: an exploratory study on innovation intermediaries in an evolving smallholder agricultural system in Kenya. *Knowledge Management for Development Journal* 7: 84-108. doi: 10.1080/19474199.2011.593859

Kilelu, W. Catherine 2014. How Dynamics of Learning are Linked to Innovation Support Services: Insights from a Smallholder Commercialization Project in Kenya. *The Journal of Agricultural Education and Extension* 20: 213-232. doi: 10.1080/1389224X.2013.823876

Kiptot, Evelyne and Steven Franzel 2015. Farmer-to-farmer extension: opportunities for enhancing performance of volunteer farmer trainers in Kenya. *Development in Practice* 25: 503-517. doi: 10.1080/09614524.2015.1029438

Linguli, Godfrey Mutuma and G Namusonge 2015. Entrepreneurial factors influencing performance of youth run Agro-based enterprises in Ngoliba Ward, Kiambu County, Kenya. *Strategic Journal of Business & Change Management* 2: 1459-1482.

Lukuyu, B., F. Place, S. Franzel and E. Kiptot 2012. Disseminating Improved Practices: Are Volunteer Farmer Trainers Effective? *The Journal of Agricultural Education and Extension* 18: 525-540. doi: 10.1080/1389224X.2012.707066

Ochieng, Cosmas Milton Obote 2007. Revitalising African agriculture through innovative business models and organisational arrangements: promising developments in the traditional crops sector. *The Journal of Modern African Studies* 45: 143-169. doi: 10.1017/S0022278X0600231X

Omedo, B. B., M. J. Gowland and O. Nicholas 2016. Changes in agri-business outcomes among the dairy beneficiaries of contracted extension service delivery model in Kenya. *J. Agric. Ext. Journal of Agricultural Extension* 20: 53-65.

Poulton, Colin, Andrew Dorward and Jonathan Kydd 2010. The Future of Small Farms: New Directions for Services, Institutions, and Intermediation. *World Development* 38: 1413-1428. doi: <https://doi.org/10.1016/j.worlddev.2009.06.009>

Ragasa, Catherine, John Ulimwengu, Josee Randriamamonjy and Thaddee Badibanga 2016. Factors Affecting Performance of Agricultural Extension: Evidence from Democratic Republic of Congo. *The Journal of Agricultural Education and Extension* 22:

113-143. doi: 10.1080/1389224X.2015.1026363

Rao, E.J.O, N Mtimet, E Twine, I Baltenweck and A Omoro 2016. Farmers' preference for bundled input-output markets and implications for adapted dairy hubs in Tanzania – a choice experiment. . In Farmers' preference for bundled input-output markets and implications for adapted dairy hubs in Tanzania – a choice experiment. , 5th International Conference of the African Association of Agricultural Economists, September 23-26, 2016, . Addis Ababa, Ethiopia.

Rivera, William M and V Rasheed Sulaiman 2009. Extension: object of reform, engine for innovation. Outlook on agriculture 38: 267-273.

SNV 2017. 2016 KMDP Progress Report for EKN: Smallholder Dairy Value Chain Progress Report (detailed). In 2016 KMDP Progress Report for EKN: Smallholder Dairy Value Chain Progress Report (detailed).

SNV 2013. Evaluation of the SNV Core Subsidy Funded Dairy Program Kenya-Evaluation Report. Evaluation done by Social Impact Consulting In Evaluation of the SNV Core Subsidy Funded Dairy Program Kenya-Evaluation Report. Evaluation done by Social Impact Consulting

SPEN website <http://spenkenya.com/index.php/using-joomla/extensions/components/content-component/article-category-list/8-welcome-to-spenkenya>.

In <http://spenkenya.com/index.php/using-joomla/extensions/components/content-component/article-category-list/8-welcome-to-spenkenya>.

UNECA 2009. Developing African agriculture through regional value chains. In Developing African agriculture through regional value chains. Addis Ababa: United Nations Economic Commission for Africa.

van der lee. J, B.O. Bebe and S.J. Oosting 2016. Sustainable intensification pathways for dairy farming in Kenya - A case study for PROIntensAfrica. In Sustainable intensification pathways for dairy farming in Kenya - A case study for PROIntensAfrica. Wageningen, Wageningen University and Research. <http://edepot.wur.nl/401333>.