The growth of the Kenyan dairy sector has triggered smallholders’ demand for various external inputs and services in order to meet the increasing demand for more and better quality milk, delivered at low costs and with sustainable practices (van der Lee et al., 2016). As a result, many business opportunities have emerged along the dairy value chain related to extension and advisory services and inputs delivery, attracting entrepreneurs. Increasingly, the youth who are seeking to venture into various agri-businesses either individually or as groups are pursuing these opportunities (Kilelu et al., 2016; Linguli and Namusonge, 2015; MoALF, 2017).

The Service Provider Enterprise (SPE) is an innovative youth-led business model in which young men and women form groups to offer commercial support services to entrepreneurial smallholders and medium scale farmers in the vibrant Kenyan dairy value chain. Figure 1 summarises the main building blocks of the SPE model. The value proposition for SPEs is to offer silage making services to dairy farmers, complimentary with advisory support on feeding and dairy cow management, in order to improve productivity. The model was initiated as a pilot in 2010 with the support of SNV’s core subsidy funded dairy program (SNV, 2013). Interested recruits received short-term practical training on technical aspects of silage making and some areas of dairy cow management.

<table>
<thead>
<tr>
<th>Sector Choice</th>
<th>Skills development</th>
<th>Branding</th>
<th>Evolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Vibrant economic sectors</td>
<td>- Targeted practical skills development</td>
<td>- Group enterprise</td>
<td>- Reskilling</td>
</tr>
<tr>
<td>- Target clients (farmers) willing to pay for services</td>
<td>- Complementary (hands-on) &amp; credible expertise</td>
<td>- Local (next-door) service provider</td>
<td>- New service products</td>
</tr>
</tbody>
</table>

**Figure 1: Building blocks of SPE as a dynamic model (Source: Maina, 2011)**

The pilot started with four SPEs located in Nyandarua, Nyeri and Embu Counties. These four SPEs later formed a limited company – SPEN (Service Provider Enterprise Networks) Ltd. The group in Embu suffered leadership challenges and did not survive past the formation phase. The SPEs are linked to Dairy Farmer Co-operative Societies (DFCS) to provide services to their members and suppliers (Table 1) to help address feed-related challenges.

**3R Kenya Project**

The 3R Kenya (Resilient, Robust, Reliable. — from Aid to Trade) project is a learning initiative supported under the Agriculture and Food and Nutrition Security (FNS) program of the Embassy of the Kingdom of the Netherlands. 3R Kenya seeks to assess evidence and lessons from FNS and other related programmes that support competitive, market-led models in spurring agricultural development. It focuses on the aquaculture, dairy and horticulture sectors. 3R Kenya is executed at a time when Dutch government’s bilateral relations in Kenya are transitioning from a focus on Aid to Trade to enhance the development of agri-food sectors. Through evidence generation and stakeholder dialogue, 3R seeks to contribute to an understanding of effective conditions for sustainable inclusive trade for transforming resilient, robust and reliable agri food sectors.

**3Rs:**

**Resilient:** dynamic and adaptive capacities that enable agents and systems to adequately respond to changing circumstances

**Robust:** systematic interactions between agents that enable them to adjust to uncertainties within the boundaries of their initial configuration

**Reliable:** the ability of a system or component to perform its functions under changing conditions for a specified period of time, to create opportunities for (inter)national trade.

**ADIAS Project**

The Assessing and supporting Dairy Input & Advisory Service Systems (ADIAS) project investigates the changing market linkages of commercializing dairy farmers in Ethiopia and Kenya.
Since 2012, the SPE model has been scaled up through SNV’s Kenya Market-led Dairy Program (KMDP) Phases I and II. This has resulted in formation of 29 SPEs spread across six Counties: 21 in Meru, 3 in Nyandarua; 2 in Baringo and 1 each in Nyeri; Nakuru and Uasin Gishu.

EXPLORING THE PERFORMANCE OF SPEs

This brief presents a study carried out by the 3R in collaboration with ADIAS project to assess the performance of SPEs, in order to understand the extent to which the model offers business options for youth in agriculture. This assessment addresses technical (i.e. soundness, quality and effectiveness of service delivery) and entrepreneurial performance (i.e. management, marketing and income generation). Eight SPEs were purposively selected for the study (see table 1). Data was collected using focus group discussions (FGD) with sampled farmers and structured interviews with SPE representatives and managers of DFCSs and the umbrella Meru Central Dairy Cooperative Union (MDU).

### TABLE 1: Details of DFCS linked to selected SPEs in this study

<table>
<thead>
<tr>
<th>County</th>
<th>SPE</th>
<th>Related DFCS</th>
<th>Group name &amp; active members</th>
<th>Active members in 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baringo</td>
<td>Bokimu</td>
<td>3 Numberes</td>
<td></td>
<td>1093</td>
</tr>
<tr>
<td></td>
<td>IDM</td>
<td>4 Kiplombe Farmers</td>
<td></td>
<td>1500</td>
</tr>
<tr>
<td>Meru</td>
<td>Drip</td>
<td>6 Nkune</td>
<td></td>
<td>1270</td>
</tr>
<tr>
<td></td>
<td>Bidii</td>
<td>4 Mbwinjeru Ariithi</td>
<td></td>
<td>340</td>
</tr>
<tr>
<td></td>
<td>DASPE</td>
<td>5 Naari</td>
<td></td>
<td>544</td>
</tr>
<tr>
<td>Nyandarua</td>
<td>Intertech</td>
<td>3 Nyla</td>
<td></td>
<td>8500</td>
</tr>
<tr>
<td></td>
<td>Ngorika</td>
<td>4 New Ngorika</td>
<td></td>
<td>900</td>
</tr>
<tr>
<td>Nyeri</td>
<td>Unique</td>
<td>3 Kiunyu</td>
<td></td>
<td>80</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>14227</td>
</tr>
</tbody>
</table>

Characterization of selected SPEs

As shown in Figure 2, the age of the sampled SPE members ranged from 18 to 60, with the majority (53%) falling in the youth bracket (18 - 35 years). Majority (59%) had attained a secondary school education and about 38% had continued with post- secondary training. It was also noted that 94% of the active SPEs members were male.

Types of services offered

Silage making was the initial value proposition for establishing SPEs. Most farmers in the study regions had not used silage before the SPEs and relied on traditional feeding practices. As Figure 3 shows, most SPEs also offered a range of other services. This includes fodder establishment, farmer training, inputs supply (e.g. forage seeds/cuttings; silage making material) and advisory services (e.g. on feed formulation and rations, calf rearing, record keeping). A few SPEs offered new and more specialized services such as biogas installation, design and construction of zero-grazing units and soil sampling.

Assessing technical performance of SPEs

The study shows that in general SPE services have contributed positively to the dairy supply chain where they are operational. The eight SPEs made an estimated 11,268 tonnes of silage in 2016. As Figure 4 shows, two SPEs in Meru, i.e. Bidii and Drip SPEs, made the highest volumes of silage of about 3100 and 2900 tonnes respectively in 2016, most of which was maize silage. The SPEN groups, Unique and Intertech, made between 1500 and 1700 tonnes of silage. On average, farmers
conserved between 0.3 and 66.2 tonnes of silage annually. Generally, farmers were satisfied with the SPEs because they made quality silage. Other benefits of SPE services that farmers mentioned include improved dairy cow management; better animal health and weight gain, reduced costs of buying feed and time saved from collecting feed outside the homestead. Construction of zero-grazing units was noted to reduce wastage of manure.

Furthermore, the volume of milk was within their set targeted range (Figure 5). This indicated that SPE services had a positive effect along the dairy value chain.

![Figure 4: Silage production in 2016](image)

**Estimated silage production of SPEs in 2016**
- Maize
- Napier
- Oats
- Sorghum

**Effects of the SPE services on-farm and the supply chain**

1. **Farm level outcomes - more milk, more money**

Farmers who sought SPE services reported some increase in productivity. In Meru, where most silage was made productivity was up to about 9.5 l/cow/day for Nkueke DFCS and 8 l/cow/day for Mbwinjeru Arithi DFCS. This is in comparison with the average productivity of 5/cow/day in dairy producing regions in the county (MoALF, 2010). Farmers also reported reduced fluctuations in their milk volumes during the dry season. Farmers noted that silage contributed to this nominal increase. More effort is needed to enable higher productivity increases.

Farmers in these two DFCSs also generated a higher average daily income from milk sales to the DFCSs as compared to those in other DFCSs (i.e. KES 1779 and KES 804 respectively). Farmers from Mumberes DFCS received the lowest milk income of about KES 263.50 per day and was among the areas where the SPE made the lowest volume of silage. However, more analysis is needed to understand actual gross-margins.

2. **Effects of SPE support on the supply chain**

Increased production at farm level resulted in an increase in volume of milk collected by DFCSs. Where more silage was produced, e.g. Meru DFCSs, the managers also indicated that their daily milk collection was stabilising in all seasons.

Secondary data of the DFCS annual milk intake showed an overall increase in volumes collected across all DFCSs from 2012-2015 except Kiplombe DFCS. MDCU also observed that there was a difference in the volume of milk collected from DFCSs that worked with SPEs. Whilst there may be many factors that contributed to more milk intake including increased membership and supplier loyalty, DFCS representatives pointed to the fact that SPE services contributed positively to the increase in their milk collection.

**Challenges limiting SPE technical performance**

- Equipment problems (breakages, limited access and poor quality, e.g. for compacting)
- Poor quality of silage making material (e.g. polythene).
- Poor quality/inaccessible fodder seeds for forage establishment
- Farmers uncovering silage before it is ready
- Drought hence fewer silage making opportunities.

**Assessing the entrepreneurial performance of SPEs**

1. **Client-reach and business operation**

SPEs have been able to reach out to many farmers, although most of the interactions seemed to be for promotional and demonstration purpose. The sampled SPEs provided silage making services to about 950 farmers in 2016. This is equivalent to about 7 % of total active DFCS farmers, the main client base for the SPEs. This shows that SPEs have not saturated their market; pointing to a need to build their capacity to market their services.

In order to grow their client base, the SPEs marketed their services through various channels. These approaches included farming fairs and dairy field days (exhibitions) organized by dairy cooperatives and processors. However, SPEs mostly acquired new assignments through word-of-mouth referral. Most SPE members offered services individually rather than as...
a group, although they use the SPE name to acquire assignments. The individual option was preferred because of efficiency (time-saving on decision making) and cost reduction for clients in terms of transportation and labour charges, especially in cases of small silage quantities.

2. Investments of SPEs
Some of the SPEs have made various necessary investments in enhancing their business. These include the purchase of new and efficient silage chopping machinery. Bidi, Unique and Intertech invested in choppers worth between Ksh. 100000 and 165000 and noted that this resulted in more silage making opportunities. Others indicated that high cost of machinery prevented them from investing.

3. Income generation of SPEs
SPE silage making fees ranged between KES 250 and KES 1,000 per tonne, depending on whether the SPEs paid for labour and provided choppers. DASPE charged a daily rate of KES 2,000 irrespective of the amount of silage made. Fodder establishment and baling was charged per acre. Farmer training was mostly for promotional purposes without charge, or paid through a third party such as SNV project support. Silage making services made up the larger portion of SPEs’ income. The results show that Unique members made the highest monthly income from silage services averaging about KES 46,500 in 2016. DRIP made the lowest monthly income of about KES 5,300 in 2016. However, in this study, volumes of silage made did not always correlate positively to income, taking other factors such as service charges and frequency of service delivery into account. Beyond silage making, another revenue stream for SPEs was the sale of inputs, mainly fodder seeds. In 2016, Intertech SPE made the highest annual income (KES 176,500) as a group from sales of about 552 Kilograms of various types of fodder seeds. This SPE established strategic networks with multiple fodder seeds suppliers and multipliers, and also has a sizeable customer base of repeat customers.

Business challenges limiting SPE performance
- The main business challenge of SPEs is farmer refusal/delay in payment and sometimes limited financial capacity of farmers to pay for services
- Difficulty in determining appropriate costing or pricing of services, to ensure fair and adequate remuneration from the services
- Slow farmer adoption of promoted technologies and practices
- Poor planning by farmers when requesting for services resulting in waste of time and other resources
- Costs of promoting and marketing services (e.g. doing many free demonstrations)
- Limited financing to acquire appropriate and quality machinery
- High work load and unavailability of casual labour, especially during peak (silage making) season
- After practical exposure, farmers start making silage by themselves; this results in fewer repeat customers for SPEs.

DISCUSSION AND CONCLUSION
1. Enabling entry of youth into agribusiness
The study shows that the SPE model offers agri-business opportunity in service provision that is attractive to youth interested in dairy as a high potential sector with growing demand for services and inputs. SNV support to the SPEs focused on vocational and practical training. Such vocational training is argued to be important to enable fast entry of youth into agri-business (FAO et al., 2014).

2. Complementarity and viability of the SPE model
The SPE model creates opportunities for rural youth as locally accessible service providers that can disseminate new technologies and practices and provide advisory support in at minimum cost. This approach confirms Anderson and Feder’s (2003) argument that there is potential for efficiency gains in agricultural extension and advisory services that comes from locally decentralized delivery systems with an incentive structure that is largely based on private provision. This is in line with policy support by the Kenyan government of a pluralistic extension and advisory system that is not only public sector driven but also through market-led approaches (Muyanga and Jayne, 2008; Kilelu et al., 2011; Bebe et al., 2016).

SPEs offer hand-on services to farmers that are complementary to extension support by public and other actors operational in the same locality. SPEs require a strong value proposition to remain in business which determines the viability of the model. An important contributor to viability relates to their ability to bundle various services offered to farmers. But what remains to be seen is whether these services stimulate a sizeable market demand that will enable the SPEs to generate decent incomes over time (Poulton et al. 2010).

3. SPE propagation and dynamics of entrepreneurship
Training and recruiting new members is a pathway to expand the SPE businesses and reach more clients. The results show that the potential client base for the SPEs is largely untapped. This raises the issue of how to propagate and scale the model. Understanding the “scaling readiness” (Sartas et al., 2017) of this innovative service delivery model in light of the challenges that limit SPE performance is key.

The results show that SPEs’ inadequate entrepreneurial skills makes marketing their services and growing their business a
4. **Performance of SPEs as an agribusiness**

Analysis of the technical performance of SPEs point indicate that they contribute to some positive outcomes at farm and supply chain levels in some regions. At farm level, the contribution of SPEs is in increasing farmers' knowledge and skills and improving feeding and general dairy cow management. This is through contracting (silage making/fodder establishment) and knowledge (advisory) services. These resulted in positive outcomes, including some improvement in productivity and in closing the seasonal fluctuation gap, which cascade to other supply chain actors. Most SPEs have not reached full potential in entrepreneurial performance due to seasonality of the business and low market penetration. There is a need to understand how best to stimulate and sustain demand for SPE services, which might require identifying the public and private dimensions of these services.

5. **SPEs as an inclusive model**

By design, the SPE model aims to attract youth to opportunities in agribusiness in other nodes of the value chain beyond production. Involving the youth through such agribusiness ventures can be seen as part of an inclusive development approach promoted in sub-Saharan African countries (Filmer, D. and Fox, L., 2014). Providing rural youth with appropriate skills and complementary support is increasingly promoted through policy and development programmes as a strategy for creating employment and livelihoods for youth in agriculture (AGRA, 2015; MoALF, 2017).

However, the findings show that few (youth) women joined, and even fewer (6%) remained active after recruitment in SPEs. This points to the need for a gendered analysis and approach to the issue of youth and agriculture, paying attention to how best to engage women to enable equitable participation and opportunities in agri-enterprises (Filmer and Fox, 2014; Heinrich Böll Stiftung, 2015).

6. **Evolution of the SPE model and some lessons learned**

The underpinning framework that informed SPE model design assumed that the SPEs offer services to producers in a dynamic agricultural sector with a growing demand for inputs and service delivery. Bundling of services over time continually offers value to farmers who demand certain services but who, over time, may enhance their own capacities to undertake some of the services on their own. However, the evolution is not only about increasing the number of services offered, but also ensuring that services are oriented towards offering a “best fit”, to meet farmers’ needs to optimize their production and enterprise results (Birner et al., 2009).

**Recommendations for policy makers and development agencies**

- **Support broader training** beyond silage making at the initial training and recruitment of SPEs to include entrepreneurial skills.
- **Public investment is needed**: Including start-up capital and facilitation of skill acquisition and SPEs’ recruitment.
- **Inclusiveness**: Factoring in the needs of women and youth during recruitment to reduce the high dropout rate.

**Recommendations for DFCSs**

- **Facilitate SPE creation and strengthen business partnerships**: DFCS - SPE partnerships can be mutually beneficial through the check-off system by linking farmers to SPEs to enhance productivity.
- **Inclusiveness**: DFCSs are uniquely positioned to help make the model more gender-and youth-inclusive
- **Business model sustainability**: To increase the sustainability of the SPE model, there is need to consider the pros and cons of having SPEs as independent businesses versus having the SPEs anchored to the support of DFCSs
- **Business coaching**: A support structure; including mentorship/coaching, perfecting of technical and entrepreneurial skills, moral support and marketing support

**Recommendations for SPEs and private service providers**

- **Broadening services offer**: For SPEs to become viable businesses with a stable source of income, they need to complement silage services with a good mix of services that are in demand from farmers.
- **Improving skills**: SPEs need to improve and broaden their skills, in terms of both technical/vocational skills and entrepreneurial skills (including the skill to define the need for capital and to apply for it).
- **Seeking out business coaching**: SPEs need to proactively seek support in developing their businesses. E.g. mentorship/coaching and other support as well as enhancing technical and entrepreneurial skills. Marketing support will be important so SPEs can commercialize more services, including those offered for free or at minimal charge.
References

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