MUSIKA

Making Agricultural Markets Work for Zambia

An assessment of the effect of improved market access on rural smallholder farmers: A case study of a livestock intervention

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FOREWORD

This report was generated to serve as a reference document for Musika and its implementing partners. Musika Development Initiatives Zambia Ltd (Musika) is a non-profit company that works to stimulate private sector investments in rural and agricultural markets. It achieves this by helping businesses to develop mutually beneficial and transparent commercial relationships with smallholders that integrate the provision of information and technology adoption, and provide confidence and long term incentives for smallholders to invest in their farming business. It provides its corporate clients with high quality, commercially focused technical advice, business model support and where relevant, smart subsidies to bring down some of the initial risks in doing business with the smallholder market. Musika also supports innovative market-based solutions to environmental issues and strives to ensure women are key participants[1] in improved agricultural markets. Musika acknowledges and appreciates the financial support from the Swedish Embassy in Lusaka.

[1] Participant/participating household in this report will mean a household which was accessing improved veterinary products and/or services from a Musika supported livestock intervention through the various access points established in farming communities.

EXECUTIVE SUMMARY

Musika facilitates the creation of mutually beneficial market linkages that support improved access to markets, by rural poor smallholder farmers, and also stimulates higher levels of farmer investment in production and productivity. There is evidence of improved production, productivity and income among rural smallholder farmers accessing improved markets, that is why this study sought to find out the indirect effects of Musika's work or interventions not only on the targeted beneficiaries but the community as a whole. It is hypothesised that households, with improved income, are capable of investing more in their production by engaging additional inputs and labour, starting up small businesses (SMEs), increasing their household expenditure on food, health and education. Because of this increased demand for various products and services, the local community tends to benefit as some will be employed, businesses will thrive and this is all due to the increased financial capacity of the household.

Musika conducted a survey in Southern Province to determine the spin-off effects of improved market access. It focused on an intervention providing livestock services such as dipping, spraying, extension services and off-take opportunities to local cattle farmers. The study captured a total of 116 farmers from both intervention and non-intervention areas but the majority of the farmers interviewed (105 farmers) were from the intervention area. The 2016/17 agricultural season was used as the reference period. The study had particularly looked at the benefits, challenges and overall community welfare[2] that could be attributed to the improved market access by farmers. A summary of the key findings is as follows:

- ♣ The study found that 32% of participant households were engaged in agricultural diversification activities: reared livestock and grew grain crops.
- ♣ There was a general decrease, among participant farmers, in the amount of time they spent on agricultural activities such as tilling (86%), veterinary access point (98%) and spraying livestock (100%).
- ♣ 26% of the participant farmers engaged additional labour and the majority employed were women[3] (89%) followed by youths (7%) and men[4] (4%).

[2] Welfare here refers to the wellbeing of individuals or groups of individuals in relation to their income earnings, availability of food, health, housing, education and general security.
[3] Women refer to females older than 35 years
[4] Men refers to males older than 35 years old

- ♣ Behavioural change on financial management practices was observed in increased investment in production (100%), purchasing assets (100%), general savings (96%) and health and education (93%).
- ♣ About 20% of the participant households used income earned due to the intervention to invest in on-farm and off-farm activities. About 48% of these used their additional income to enhance their livestock production enterprises, 14% used it to produce cash crops while 38% invested in starting up SME's such as grocery stores.

- ♣ Participant households observed a general increase in the communities' social and economic status. There were new firms operating in the agricultural space in these communities and offering services similar to the Musika supported intervention as observed by 51% of the households. There was also an observed increase in the number of shops (87%), agricultural (79%) and non-agricultural (83%) traders. Time spent on recreational activities (89%), religious activities (90%), civic and other activities (90%) was observed to have increased and this was attributed to the intervention. Over and above, general community welfare and wellbeing increased due to the intervention as observed by 96% of the participating households.
- ♣ Non-participant households also observed an increase in the social and economic status of the communities hosting these interventions. About 73% of the non-participant households cited an increase in their financial status which they solely attributed to the intervention. There was also an observed increase in communities' off-farm employment (73%), number of agricultural traders (64%) and non-agricultural traders (55%).

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ABBREVIATIONS AND ACRONYMS

CSO	-	Central Statistical Office
FAO	-	Food and Agriculture Organisation
HH	-	Household
ILRI	-	International Livestock Research Institute
Musika	-	Musika Development Initiatives Ltd
ZMW	-	Zambian Kwacha
Km	-	Kilometre
SDG	-	Sustainable Development Goal
SME	-	Small and Medium-sized Enterprise
UN	-	United Nations
USAID	-	United States Agency for International Development

1. INTRODUCTION

1.1 Background

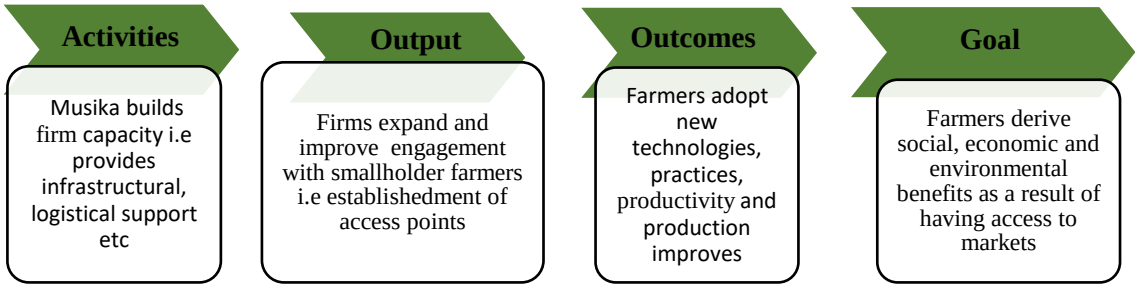
The majority of the Zambian population (over 58%) is isolated in rural areas surviving on subsistence agricultural activities (CSO, 2016). However, the prospects of eradicating hunger and poverty in areas where the majority are mainly engaged in subsistence agriculture is overshadowed by low productivity (FAO, 2017). Given the predominant role of agriculture in rural households' livelihoods, any strategy targeting at reducing poverty and hunger must centre on rapid growth in the agricultural sector.

There is evidence that improved market access by rural smallholder farmers leads to improvement in their livelihoods. Studies have shown that farmers who have access to improved markets have realised both monetary and non-monetary benefits. (Musika, 2017) One of the key benefits is improved income, which may be channelled towards purchase of agricultural inputs and productive assets, health and education among other things. Many farmers observe an increase in their knowledge base, and in the number of market opportunities to which they get exposed. Therefore, market access is important for the Zambian agriculture sector as it can be a driver of poverty eradication among the rural poor smallholder farmers.

According to Loison (2015), better functioning markets and improved infrastructure in rural areas leads to rural households diversifying their livelihood to include non-farm activities as a way to increase their incomes. In theory, with improved incomes, farmers can have the capacity not only to re-invest in their production and employ additional labour, but to engage much more in the purchase of food and non-food goods within the community thus having a 'spin-off' or multiplier effect within the local community. In the same light, Musika is cognizant of the fact that there are 'Latent Functions' that its various interventions perform which impact on the social and economic welfare among rural households.

While Musika had successfully tested its hypothesis that improved market access leads to improved production, productivity and incomes at the farm level, it has never before tested the parallel hypothesis that improved production, productivity and incomes at the farm level leads, in turn, to socio-economic improvements in the wider community, see figure 1.1. In other words, Musika has never examined the 'indirect' effect of its interventions before.

Figure 1. 1: Musika's theory of change



It was against this background that Musika sought to conduct a study to assess the effects of improved market access on the social and economic welfare of rural households - both those directly engaged with improved markets and those living in the rural communities alongside those households. To demonstrate the effects of markets on the social and economic welfare of smallholder farmers and the surrounding communities, the study targeted one Musika-supported livestock intervention, based on its potential to generate community spill over effects. The intervention was involved in providing livestock veterinary and output market services in Zimba district of Southern Province. In addition, it accorded the assessment different perspectives as the firm offered different services. The main objectives of this study were;

1. Determine whether access to improved markets had led to a change in rural households' engagement in off-farm employment for both direct and indirect intervention participants.
2. Determine whether access to improved markets had led to a change in rural households' annual disposable income[5] and if so, what it was spent on.
3. Assess as to whether access to improved markets led to a change in labour requirements of rural households regarding field preparations, planting, weeding, harvesting, etc. And if so, determine what made up the change in labour requirements (e.g. youth, women, animal power, hired mechanisation etc.)
4. Ascertain whether access to improved markets had led to a change in rural households' investment of resources in social (education, health etc.) and/or economic activities (new businesses, etc.)
5. Ascertain whether access to improved markets by smallholder farmers had led to indicative changes in the economy of the community (more shops, more non-agricultural traders, more money circulating, etc)

[5] Annual disposable income in this case means any money that remained to be/was spent on household expenses, health services, education services, agricultural and non-agricultural assets, and general savings.

6. Assess whether access to improved markets had led to a change in the range of income generating activities that farmers engaged in.

1.2 Methodology

The study adopted a quasi-experimental design in estimating the spin-off effects of the livestock intervention on the rural farming households in Zimba district. The participating region was purposively selected due to the region of operation of the intervention implementer. The survey had also captured non-intervention participants within communities where the interventions were being implemented. The total sample size comprised of 116 participants purposively selected from Zimba district. The survey covered the 2016/17 agricultural farming season. To collect the quantitative and qualitative data, structured interviews were administered to households using mobile phone-based questionnaires. The household was used as the main unit of analysis.

FINDINGS AND DISCUSSIONS

2.0 Demographics

Table 2.1 highlights the demographic characteristics of the farming households interviewed in Zimba district. The total number of households interviewed was 116 with the majority (99%) being male headed. The average household size and age of the household head were 8 and 41 years, respectively. About 98% of these households indicated that their household head was married whereas the majority of these household heads managed to attend primary (54%) and secondary (43%) school. On average, the distance to points of access to veterinary products and services was 5.9 km from the farmers' homes. Farmers from the intervention area however covered 4.5km's less distance than those from the non-intervention area and this is because the Musika supported intervention had established various points of access near the farmers' homesteads.

Table 2. 1: Demographic characteristics

Zimba District			
Variable	**Total/Average**	**Non-intervention area**	**Intervention Area**
Number of Households	116	11	105
Household size	8	12	8
Age of HH (Years)	41	42	41
Gender of HH			
Male	99%	100%	98%
Female	1%	0%	2%
Marital status of HH			
Divorced	0%	0%	1%
Married	98%	100%	96%
Widowed	2%	0%	3%
Education level of HH			
None	2%	0%	4%
Primary	54%	55%	52%
Secondary	43%	45%	41%
Tertiary	1%	0%	3%
Distance to access point (km)	5.9	8.1	3.6

Source: Spin-off survey 2018

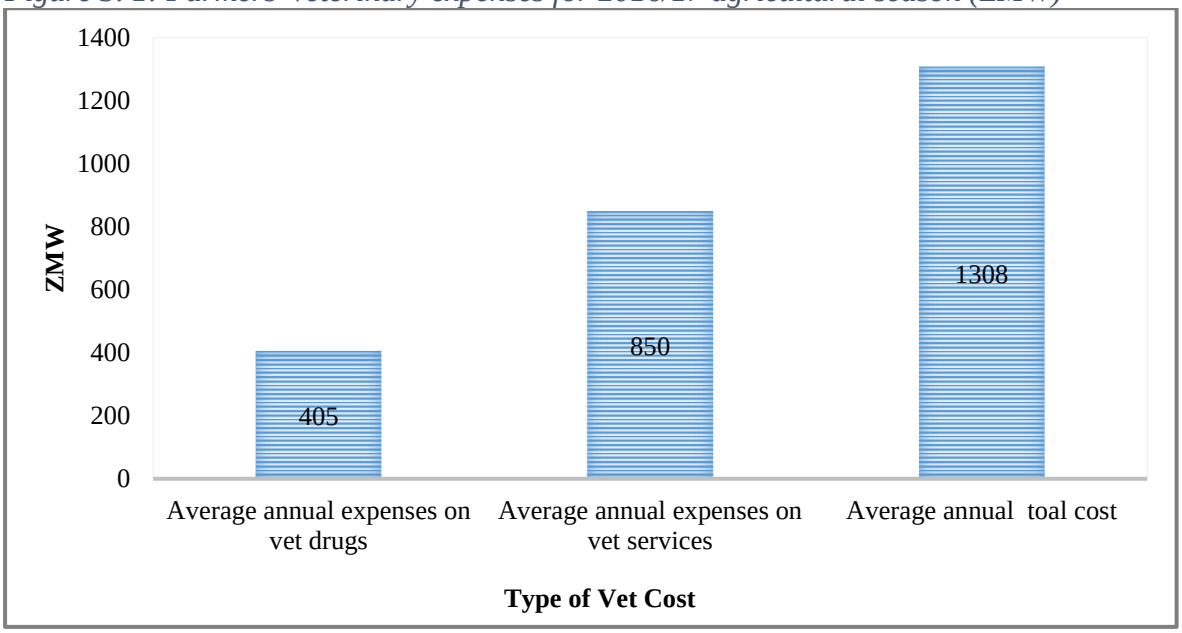
3.0 IMPACT ON FARMERS ENGAGED IN IMPROVED MARKETS

3.1 Veterinary drugs and Services

All farmers interviewed had accessed some form of veterinary service from the Musika supported intervention during the 2016/17 agricultural season. The most common services accessed as highlighted by the farmers were dipping, spraying, vaccination and deworming among others. Figure 3.1 highlights the average costs that the farmers incurred on veterinary drugs and services. The average annual expenditure on veterinary drugs per household was

about ZMW 405 while the average annual expenses of veterinary services[6] per household was more than double the expenditure on drugs at about ZMW 850. The study also revealed that this was the case because only 65% of the livestock farmers interviewed had purchased some drugs during the 2016/17 farming season. The average annual expenses on veterinary drugs and services were shown to be about ZMW 1, 308 per household. The willingness by farmers to spend money on these products and services showed that they appreciated and benefited from the improved market access.

Figure 3. 1: Farmers' veterinary expenses for 2016/17 agricultural season (ZMW)



Source: Spin-off survey 2018

3.2 Cattle Sales Revenue

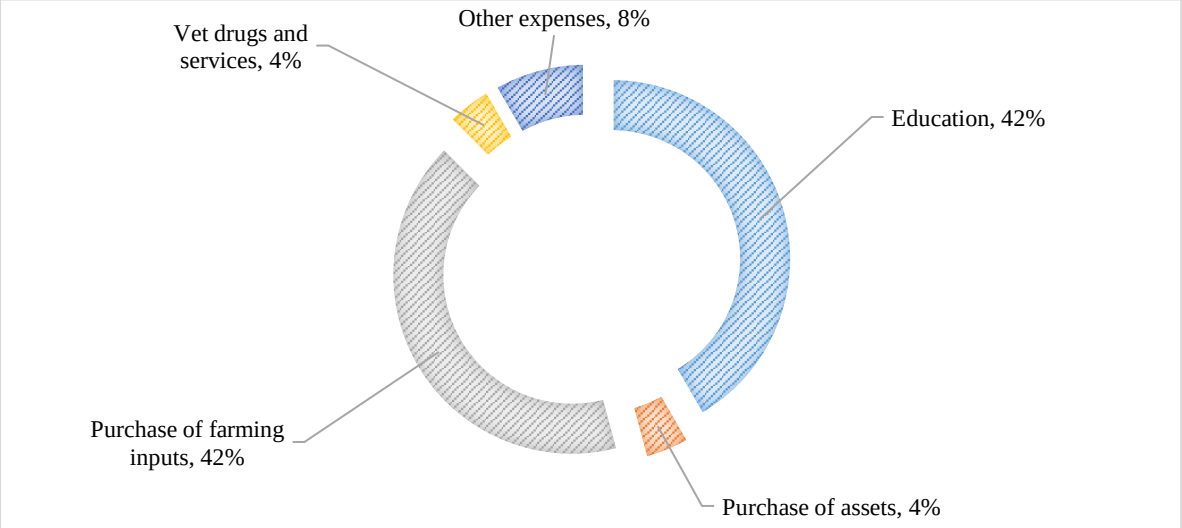
The farming households interviewed reared and sold cattle for a living and so the production process was just as important as the revenue obtained from the sale of cattle. The study revealed that during the 2016/17 agricultural season, 49% of the farming households raised an overall revenue of ZMW 481, 357 from cattle sales. The average annual income for each household that sold cattle was found to be over ZMW 9, 400.

[6] Veterinary services included dipping, vaccination, deworming, dehorning and extension services among others.

3.3 Use of Cattle Sales Revenue

The 23% of the farming households that sold cattle to the Musika supported firm highlighted what they mainly spent their income on. Figure 3.2 shows that the majority of households spent this income on education (42%), purchasing of farming inputs (42%) and other expenses (8%) which comprised of livestock purchases and construction projects. This is actually in line with the Sustainable Development Goal (SDG) 4 which advocates for quality education for all from primary to tertiary level (United Nations, 2015). With more money being channelled towards education, literacy levels are likely to increase in households and the community at large, likely leading to increased opportunities of employment and development.

Figure 3. 2: Main uses of cattle sales revenue



Source: Spin-off survey 2018

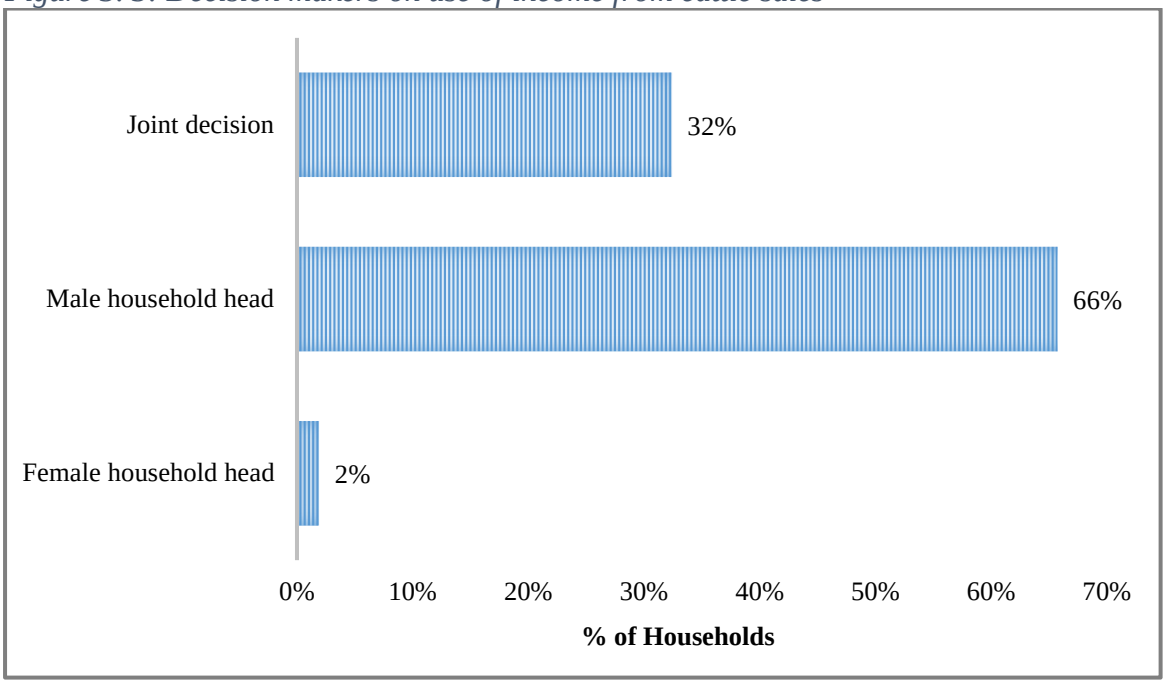
3.4 Decision making on use of income from cattle sales

Figure 3.3 shows the main decision makers on how income from livestock sales was used. The majority of households (66%) highlighted that cattle income decisions were made by men and this is consistent with the results in the demographics table 2.1 above showing that the majority of households were male headed (99%). However, there was a strong indication of women having some level of influence in making decisions on use of income earned as 32% of the households used the joint decision[7] making model. Decision making on livestock related revenue among females was discovered to be very low (2%) and this could be because livestock production in Southern Province is predominant among males as it is traditionally seen to be a

[7] Joint decisions refers to decisions made by a household head with the spouse or other members of the household.

man's job or business. These findings are in line with what the *International Livestock Research Institute (ILRI)* (2013) found. The ILRI found that men had more control over livestock income but only in cases where women were unable to sale the livestock themselves due to their inability to transport livestock to markets where buyers were found. The ILRI further highlighted that women's' roles diminished as formal markets expanded but suggested the need for strategies that would ensure women participation in these markets.

Figure 3. 3: Decision makers on use of income from cattle sales

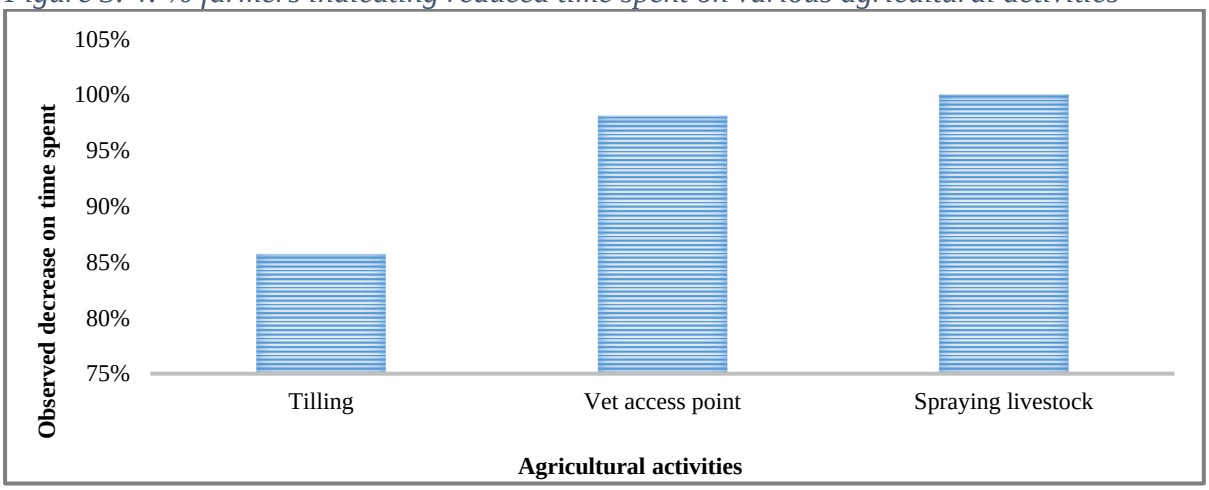


Source: Spin-off survey 2018

3.5 Production efficiency

Figure 3.4 shows the proportion of households that observed a decrease in the amount of time spent on various agricultural activities. Generally, all participant farmers observed a decrease in the amount of time spent on tilling their land (86%), moving to veterinary access points (98%) and spraying livestock (100%). This may imply that farmers are spending less time on tilling due to assured availability of animals for draught power, bolstered by improved health due to increased veterinary access points near their homes and improved spraying technology compared to use of knapsack sprayer or other traditional methods.

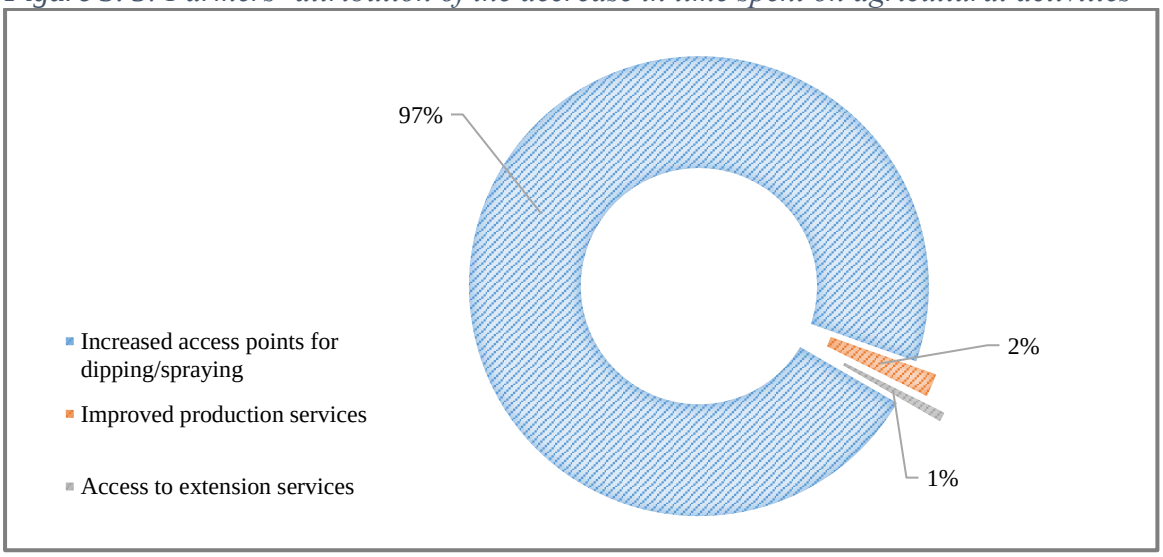
Figure 3. 4: % farmers indicating reduced time spent on various agricultural activities



Source: Spin-off survey 2018

When asked what they thought was mainly responsible for the decrease in time spent on the agricultural activities, the majority of the farming households (97%) cited increased access points for dipping/spraying, this is shown in figure 3.5.

Figure 3. 5: Farmers' attribution of the decrease in time spent on agricultural activities



Source: Spin-off survey 2018

3.6 Diversification

About 32% of the farmers sold grain crops in order to earn some income and they on average earned about ZMW 7, 000 per household during the 2016/17 agricultural season. This is an indication that farmers are diversifying into other enterprises rather than specialising in one, in this case, livestock production. A study by Waha, et al (2018) showed that diversification had a positive effect on food security. With the ever changing rainfall patterns experienced in Zambia in the last 5 years, agricultural diversification cannot be over-emphasized.

About 20% of the farming households actually indicated that they invested part of the earned annually as a result of the intervention into various on-farm and off-farm enterprises. About 62% of these households invested in on-farm activities – livestock (48%) and crop production (14%), while 38% invested in starting up SME's such as grocery stores. This shows that households were diversifying income, a strategy that is very important among farmers especially in the wake of climate risks.

3.7 Positive change in investment choices

Table 3.1 shows the proportion of households that observed an increase in their expenses. All the participant farmers cited having increased the amount of money they saved for production the following season and that spent on purchasing assets. Overall, the majority of the households increased their annual expenses. This is significant as it indicates behavioural change by smallholder rural farmers. They were investing more in their production probably because they had more confidence in their agricultural activities. These households even became more capable and purchased various household assets to improve their livelihoods. It was further highlighted that they attributed this increase in expenses to increased income from cattle trading (42%) and off-farm activities (30%).

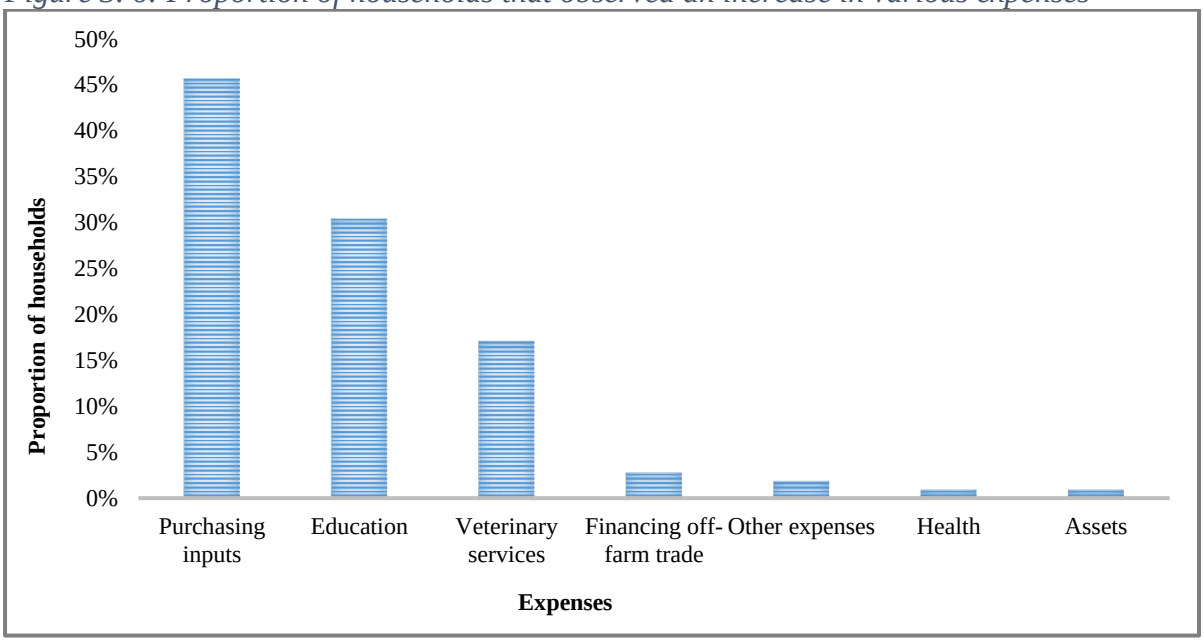
Table 3. 1: Households that observed an increase in their expenses

Type of expense	% proportion of farmers
Money saved for production next season	100%
Money spent on purchasing household assets	100%
General savings	96%
Money spent on health & education	93%

Source: Spin-off survey 2018

The study also revealed that each participating household earned an average income of about ZMW 5, 984 each year solely due to the intervention. Apart from farmers re-investing in their production through purchasing of agricultural inputs (46%), they also spent part of this income on education (30%) and veterinary services (17%). This extra income earned by farmers, which they would not have earned if not for the intervention, and was being used to improve and expand production, educating family members and improving the health of their livestock, is a remedy for development both at household and community level.

Figure 3. 6: Proportion of households that observed an increase in various expenses

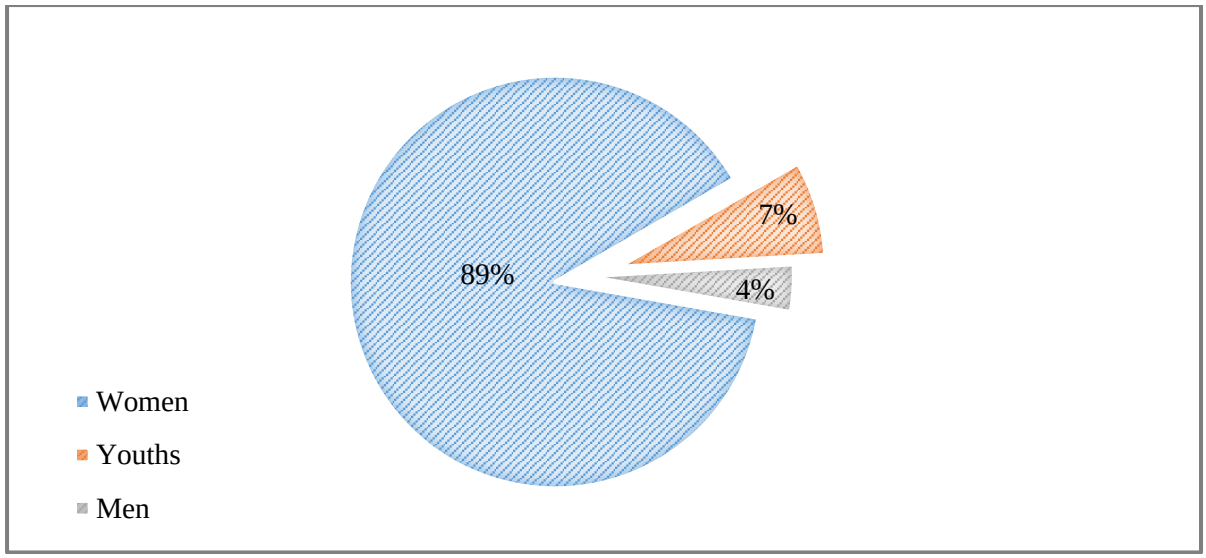


Source: Spin-off survey 2018

3.8 Increased demand for labour by farmers accessing improved markets

About 26% of households from the participants engaged additional labour for their agricultural activities during the 2016/17 farming season. The majority of these households employed women to assist them in their agricultural activities as shown in Figure 3.7. This may mean two things; **1.** Women have access and control over the income earned or **2.** Women offer labour services to earn income on which decisions of use are made by male household heads as is commonly the case in rural areas. If the former is the case, it has been shown by research from many countries around the world that assisting women have access to more income they have control over results in benefits for child nutrition, health and education. Understandably, there may be exceptions but the strategy of empowering women has been proved to improve children's well-being and the family as a whole. (FAO, 2011)

Figure 3. 7: Engagement of off-farm employment

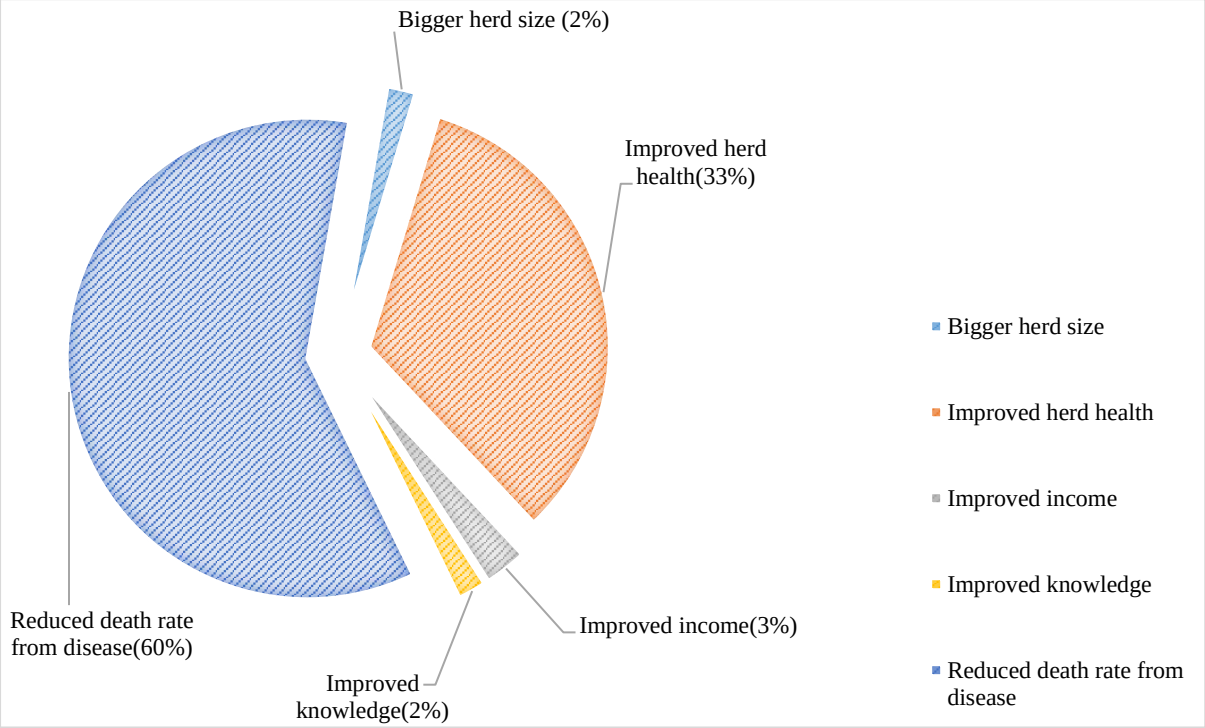


Source: Spin-off survey 2018

3.9 Main Intervention Benefits

Figure 3.8 shows the main benefits of the intervention that farmers highlighted. The study found that the majority of the farmers stated 'reduced death rate from diseases' (60%) as their major benefit from accessing livestock veterinary products and services market, followed by 'improved herd health' (33%). This makes sense as the farmers indicated that they used to experience high mortality rates of cattle before the intervention due to lack of veterinary service providers, and in some areas there were few service providers before the intervention but they provided these services at irregular intervals and high cost. The least highlighted benefits were 'improved knowledge' and 'bigger herd size'. Although the latter was one of the least highlighted benefits, the study showed that the interviewed farmers experienced a cattle population increase, due to the intervention, of 880 animals with an average increase in herd size of about 8 cattle per household. In fact, 99% of the participants had indicated that they experienced an increase in herd size as a result of access to improved markets.

Figure 3. 8: Major intervention benefits



Source: Spin-off survey 2018

4.0 IMPACT ON WIDER COMMUNITY

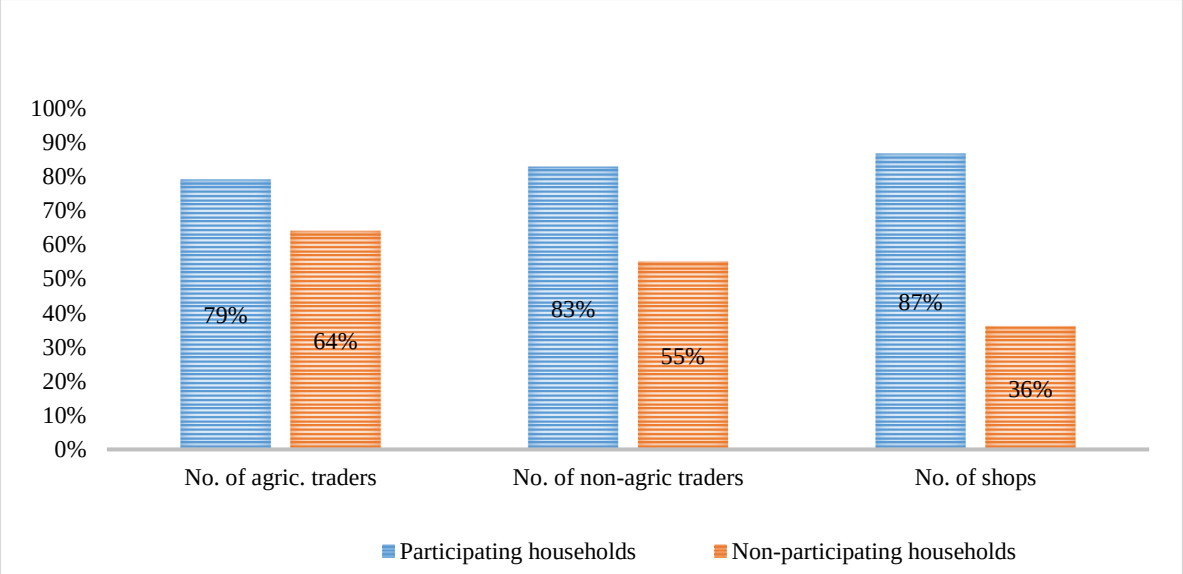
4.1 Improved socio-economic status of the community

Various socio-economic factors were used as indicators of growth and development in these rural communities and from the study findings, there were tremendous improvements in the various aspects of the lives of rural farming households. The study found that the majority of non-participating households observed an increase in their financial status (73%) and off-farm employment opportunities (73%) in the community due to the Musika supported intervention. Overall, there was an observed improvement in the communities' welfare and wellbeing by both participating (96%) and non-participating (91%) households due to the Musika supported intervention. These finding are very significant to achieving the SDG's at national level especially SDG 3 which promotes good health and wellbeing for all ages (United Nations, 2015).

4.2 Spin-off benefits from more money in farming households' pockets

Generally, the majority of all the interviewed households observed an increase in the number of shops, agricultural and non-agricultural traders in their communities apart from the case where the majority (55%) of non-participating households observed no change in the number of shops in their community since the inception of the Musika supported intervention. This is highlighted in figure 4.1. The general increase in trade usually happens when traders see potential profitable demand for various products demanded by the farmers. Farmers can only demand and be willing to pay for products they can afford because of increased income. As a result of stimulated demand, it was observed that more firms offering services similar to the Musika supported intervention had started operating in the agricultural space in these communities as it made business sense for firms to invest in these rural communities.

Figure 4. 1: Households that observed increased socio-economic activities

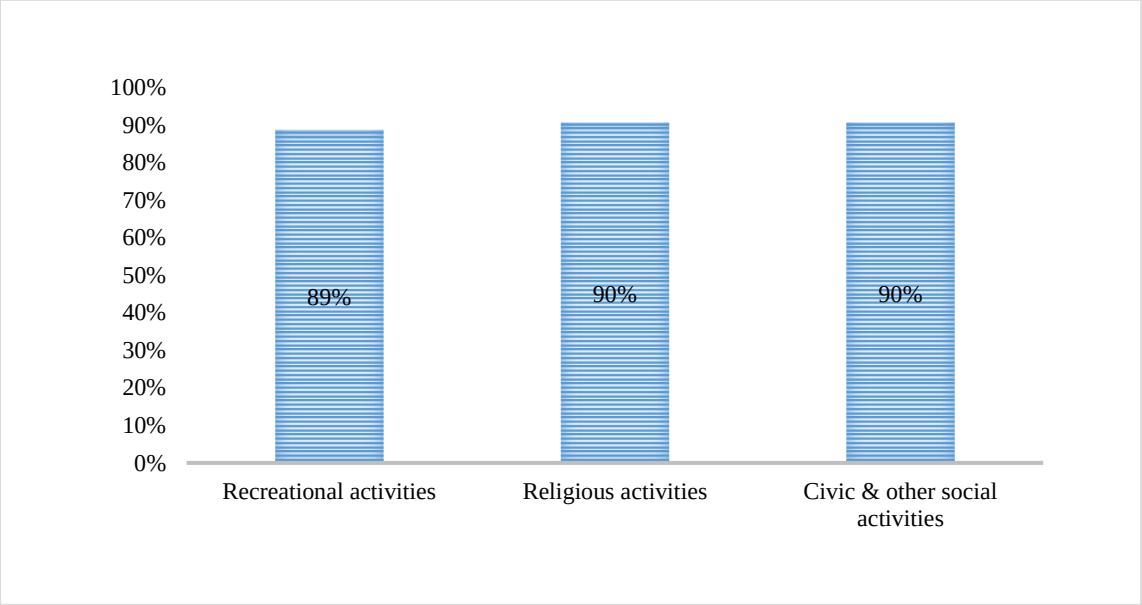


Source: Spin-off survey 2018

4.3 Spin-off benefits from more spare time

All the factors highlighted in figure 4.1 above indicated improved economic activities but there was also improvement on the social aspect. The study showed that participating households had more time than before the intervention to engage in recreational, religious, civic and other activities. The intervention through, for instance, easy access to dip/spray stations left farmers with more time to themselves than before when they would cover long distances to access veterinary products and services. This extra time as shown was used to strengthen community ties by participating in recreational, religious and civic activities. This is shown in Figure 4.2.

Figure 4. 2: Increased time spent on social activities observed by participating households



Source: Spin-off survey 2018

4.4 Non-participants' other benefits

More than half (55%) of the non-participants highlighted other benefits they observed since Musika supported livestock intervention started working with the farmers in providing veterinary products and extensions services. One of the non-participants noticed a boom in their poultry business because the consumption levels of the chickens in their community had gone up, possibly as a result of improved income levels. Another attributed having more clients in his businesses and the majority were either participants in the intervention or employees of the Musika supported livestock intervention. Some cited that they had diversified into growing sunflower, a crop they never used to grow, maize and livestock because the intervention implementer provided them with an output market for these products. One farmer observed that it was now easier to access agricultural inputs due to the Musika supported livestock intervention implementer's efforts to bring the farming inputs closer to the farmers in their communities. Such testimonies indicate a community growing socially and economically.

5. CONCLUSION

This survey sought to determine the spin-off effects or externalities of the Musika supported livestock intervention on the communities it was being implemented in. It specifically sought to identify the changes in the social and economic statuses of the community through indicators such as community welfare, off-farm employment, and investment in health and education among others.

It was discovered that households engaged in diversification as they reared livestock and grew grain crops which they sold to the Musika supported livestock intervention. Some households engaged in new crops like sunflower because the Musika supported livestock intervention also offered to purchase it or process it for them at no fee depending on the households' preference. Households also exhibited a change in investment decision as there was an increase in investment in production, general savings, health and education. Because of extra time and additional income from the intervention, some participating households engaged in off-farm employment and started up SMEs. The community also benefited from the intervention through increased time investment in recreational, religious, civic and social activities. This time investment is envisaged to have strengthened community bonds, fostered peace and moral development. There was also an increase in economic activities observed from the rise in number of traders in the communities. All in all, there were various spin-off benefits or positive externalities due to the intervention which resulted in an improvement in the overall wellbeing and welfare of the entire community – for both participating and non-participating households.

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