END LINE IMPACT ASSESSMENT OF THE AGRIBUSINESS ACCELERATE INITIATIVE

2021

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Foreword

This report was generated to serve as a reference document for Musika and its implementing partners. Musika Development Initiatives (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. Under the Agribusiness Accelerate Initiative (AAI) project, Musika supported capacity building of the SMEs through different platforms. Musika acknowledges and appreciates the financial support for the AAI project and this study from the Norwegian Agency for Development Cooperation (NORAD).

Executive Summary

Following the implementation of the Agribusiness Accelerate Initiative (AAI) for the past three (3) years (2018-2020), an impact assessment was conducted. The study primarily assessed the impact of various capacity building activities such as training, mentorship, coaching and commercial linkages on the small agribusinesses. In assessing impact, a total of 196 SMEs and 22 farmers were interviewed in 2021 over their agribusiness operations and interactions in the year 2020 whilst the preceding survey in 2019 captured a total of 254 SMEs. Data for 2018 were retrospectively collected during the 2019 survey. Three waves of survey data were further aligned, and a total of 104 SMEs formed a panel of three years.

Below were some of the key results;

- The majority of the SMEs were running agro-dealer shops and these accounted for 82% of the total number of SMEs captured during the 2021 survey. This trend was consistent across all the waves. Furthermore, over one third (38%) of the SMEs interviewed in 2021 indicated that they had been operating for under 5 years whilst only 9% of the SMEs had existed for more than 15 years.
- SMEs provided a wide range of services to the rural communities. The most common service provided was input supply, which could also be strongly linked to business opportunities created by the Government's Farmer Input Support Program (FISP). The study found that 90% and 88% of the SMEs in 2019 and 2020, respectively, were involved in supplying inputs, which was the main line of business for the majority. On average, SMEs provided three (3) different market services to the smallholder communities in 2020, representing an increase by one service from 2018.
- In 2020, only 14% of the SMEs had accessed loans, this represented an 11% drop from 2019. The most common source of credit was micro-financial institutions as more than half of SMEs (54%) who accessed credit obtained loans from this source. Only a quarter (25%) of the SMEs accessed credit from the banks.
- The study revealed that 69% of the SMEs felt that the cost of doing business increased between 2019 and 2020. Some of the reasons given for the increase included: the spike in inflation, kwacha depreciation, an increase in transportation costs etc. It was also observed that over half of the SMEs interviewed indicated having experienced higher costs of business in the year 2019 compared to 2018.
- The study further found that SMEs generated an approximate average turnover of ZMW 1,517,911.5. The significant transaction volumes and values have resulted into employment opportunities, a total of 1,139 full time jobs were created by the SMEs captured in the 2021 survey. This represented an 8% increase in full time jobs created by SMEs, despite the sustained challenging economic situation. On average, at least 42% of the SMEs observed an increase in their annual turnover between 2019 and 2020. The average increase in turnover was 12% between 2019 and 2020. However, 35% of the SMEs had increased their turnover by at least 20% between the stipulated period while 39% had improved turnover by at least 10% between 2019 and 2020.
- The majority of the SMEs generated gross profits below ZMW50, 000. However, a third of SMEs in 2018 and 2020 generated profits which were over ZMW200, 000,

respectively. The study further revealed that 60%, 65% and 59% of the SMEs had generated profits below ZMW100,000 for the year 2018, 2019 and 2020, respectively. There was a 41% general increase in profitability of the SMEs who were trained between 2018 and 2019, and 43% increase for SMEs trained between 2019 and 2020, implying that there was only a 2% increase in the proportion of SMEs that experienced an increase in profitability between the two training periods. The study further found that out of the total number of SMEs trained, 36% increased their profitability by at least 20% between 2018 and 2019 after attending capacity building trainings. Furthermore, 40% of the SMEs indicated an improvement in profitability by at least 20% between 2019 and 2020.

- In terms of key enablers of profitability, that study found that amongst other key influencers of profitability, trainings were crucial in enhancing enterprise profitability. For instance, the study revealed that the trainings had the potential of increasing SMEs' gross profits by ZMW43, 094 annually, all other things being equal. This implies that trainings contributed an average of 18% towards enhancement of SMEs' profitability. In terms of the specific trainings, recording keeping and financial management trainings were found to significantly affect the profitability of the enterprises.
- It was also learnt that 69% of the SMEs stated that their businesses offered at least one extension service to farmers as their customers or clients. Additionally, 65% of the SMEs stated they mainly offered crop extension services to their customers.
- In terms of record keeping, it was found that an average of 4 records were kept or maintained by the SMEs. The most commonly kept records included: cashbooks, customers' book, receipt books and stock books. It was also observed that at inception, 2018, 3% of the SMEs interviewed stated that they had no records compared to 2020 were all the SMEs interviewed had kept at least one record.
- The SMEs interviewed in 2020 attended an average of at least 4 trainings, 3 mentoring sessions and 1 coaching session, whereas 19% of all the SMEs interviewed in 2020 did not attend any trainings.
- The majority of the SMEs were linked to large scale Agri-businesses (40%) brokered through the AAI platform, engagement to large scale agribusinesses was only followed by distribution partnerships (22%) largely through consignment agreements.
- Only 26% of the interviewed SMEs highlighted having been linked to commercial finance for their businesses, 6% of the SMEs accessed capital finance.
- The study also assessed the indirect impacts of AAI activities on smallholder farmers that were customers to the agri-business SMEs. The study found that 18% of the farmers observed a decrease in the distance to the market access points since they started working with the SMEs while 9% observed an increase in distance instead.
- The majority of the farmers (63%) stated that they increased the number of crops grown since they started working with the SMEs while 90% observed an increase in yield.
- More than half of the farmers (68%) indicated having observed an increase in the amount of income earned from farming activities as a result of working with SMEs under the AAI. The study further revealed that an average of ZMW25, 905 was earned from all agricultural activities by farmers during the 2019/20 agricultural season.

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Abbreviations and Acronyms

AAI	Agribusiness Accelerate Initiative
BDS	Business Development Services
BoZ	Bank of Zambia
CMMR	Credit Market Monitoring Report
COVID-19	Coronavirus disease
FISP	Farmer Input Support Programme
FSP	Financial Service Provider
GDP	Gross Domestic Product
IGC	The International Growth Centre
ITC	International Trade Centre
ILO	International Labour Organisation
MCTI	Ministry of Commerce Trade and Industry
MSME	Micro, Small and Medium Enterprise
Musika	Musika Development Initiatives
NORAD	The Norwegian Agency for Development Cooperation
RALS	Rural Agricultural Livelihoods Survey
SMEs	Small and medium-sized enterprises
TMTRF	Targeted Medium-Term Refinancing Facility
ZDA	Zambia Development Agency
ZMW	Zambian Kwacha
ZRA	Zambia Revenue Authority

1 Introduction

Musika has since 2018 been implementing the Agribusiness Accelerate Initiative (AAI) in the SME agribusiness sector with the aims of improving agricultural market access by smallholder farmers and facilitate a market environment that encourages farmers to invest in new technologies and practices to diversify their production systems and enhance their production and productivity. The AAI through its activities has developed a number of partnerships with both public and private organizations to deliberate various forms of human and financial resources on building the capacity of the small rural agribusinesses that are critical to the deepening and broadening of the agricultural sector. The project through the participation of public and private partners provided technical support as well as business opportunities to their small business partners and it was envisioned that these partnerships would continue beyond the life of the project, for mutual commercial benefit. It was a performance-based initiative, in which trainees were required to invest time and resources in their own upgrading, completed tasks demanded of them and maintenance of sound business relations with their commercial partners.

There was also an explicit effort to build the capacity of the implementing partners and others to deliver business development services to the small businesses within the agricultural sector, and to test the viability of establishing a longer term framework for the delivery of capacity building services to the sector. Musika believed that offering a more structured capacity building opportunity to such businesses would make a significant contribution to their performance, and their ability to grow, generate employment and market opportunities for their farmer customers and suppliers. Also, it had already been demonstrated that the small rural agribusiness sector, if adequately empowered, can perform a vital role in information dissemination and therefore deliver a vital 'extension' service to farmers to improve their businesses and livelihoods and influence behavioural change among farmers.

1.2 Study Objectives

Musika sought to conduct an end line impact assessment of outcome indicators in the Agribusiness Accelerate Initiative Results Framework. The study primarily assessed the impact of various capacity building activities such as training, mentoring, coaching and commercial linkages on the small businesses. The exercise also assessed the perceptions of the small rural agribusinesses on the quality of the training, mentorship, coaching and commercial linkages activities on the platform. This information could be useful in measuring the impact of program implementation on the small rural businesses and smallholder farmers. Specifically, the assessment sought to:

- Assess the number of SME agribusinesses increasing turnover
- Assess the number of SME agribusinesses increasing profitability
- Assess the number of SME agribusinesses increasing the number of smallholder customers / suppliers
- Determine the number of SME agribusinesses increasing the range of market services offered to smallholder customers / suppliers.
- Assess the number of SME agribusinesses increasing their workforce.

- Determine the number of SME agribusinesses with increased capacity to deliver market services to the smallholder market.
- Determine the number of increased commercial partnerships between SME agribusinesses and other market actors.
- Understand the causal factors that have led to the achievement of the positive changes above and constraints that have led to businesses within AAI failing to achieve positive change.
- Assess the extent to which participation in AAI has led to positive change in business management, resilience and profitability
- Where feasible, assess the extent to which these positive changes have led to positive change at the level of the farmer supplier/customer/client
- Determine the effects of COVID-19 on SME businesses
- Understand Farmers' perception on market availability for inputs and commodities.
- Learn of Farmers' perception on changes in yields as a result of market linkages through SMEs
- Learn of Farmers' perception in changes in income as a result of market linkages through SMEs.

2 Methodology

2.1 Study Design and Sampling

A three pronged approach was used to conduct this study. In the first instance, a 2020 SME survey was carried out, and it covered 6 provinces and 15 districts against a target of 200 AAI trained SMEs. The SMEs were randomly sampled from a sampling frame of 531 SMEs who had participated in the AAI trainings over the last 3 years. The second approach involved in-depth interviews targeting 30 smallholder farmers linked and accessing goods and services from the sampled SMEs. The third approach involved drawing a panel data set from 2018 to 2020. A total of 104 SMEs were identified and formed a panel for three waves. The panel data set was used to assess AAI impact.

2.2 Data Collection

In 2021, a total of 196 SMEs and 22 farmers were actually interviewed. Cell phone based interviews were conducted, and data was entered onto the tablet through the use of electronic questionnaires to collect quantitative SME data over a period of 6 days. The data collected through cell phone based interviews was then validated by randomly selecting 31 already interviewed SMEs, and then conducting in-person interviews to verify the data across the 6 Provinces and 13 districts. During the validation exercise, 22 smallholder farmers were also interviewed through in-person interviews. In 2019, a total of 254 SMEs were interviewed across 6 provinces, data for 2018 were retrospectively collected from the same SMEs.

2.3 Data Analysis

The study used Stata version 16 and Microsoft Excel for its analysis of the data collected as well as narrative analysis for the qualitative data that was collected.

2.4 Study Limitations

Some interviews were not completed during the 2021 survey due to various challenges encountered such as poor network in certain parts of the country as well as non-availability and/or non-response of SMEs during the phone based interviews. Certain variables such as access to credit and provision of extension services were not collected in the first wave, thus baseline values were missing. Notwithstanding the aforementioned limitations, it is our considered view that our findings which combine a quantitative and qualitative approach to the analysis will be able to generate critical insights for the growth and development of the SMEs sub sector. Moreover, the study includes the smallholder farmer component to understand the impact of SMEs' activities on the livelihoods of farmers as customers to the SMEs.

3 Results

3.1 SME Characteristics

A total of 196 SMEs were captured during the 2021 survey, 60% of the enterprises captured were owned by male (s) whilst 25% were either directed or owned by females (one or more females). The rest of them were directed by both sexes in co-ownership, these were especially common amongst co-operatives or associations, see table 2.1. The largest representation of female run or directed enterprises (9%) came from Central province. It was also observed that only 15% of the SMEs were co-owned/managed. Co-ownership of enterprises was most common in Western, North western and Northern. Further, majority of the SMEs were running agro-dealer shops and this accounted for 82% of the total number of SMEs interviewed. This means that the AAI project is reaching out more to agro-dealers than any other type of SME. Food processing came in second, accounting for 5% of the total sampled SMEs. Thus there was very minimal representation of the other types of SMEs. The average age of the SMEs captured was 45 years, relatively younger SMEs were represented by Southern and Eastern province whilst Central and Northern province had relatively older SMEs; the average age of female managed enterprises was 47 years compared to males whose average age was 44 years.

SMEs were further categorized[1] according to the classifications by the Ministry of Commerce Trade and Industry (MCTI) through the Micro, Small and Medium Enterprise (MSME) Development Policy[2]. The majority of the enterprises captured fell under the medium enterprises, however, this study adopted the term "SME" loosely to also include micro enterprises. Southern province had the highest proportion of medium sized enterprises whilst Western province had the least proportion of enterprises in this category.

Shah (2012) estimated that there were about 1.02 million informal micro and small enterprises (MSMEs) in Zambia, but only 80,000 of such enterprises were formally registered for taxation purposes.

[1] This study used mainly turnover to classify the SMEs.

[2] https://www.boz.zm/Micro-Small-and-Medium-Enterprise-Development-Policy-2008.pdf

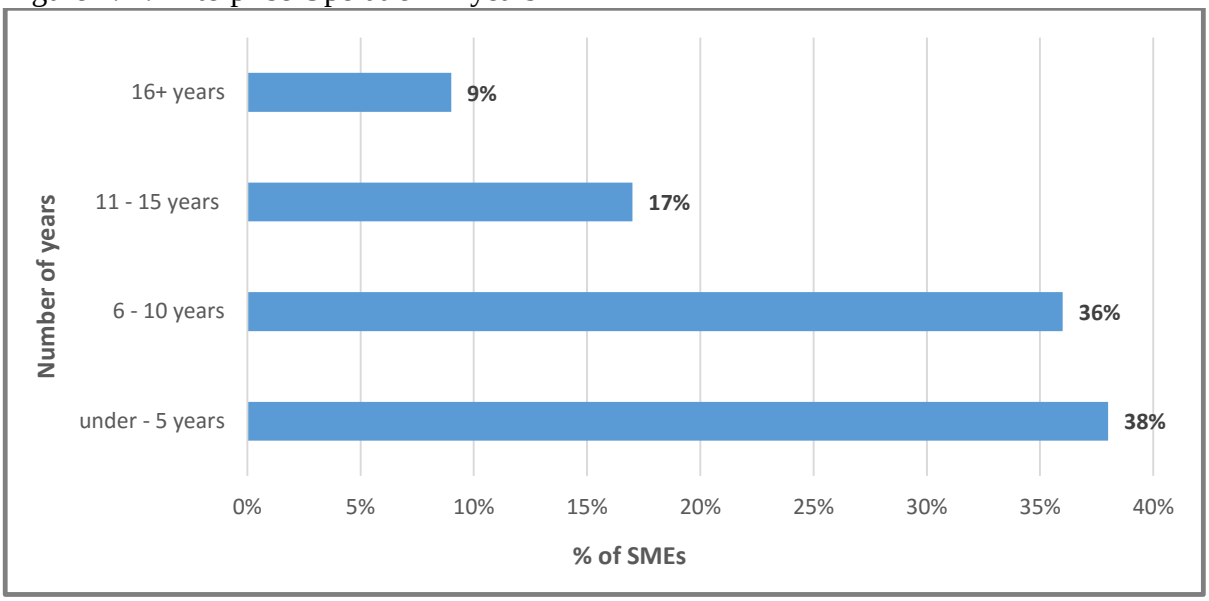
Table 2. 1 SMEs Background Characteristics

PROVINCE	***Eastern***	***Central***	***Southern***	***Western***	***North-western***	***Northern***	***Totals/Average***	***Percentages***
Number of SMEs	41	51	25	20	26	33	196	100%
Average age of Owner	42	46	44	45	45	46	45	
Sex of Director								
Male	13%	15%	10%	5%	7%	9%	118	60%
Female	6%	9%	2%	2%	3%	4%	48	25%
Both sexes (Co-Owned)	1%	2%	1%	4%	4%	4%	30	15%
Type of SME								
Agro-dealer	37	43	22	14	20	25	161	82%
Aggregator	2	2	-	1	1	1	7	3%
Agent/ Distributor	-	-	-	1	-	-	1	1%
Transport	-	1	-	-	-	1	2	1%
Food Processing	1	3	1	2	0	2	9	5%
Veterinary service	-	1	1	-	-	-	2	1%
Cooperative	-	1	-	3	1	3	8	4%
Livestock production	-	-	-	2	-	-	2	1%
Crop production	-	-	-	1	1	-	2	1%
Fish farming	-	-	-	-	1	1	2	1%
Categorisation by National Definition								
Micro Enterprises	44%	29%	16%	55%	43%	37%	76	37%
Small Enterprises	21%	17%	12%	15%	22%	14%	30	17%
Medium Enterprises	35%	54%	72%	30%	35%	49%	90	46%

Source: AAI 2021 data and authors' computations

Over one third (38%) of the SMEs interviewed indicated that they had been operating for under 5 years whilst only 9% of the sampled SMEs indicated having existed for more than 15 years, see figure 2.1 below. This indicates that the project is not only reaching out to fairly new businesses that are in need of business capacity building activities that the project offers, but also that two-thirds might be in continuous need of categorisation to help carter for specific needs such as business relations strengthening, market linkages and networking for business size and profit up-scaling processes as well as to carter for more digitalization needs in the COVID-19 new normal era.

Figure 2. 1: Enterprise Operation in years

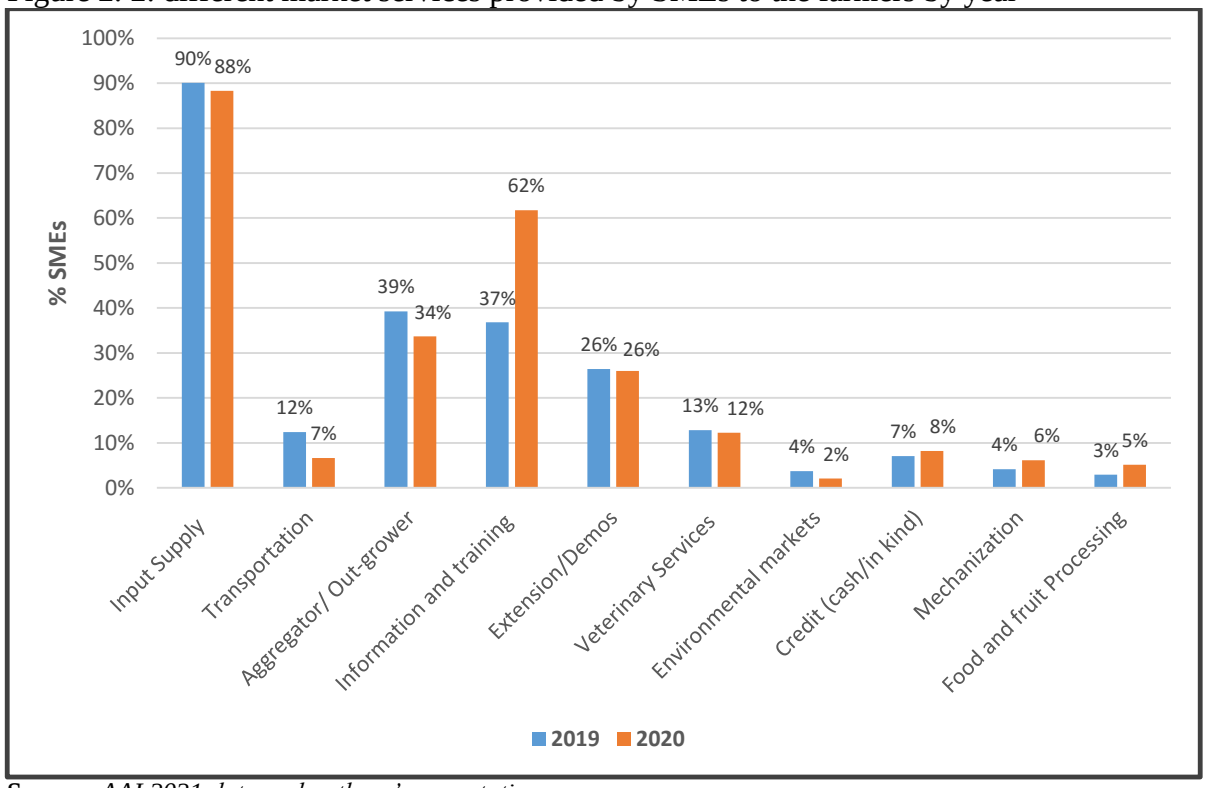


Source: *AAI 2021 data and authors' computations*

3.2 Market Services and Scale

SMEs provided a wide range of services to the rural communities. The most common service provided was input supply. One apparent reason for this was that most of the rural SMEs were engaged in agro dealership, which could also be strongly linked to business opportunities created by the Government's Farmer Input Support Program (FISP). For instance, the second most important channel for smallholder farmers in accessing fertilizer were the commercial sources such as agro dealers, 37% of the farmers used such a source in 2018/2019 agricultural season (RALS, 2019). Notwithstanding, there was a slight reduction in the proportion of the SMEs that provided such a service in 2020 with SMEs highlighting that the Government was still owing them for 2018/19 season so they could not stock up to their desired level. SMEs were least involved in the provision of environmental market services and processing, see figure 2.2 below. Despite a relatively low proportion of SMEs participating in environmental markets, 83% of the SMEs in 2020 were mindful of the environment compared to 77% in 2019 as they devised plans of promoting positive environmental impacts. Some of these plans involved providing information to their farmer clients regarding safe use of chemicals and encouraging climate smart agriculture.

Figure 2. 2: different market services provided by SMEs to the farmers by year



Source: *AAI 2021 data and authors' computations*

Input supply remains the linchpin of SMEs' agribusinesses, with the majority of the SMEs having stated that their main line of business was input supply. This activity was only followed by aggregation or running an out-grower as the main business. This trend was consistent between 2019 and 2020, see table 2.2 below. In terms of gender, there were relatively more female than male-owned businesses that were engaged in input supply as the main business. Mechanisation remains the least provided service amongst the SMEs despite its potential in significantly improving agricultural productivity amongst rural households (Sichilima, 2017).

Table 2. 2: Main line of business

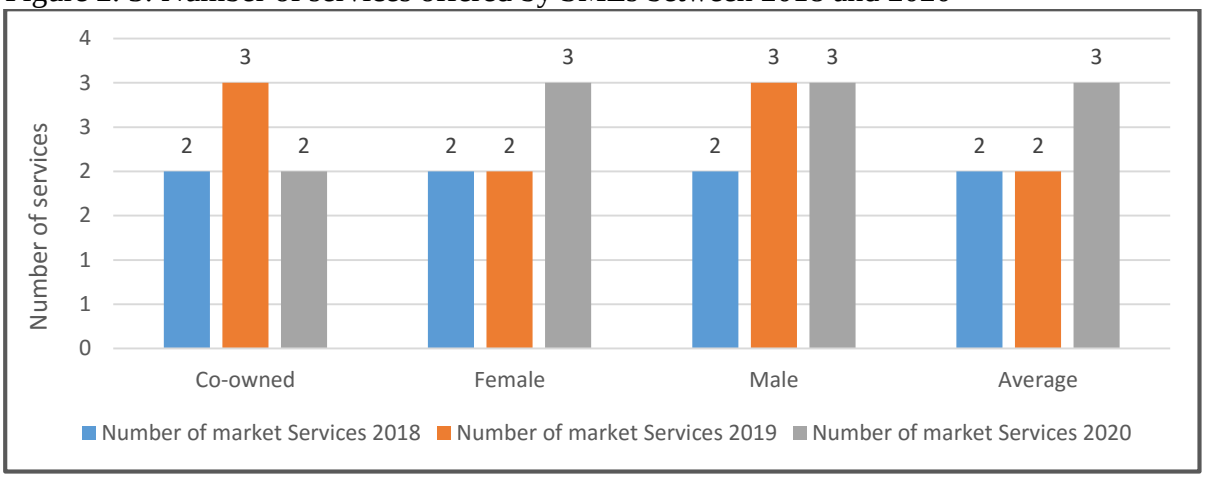
	2020				2019			
	co-owned	Female	Male	Average	co-owned	Female	Male	Average
Aggregator/Out-grower	10.0%	4.2%	7.7%	7.2%	5.9%	12.3%	6.7%	7.9%
Environmental Markets	3.3%	0.0%	0.0%	0.5%	0.0%	1.8%	2.2%	1.7%
Food and Fruit Processing	16.7%	2.1%	3.4%	5.1%	2.0%	0.0%	3.7%	2.5%
Input Supply	60.0%	87.5%	80.3%	79.0%	86.3%	80.7%	79.1%	81.0%
Mechanization	0.0%	0.0%	0.9%	0.5%	0.0%	0.0%	0.7%	0.4%
Transportation	0.0%	2.1%	0.9%	1.0%	0.0%	0.0%	2.2%	1.2%
Veterinary Services	3.3%	0.0%	2.6%	2.1%	0.0%	0.0%	3.0%	1.7%
Other Specify	6.7%	2.1%	4.3%	4.1%	5.9%	5.3%	1.5%	3.3%

Source: *AAI 2021 data and authors' computations*

On average, SMEs provided three (3) different market services to the smallholder communities. This represented an increase by one service from 2018 and 2019, see figure 2.3 below. This is critical in business diversification as it could cushion against poor business performance in one

or two business lines. A positive trajectory in number of business lines were observed for male and female-run businesses, whereas co-owned enterprises experienced a drop in the number of market services provided.

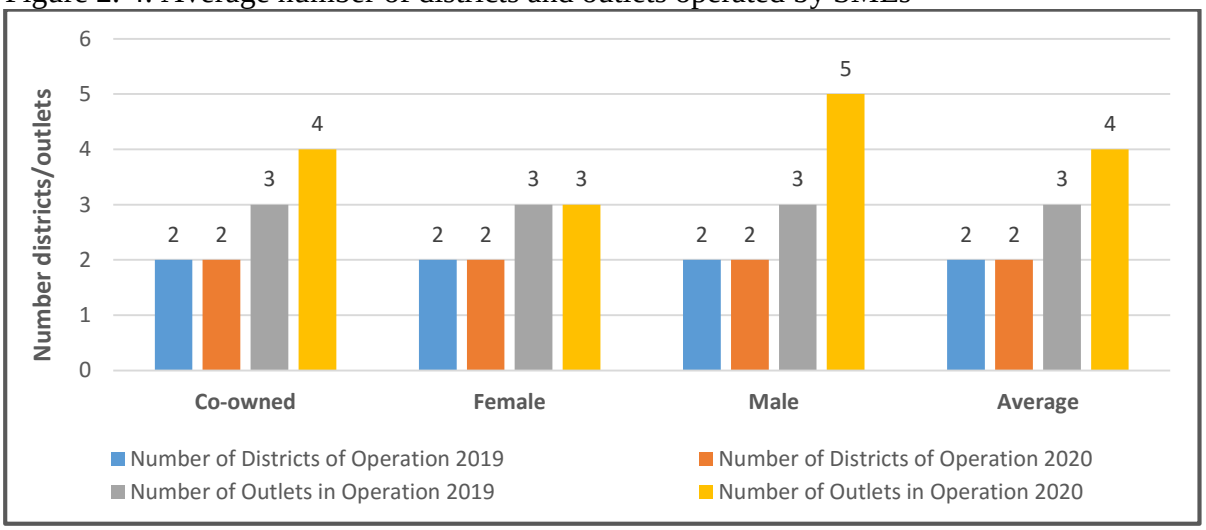
Figure 2. 3: Number of services offered by SMEs between 2018 and 2020



Source: *AAI 2021 data and authors' computations*

There was a general increase in the number of outlets operated by SMEs between 2019 and 2020, this improvement was only observed amongst the male and co-owned enterprises, see figure 2.4 below. However, there was no observed change in the number of districts where the SMEs operated. In some cases, SMEs had opened new outlets in new districts but they were not operational or active due to financial challenges.

Figure 2. 4: Average number of districts and outlets operated by SMEs



Source: *AAI 2021 data and authors' computations*

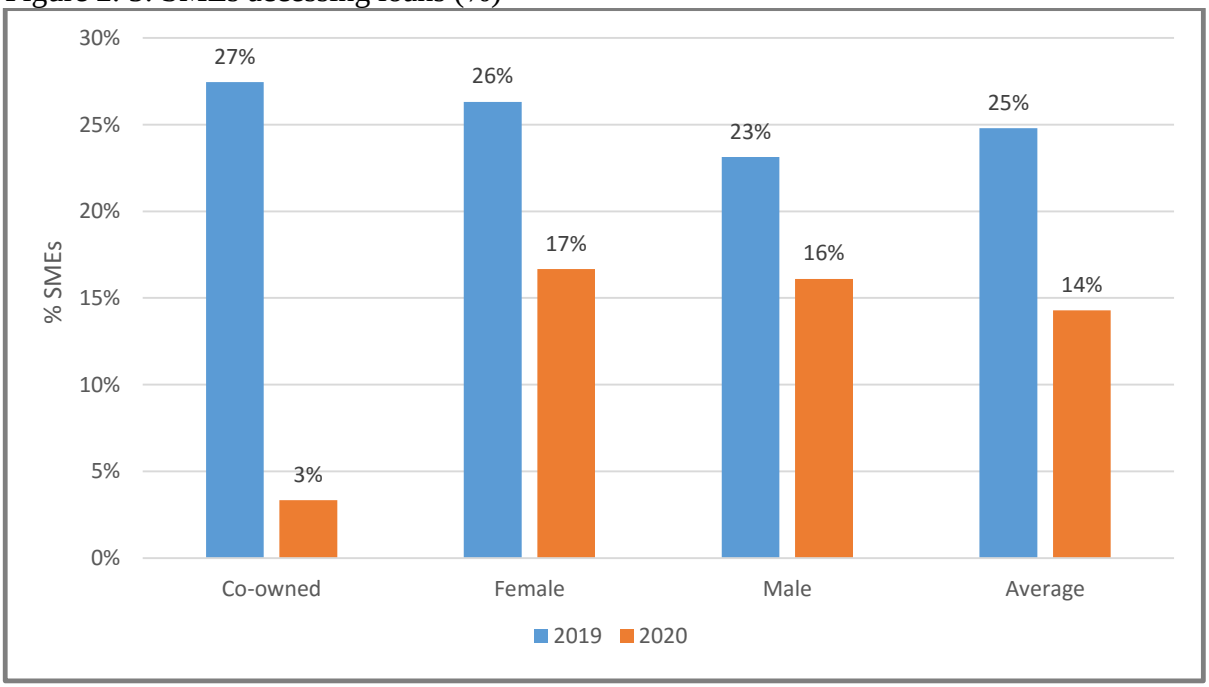
The study also revealed that in 2019, 41% of the SMEs had specific plans to focus on women farmers as their clients compared to 30% of SMEs with such plans in 2020. Although it was not clear as to what led to a reduction in the proportion of SMEs focusing on women, the plans in both periods mainly involved encouraging women to grow vegetables and legumes. The choice of the value chain could be motivated by women's dominance or significant participation in such value chains, suggesting an easier route to women empowerment than advocating for completely new value chains or value chains already dominated by men.

Ngoma-Kasanda and Sichilima (2017) reveals that a larger proportion of women had control over groundnut revenue than groundnut production.

3.3 Business Financial Performance

In 2020, only 14% of the SMEs had accessed loans, this represents an 11% drop from 2019. BoZ (2020)[3] attributes the low access to credit to tighter lending criteria occasioned by weak economic conditions due to the adverse effects of the COVID-19 pandemic. This is despite the implementation of the Targeted Medium-Term Refinancing Facility (TMTRF). The most common sources of credit were micro-financial institutions as more than half of SMEs (54%) who accessed credit obtained loans from these sources. Only a quarter (25%) of the SMEs accessed credit from the banks. The low access of loans from commercial banks could be attributed to tight credit conditions for SMEs. The measures set by banks were even tighter largely due to weak macroeconomic conditions that prompted them to adopt strict criteria in reviewing credit applications, and this was despite a rise in demand for working capital from SMEs (BoZ, 2020).

Figure 2. 5: SMEs accessing loans (%)



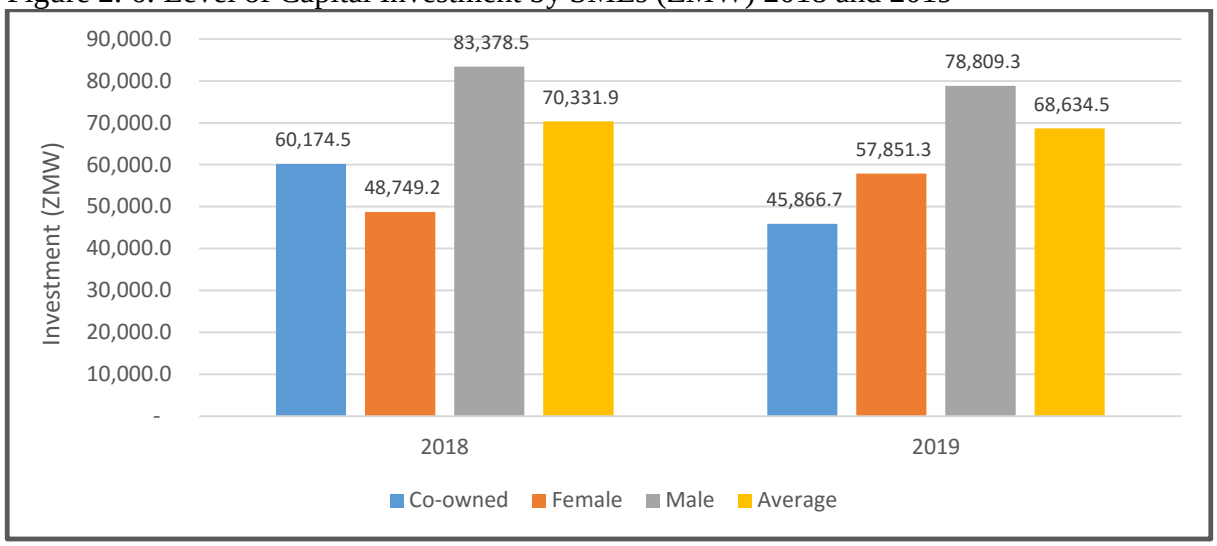
Source: *AAI 2021 data and authors' computations*

In terms of level of capital investments, an average of ZMW68, 635 was invested in 2019. This represents a 2.4% reduction from 2018. Possible reasons for this reduction could be the faltering economic fundamentals in 2019. For instance, due to the reverberating effect of debt distress, the imminent debt repayment burden exerted pressure on the currency that resulted in the Kwacha losing ground to the dollar by 24% in nominal terms. In the month following the onset of the pandemic, the currency further lost value by 26% (IGC, 2020). Economic fundamentals have direct effects on SMEs as the majority stock imported products, bearing

[3] https://www.boz.zm/credit_conditions_survey_report2020q4.pdf

increasing costs for the same quantities of stock would mean less money left for injecting into the business.

Figure 2. 6: Level of Capital Investment by SMEs (ZMW) 2018 and 2019



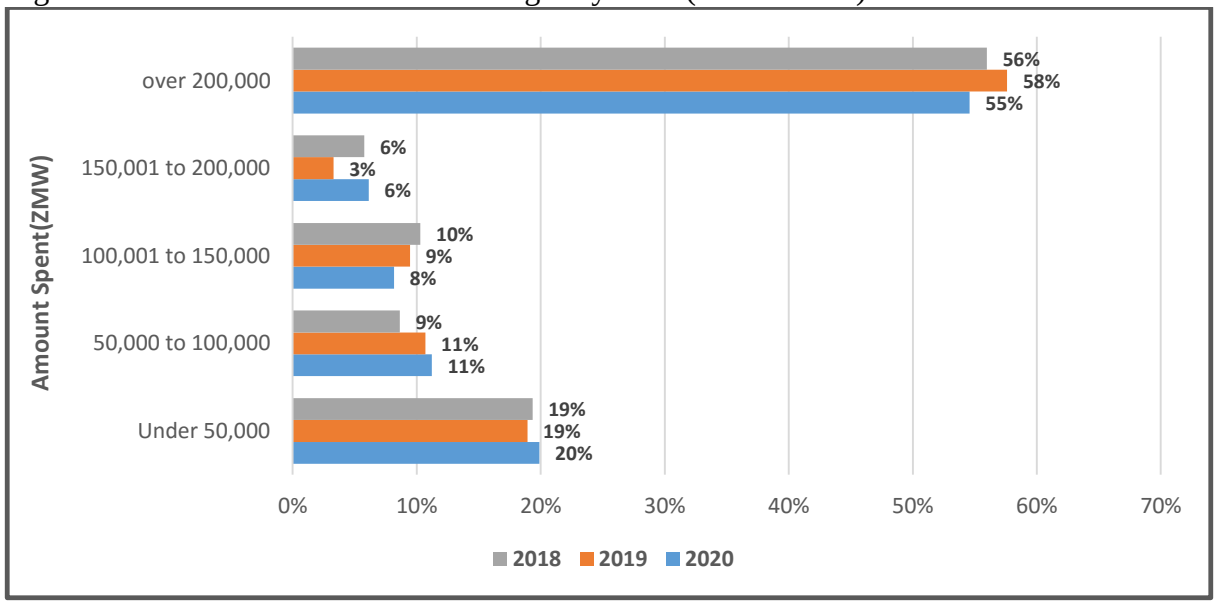
Source: *AAI 2021 data and authors' computations*

3.3.1 Costs

The study revealed that 69% of the SMEs felt that the cost of doing business increased between 2019 and 2020. Some of the reasons given for the increase included: the spike in inflation, kwacha depreciation, an increase in transportation costs etc.

It was also observed that over half of the SMEs interviewed indicated having experienced higher costs of business in the year 2019 compared to 2018 with 55% of the SMEs in 2020 stating costs of business to have been over 200,000 ZMW, see figure 2.7 below.

Figure 2. 7: SMEs Cost of Business Ranges by Year (2018 – 2020)

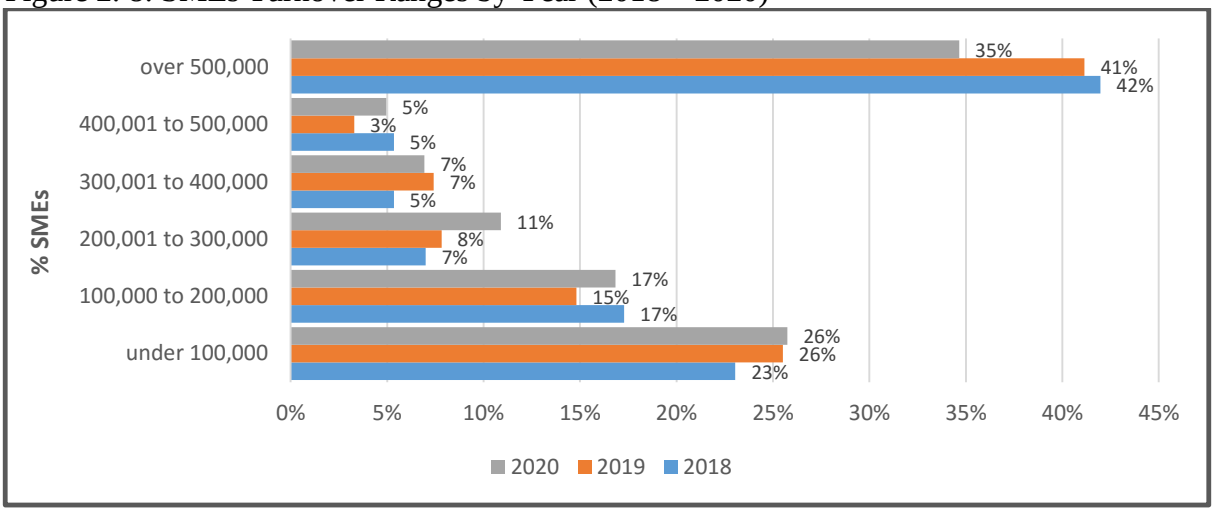


Source: *AAI 2021 data and authors' computations*

3.3.2 Turnover

The study found that SMEs generated an approximate average turnover of ZMW 1,517,911.5. This denotes the important role that SMEs play in propping rural economies. Despite a decline in overall turnover between 2018 and 2020, the majority of the SMEs had generated turnover of over ZMW500,000, see figure 2.8 below. The significant transaction volumes and values have resulted into employment opportunities, a total of 1,139 full time jobs were created by the SMEs captured in the 2020 survey. This represented an 8% increase in full time jobs created by SMEs, despite the challenging economic conditions experienced the past few years. The importance of this sub sector is corroborated by ITC (2019) which estimated that SMEs accounted for 70% of Zambia's GDP and 88% of the employment.

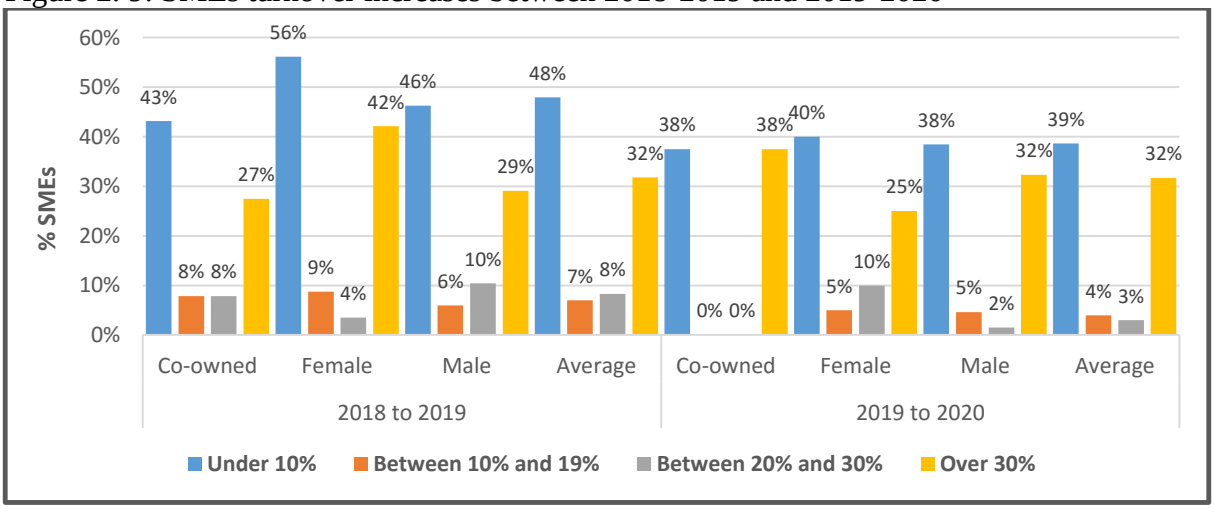
Figure 2. 8: SMEs Turnover Ranges by Year (2018 – 2020)



Source: *AAI 2021 data and authors' computations*

On average, at least 42% of the SMEs observed an increase in their annual turnover between 2019 and 2020. The average increase in turnover was 12% between 2019 and 2020. This represents a 2% increase from 10% in actual improvement in turnover between 2018 and 2019. However, 35% of the SMEs had increased their turnover by at least 20% between the stipulated period while 39% had improved turnover by at least 10% between 2019 and 2020.

Figure 2. 9: SMEs turnover increases between 2018-2019 and 2019-2020

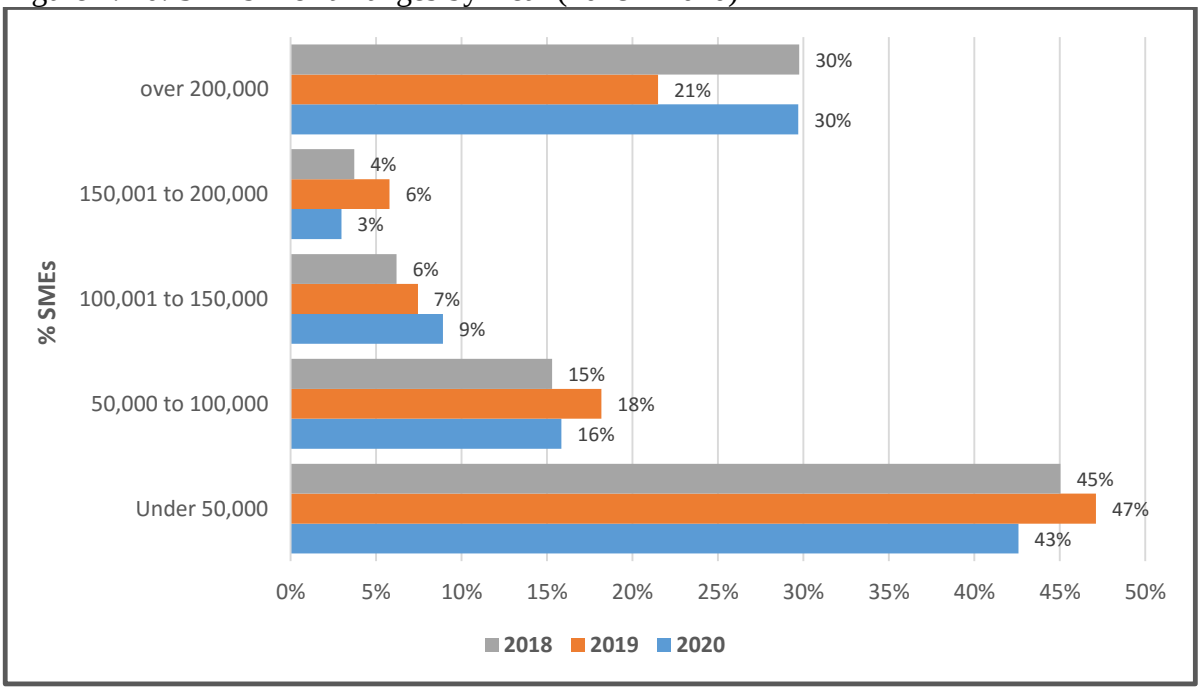


Source: *AAI 2021 data and authors' computations*

3.3.3 Profitability over the past three (3) years

The majority of the SMEs generated gross profits below ZMW50, 000. However, a third of SMEs in 2018 and 2020 generated profits which were over ZMW200, 000, respectively. The study further revealed that 60%, 65% and 59% of the SMEs had generated profits below ZMW100, 000 for the year 2018, 2019 and 2020, respectively. Gross profits were skewed towards amounts below ZMW100, 000.

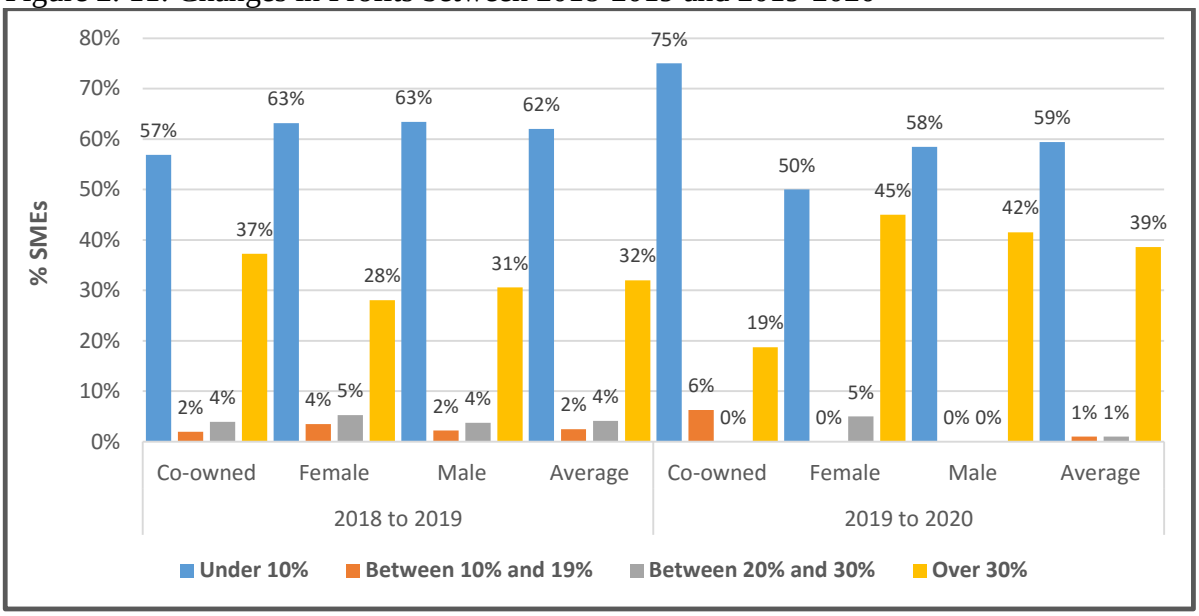
Figure 2. 10: SMEs Profit Ranges by Year (2018 – 2020)



Source: *AAI 2021 data and authors' computations*

There was a 41% general increase in profitability of the SMEs who were trained between 2018 and 2019, and 43% increase for those SMEs trained between 2019 and 2020, implying that there was only a 2% increase in the proportion of SMEs that experienced an increase in profitability between the two training periods. And this improvement in profitability was despite the prohibiting external factors prevailing during 2020. The study further found that out of the total number of SMEs trained, 36% increased their profitability by at least 20% between 2018 and 2019 after attending capacity building trainings. There was also an observed improvement in the proportion of SMEs that indicated an improvement in profitability by at least 20% between 2019 and 2020 by 4%. However, a similar pattern was observed in terms of the skewness in the proportions of the SMEs that increased profitability by specific amounts. For instance, the majority of the SMEs increased profitability under 10% in 2019 and 2020, see figure 2.11 below. Interestingly, women-operated enterprises generated better profit margins than either male or co-owned businesses in 2020. The study further found that SMEs involved in aggregation and distribution generated the most profit in 2020, see table A3. However, there were significant profit variances for all SMEs between 2018 and 2020. SMEs engaged in food processing and agro dealership as their main lines of business had relatively more stable profitability, and in the highest profit bracket, than SMEs involved in other lines of businesses i.e. aggregation, mechanisation, transportation, veterinary etc.

Figure 2. 11: Changes in Profits between 2018-2019 and 2019-2020



Source: *AAI 2021 data and authors' computations*

3.3.4 Key Enablers of Profitability

The study generated key factors which have the potential of influencing the profitability of enterprises. Panel data was used for the three (3) years that the AAI project has been implemented. The panel data was utilised mainly because, the use of cross-sectional data as is the case in most Zambian SME studies[4] has significant potential of preventing the detection of unobserved SME heterogeneity[5], which might also have the potential of influencing the profitability of the enterprises. This can therefore limit the external validity of results. Below were the key factors found to influence SMEs' profitability[6];

3.3.4.1 Reducing the Costs

Whilst this is obvious and expected that an increase in costs would reduce the profitability of enterprises, the opposite is also true that an increase in turnover would eventually result into an increase in profitability as an enterprise draws towards breaking even through the realisation of economies of scale, ceteris paribus. The study found that over three-quarters of the costs were associated to the costs incurred in procuring stock, see table 2.3 below. A one-kwacha increase in total costs would reduce the profitability by 0.9 ngwee, all other things being equal. In circumventing some of these costs, the high[7] performing enterprises were engaged with major input suppliers on selling their brand-stock on consignment basis. Commissions for most of the major input suppliers ranged from 13% to 18%. However, when rebates were considered, commissions surged to 22% for most of the suppliers. This distributor route for a number of SMEs was gaining traction, and was helping SMEs to contain some of the costs involved in the traditional direct stock procurement and sales.

[4] Shah, 2012; Nuwagaba, 2015; Arneson et al., 2017; Chanda et al., 2017;
[5] the quality or state of being diverse in character
[6] See annex 1 for detailed Panel results
[7] Those in the 4th Quarter percentile of gross profits

3.3.4.2 Trainings Have had a Significant Positive Effect on Profitability

The major premise for the AAI has been capacity building, and trainings in various forms have been a critical component. In Zambia, a total of 531 SMEs were trained on the AAI platform in 2020, originally, about 200 SMEs were trained in 2018 representing a 166% surge in the proportion of SMEs trained over the past 3 years. On average, SMEs attended 5 trainings over the course of the past 3 years. The study revealed that the trainings have the potential of increasing SMEs' gross profits by ZMW43, 094 annually, all other things being equal. This implies that trainings contributed an average of 18% towards enhancement of SMEs' profitability. Potential key enablers for this positive outcome are the one-on-one mentorship and coaching activities conducted by different Business Development Service (BDS) providers. These technical business support services are further augmented by Musika staff who provide an oversight and backstopping of activities conducted by BDS consultants. In terms of the specific trainings, record keeping and financial management were found to significantly and positively contribute towards SMEs' financial performance. For instance, record keeping was found to contribute about 23% towards SME's profitability whilst financial management was found to contribute about 31%, table A1 in the annex shows approximate potential annual contributions towards enterprise profitability, ceteris paribus.

3.3.4.3 Improving Customer Base Improves Business Profitability

Whilst this, on face value, might be another cliché. A closer look at this important component of business development and marketing using a different lens could be insightful. According to Chibbabbuka (2007), SMEs are not able to compete favourably with other corporate firms because they lack information to enable them exploit new markets other than those that they have already established market niches. This necessitates the need to create relevant networks that permeate the smallholder farming communities. Possible routes include out-grower arrangements embedded with information dissemination or improving visibility through deliberate in-store promotions in exploiting the distribution dealerships, especially in the short term. The study found that an increase by one regular customer in the overall customer base could increase SMEs' profitability by ZMW 209 annually, ceteris paribus.

3.3.4.4 Access to Credit

Although the panel model did not find a significant effect of access to finance on SMEs' profitability, the modelling of cross sectional data found that access to finance significantly affected SMEs profitability. Possible explanation for the lack of effect from the panel models could be that there were only observations for two (2) waves as no baseline data was captured for 2018. ILO (2012) and Nuwagaba (2015) observed that access to finance remained a major constraint in attaining growth of the SME sub-sector. A Credit Market Monitoring Report (CMMR) by BoZ (2020) found that approximately half of the loans applied for by the MSMEs are granted, see figure 1A in the annex. Furthermore, MSMEs loan value constitute only 6.9% of the total value of loans disbursed to other loan recipients across different sectors. This study found that only 14% of the SMEs had access to credit in 2020. Nuwagaba (2015) further suggested provision of support through grants, personal savings and or loans.

Table 2. 3: SMEs' Average Annual Gross Margin (ZMW) 2018 - 2020

Year	2018		2019		2020	
Average Earned Turnover (ZMW)	**2,202,069.0**		**1,190,321.0**		**1,517,912.0**	
Business Costs (ZMW)		2018 cost contribution (%)		2019 cost contribution (%)		2020 cost contribution (%)
Stock	1,794,901.0	93.8%	780,376.1	87.2%	1,132,183.0	81.5%
Utilities	7,809.4	0.4%	8,164.8	0.9%	9,940.6	0.7%
Transport of goods	35,239.3	1.8%	27,176.9	3.0%	141,584.0	10.2%
Rent	16,428.2	0.9%	17,352.0	1.9%	19,993.5	1.4%
Wages	41,698.1	2.2%	39,333.2	4.4%	67,656.1	4.9%
Other costs	17,532.9	0.9%	22,630.7	2.5%	17,085.1	1.2%
Average Business Cost (ZMW)	1,913,608.8	100%	895,033.7	100%	1,388,442.4	100.0%
Average Earned Profit (ZMW)	**288,460.2**		**295,287.3**		**129,469.6**	

Source: AAI 2021 data and authors' computations

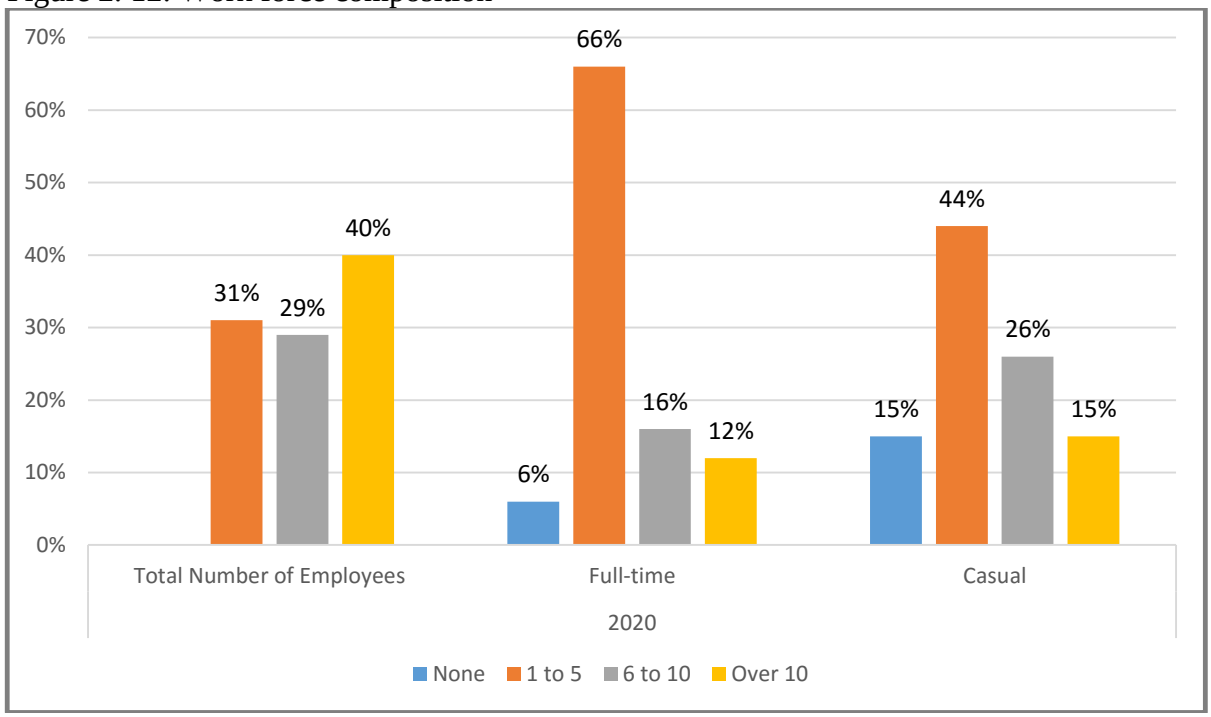
3.4 Operational and Staff Management

3.4.1 Capacity Building Training

It was observed that the majority of the SMEs were also taking up capacity building trainings from other partners and stakeholders other than the Musika AAI. For instance, 96% of the SMEs interviewed have coupled Musika AAI trainings with capacity building trainings from different stakeholders and sources. This is a great indication in driving towards sustainability through the interest and appreciation shown by the SMEs in wanting to take up more capacity building trainings for their businesses from various sources in order to increase capacity and improve knowledge.

About 40% of the SMEs interviewed indicated that they had over 10 employees in total (full-time or casual). There was a 14% increase in the number of total employees from 2018. Some of the reasons cited by the SME agribusinesses for the low growth in the workforce included competition within the market limiting expansion of business, in other areas reduced business activity due to COVID-19 health regulations and protocols that limited interactions with customers and subsequently led to the downsizing operations and reduced amounts of stock due to import restrictions. However, 66% of the SMEs indicated that they had at least 1 to 5 full time employees compared to 44% casual workforce in the same range, see figure 2.12 below. This showcases the importance of the SME sub sector in creating job opportunities, ZDA (2019)[8] found that of the total jobs created in the micro, small and medium sub sector, the Agriculture, Manufacturing, Construction, and Service sectors were the major contributors accounting for over 90% of the jobs created in 2019.

Figure 2. 12: Work force composition

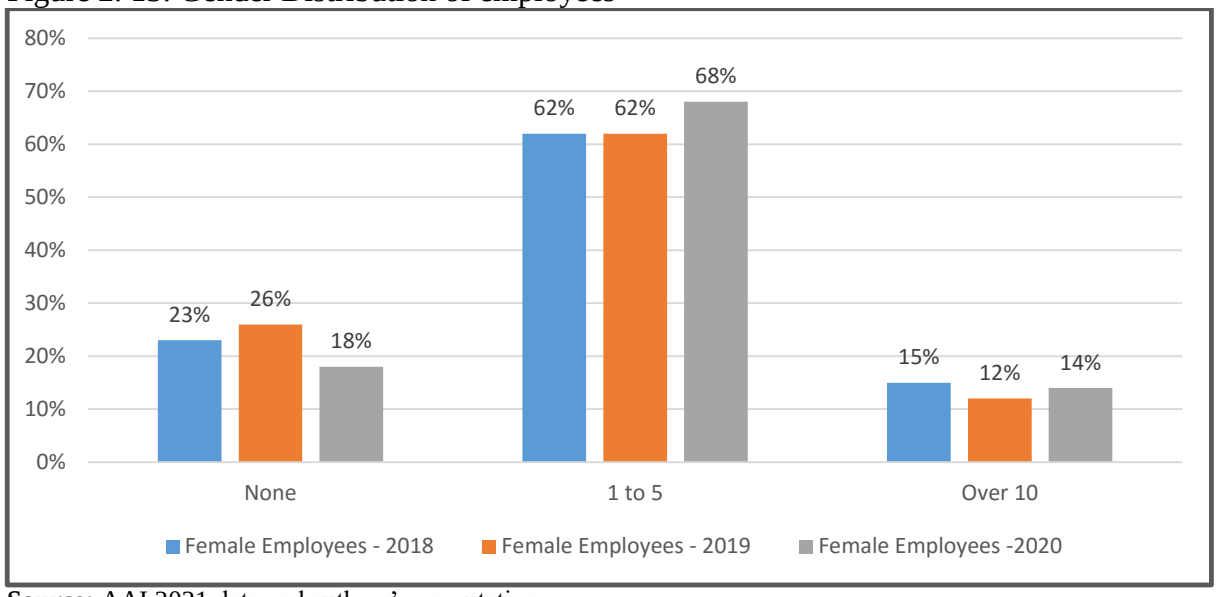


Source: AAI 2021 data and authors' computations

A further look at the gender distribution of employees over the past 3 years of implementation points out that the project made strides at reducing the number of SMEs without any female employees as part of their workforce as shown below. For example, in 2018, 23% of the SMEs had no female employees compared to 18% in 2020 at the time of the study. It is also important to note that the majority of the SMEs employed between 1 to 5 female employees in total over the past 3 years.

[8] http://ayokos.com/vs/zdanew/wp-content/uploads/2020/09/ZDA-2019-ANNUAL-REPORT.pdf

Figure 2. 13: Gender Distribution of employees

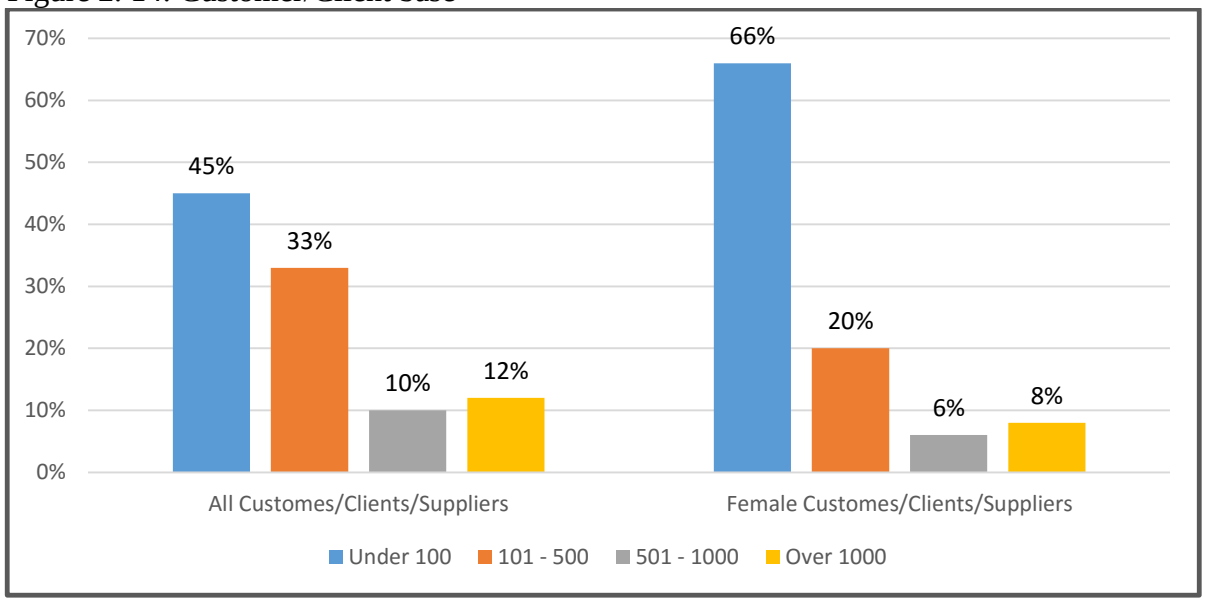


Source: AAI 2021 data and authors' computations

3.4.2 Customer/Client Base

The study further revealed that almost half (45%) of the SMEs interviewed reached out to less than 100 farmers in 2020 while only 12% of the SMEs interviewed reached out to over a 1,000 farmers/customers, as seen below in figure 2.14. Additionally, 66% of the SMEs that were interviewed stated they were only able to reach out to an estimated 100 female farmers/customers. This change could be attributed to the harsh conditions of conducting businesses world over in 2020, such as, plummeting local currency in the world market, COVID-19 regulations and restrictions. This has the potential of affecting the provision of extension services. Ensuring the growth and sustainability of clientele base is critical in enhancing the profitability of the enterprises as has been shown in the model results.

Figure 2. 14: Customer/Client base

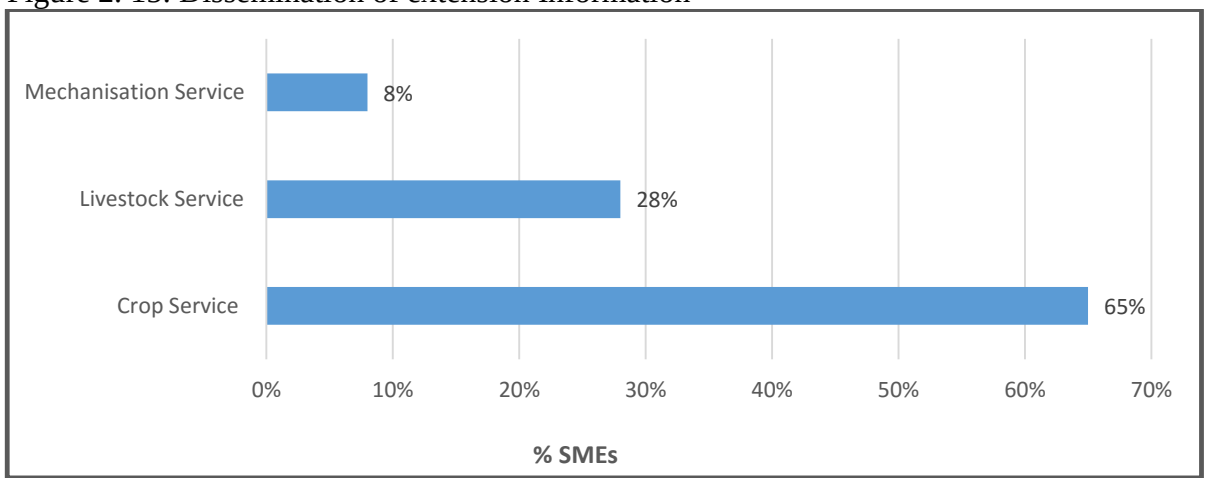


Source: AAI 2021 data and authors' computations

3.4.3 Dissemination of Extension Information

It was also learnt that 69% of the SMEs interviewed stated that their business offered one or more extension services to smallholder farmers as customers or clients. Additionally, 65% of the SMEs interviewed stated they mainly offered crop extension services to their customers/clients, while only 8% offered mechanisation extension services. Crop service extension and information service was provided by the majority of SMEs largely due to the fact that the project reached out mainly to agro-dealers more than any other type of agri-business SME, see figure 2.15 below. Moreover, most of the clients/customers reached out to were generally subsistence farmers growing mostly crops for household food security needs.

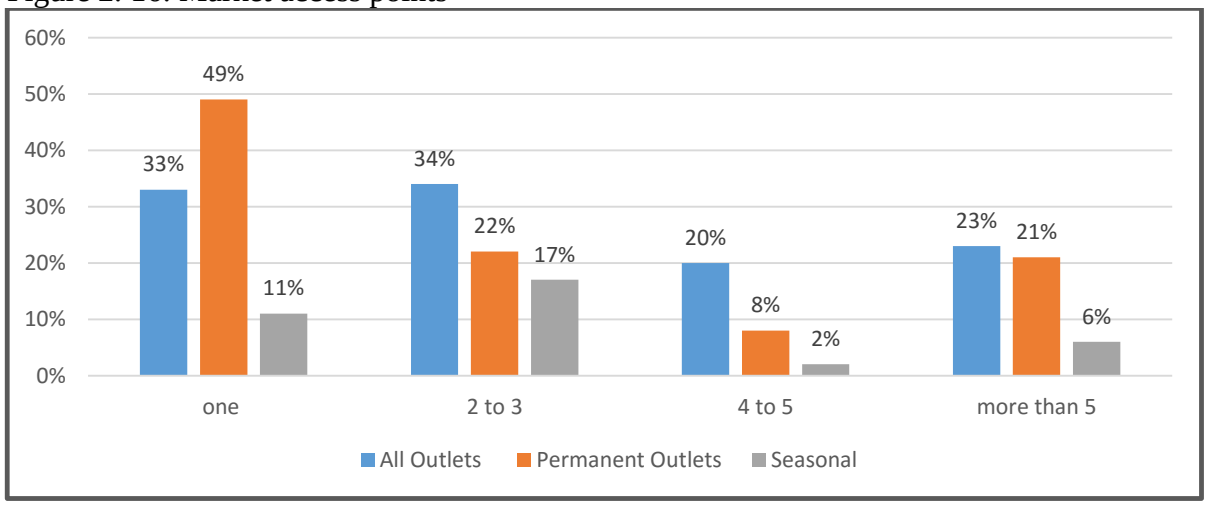
Figure 2. 15: Dissemination of extension Information



Source: AAI 2021 data and authors' computations

The number of outlets the SME business operated varied from one to more than five depending on the SME's capital capacity, 33% of the total interviewed SMEs indicated having one outlet (either permanent or seasonal), 49% of the SMEs indicated having one permanent outlet. Some of the key factors constraining the increase in the number of outlets, included lack of finance (capital) to expand or open up new outlets, delayed FISP payments, low customer base, while factors that facilitated an increase in the number of outlets included: high level of demand for certain inputs/products, shortening the distance to the targeted customers.

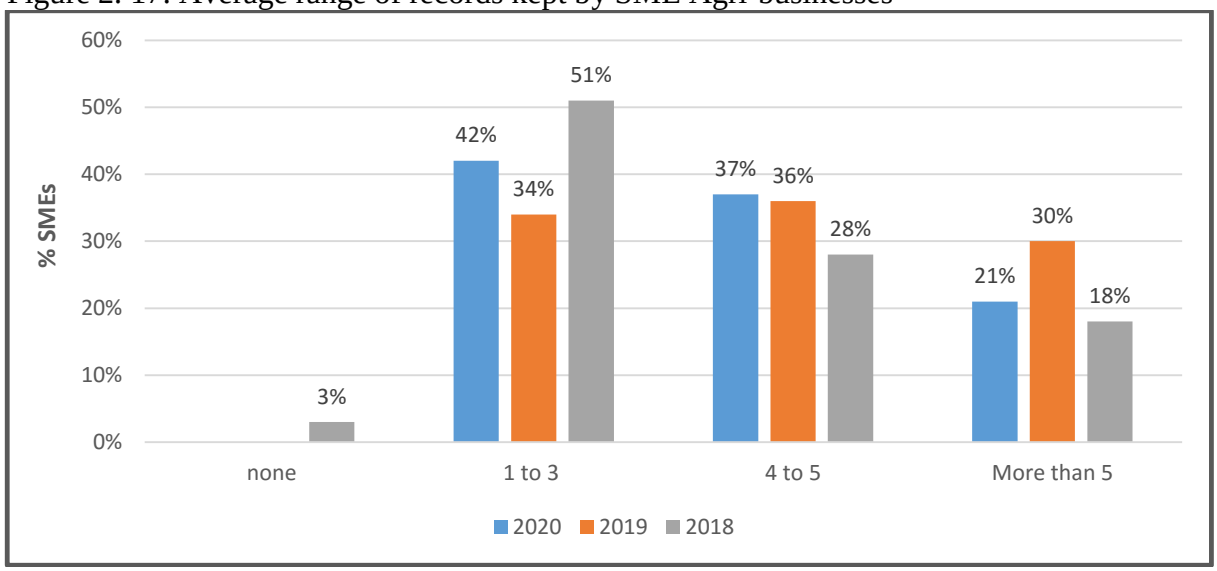
Figure 2. 16: Market access points



Source: AAI 2021 data and authors' computations

In terms of record keeping, it was found that an average of 4 records were kept or maintained by the SMEs. The most commonly kept records included: cashbooks, customers' book, receipt books and stock books. It was also observed that at inception, 2018, 3% of the SMEs interviewed stated that they had no records at all compared to 2020 were all the SMEs interviewed had kept at least one or more records, see figure 2.17 below.

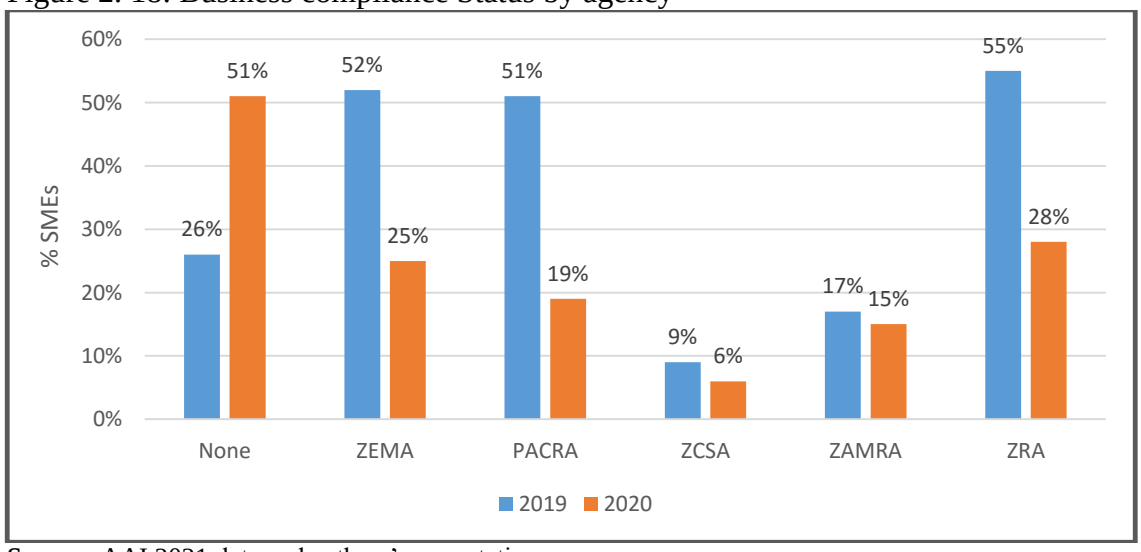
Figure 2. 17: Average range of records kept by SME Agri-businesses



Source: AAI 2021 data and authors' computations

Almost half of the SMEs interviewed (49%) adhered to a number of legal requirements for their business operations in the year 2020, a reduction from 74% in 2019, see figure 2.18 below. With highest compliance being with Zambia Revenue Authority (ZRA), 28% of all the SMEs interviewed complied with ZRA while the least compliance was with Zambia Compulsory Standards Agency (ZCSA) at 6% of the SMEs interviewed. The fact that more than half of the SMEs were not meeting legal requirements suggests that there is still work to be done in showcasing value proportion of running legitimate firms as this remains a key ingredient for SMEs seeking to access commercial finance.

Figure 2. 18: Business compliance Status by agency

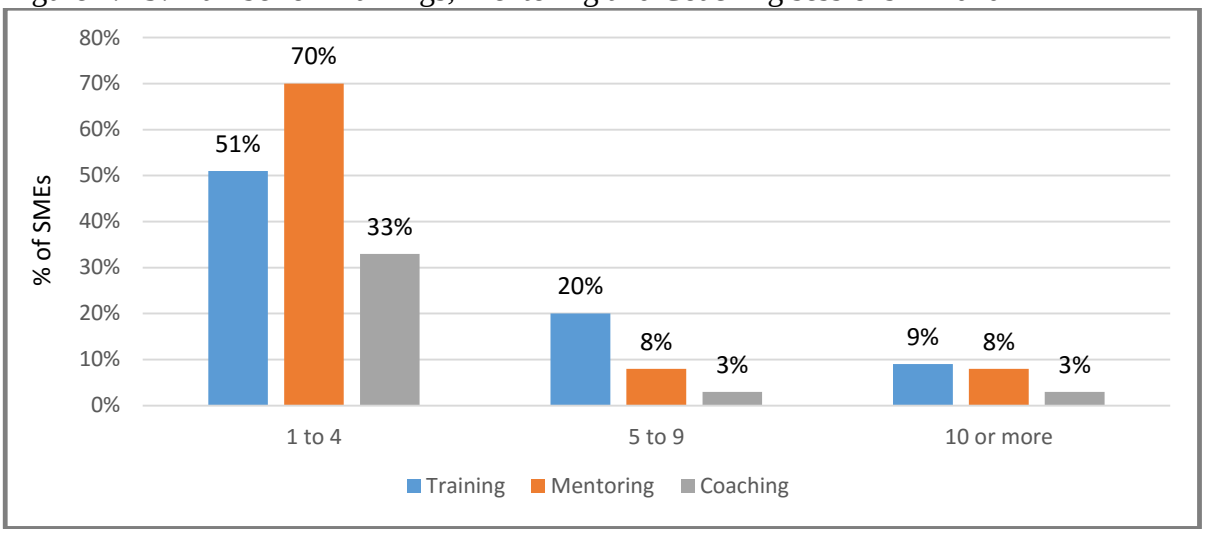


Source: AAI 2021 data and authors' computations

3.4.4 AAI Activities

The SMEs interviewed in 2020 attended an average of at least 4 trainings, 3 mentoring sessions and 1 coaching session, whereas 20% of all the SMEs interviewed in 2020 did not attend any trainings, while 14% did not attend any mentoring sessions and 61% did not attend any coaching sessions.

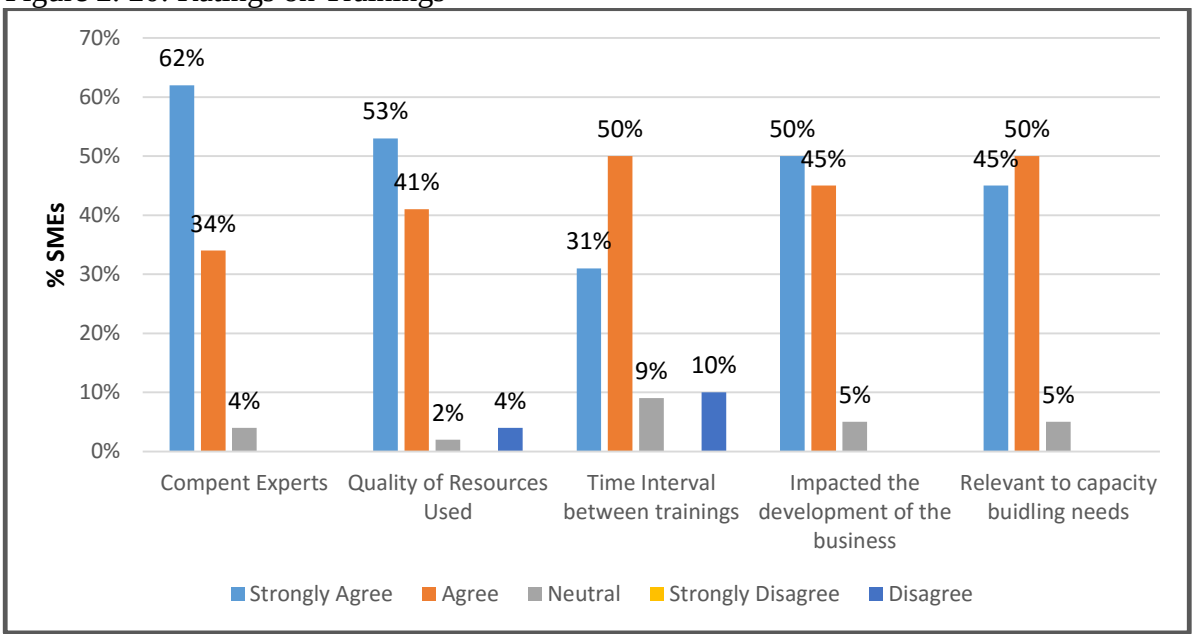
Figure 2. 19: Number of Trainings, Mentoring and Coaching sessions in 2020



Source: AAI 2021 data and authors' computations

The study further revealed that 62% of the SMEs strongly agreed that the trainings were conducted by competent experts, and had impacted them towards the development of their businesses, see figure 2.20 below. In addition, half of the SMEs interviewed agreed to a greater extent that the trainings received were relevant to their business capacity building needs; the resources used during trainings were satisfactory; and half of the SMEs fairly agreed that the time interval between training sessions were appropriate.

Figure 2. 20: Ratings on Trainings

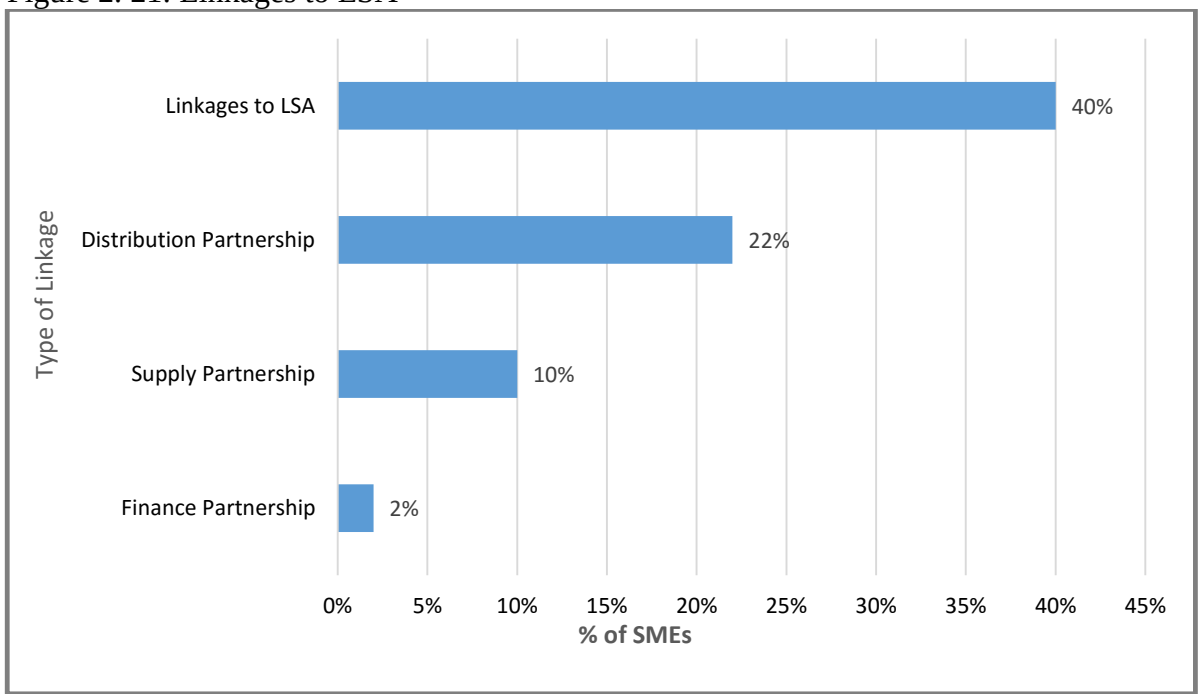


Source: AAI 2021 data and authors' computations

3.4.5 Partnership Engagements

The majority of the SMEs were linked to large scale Agri-businesses (40%) brokered through the AAI platform, engagement to large scale agribusinesses was only followed by distribution partnerships (22%) largely through consignment agreements, see figure 2.21 below. This form of partnership seems to be gaining traction amongst SMEs as primary firms give commission on quantities of mostly inputs sold by SMEs. This might also provide a quicker way for SMEs to expand operations.

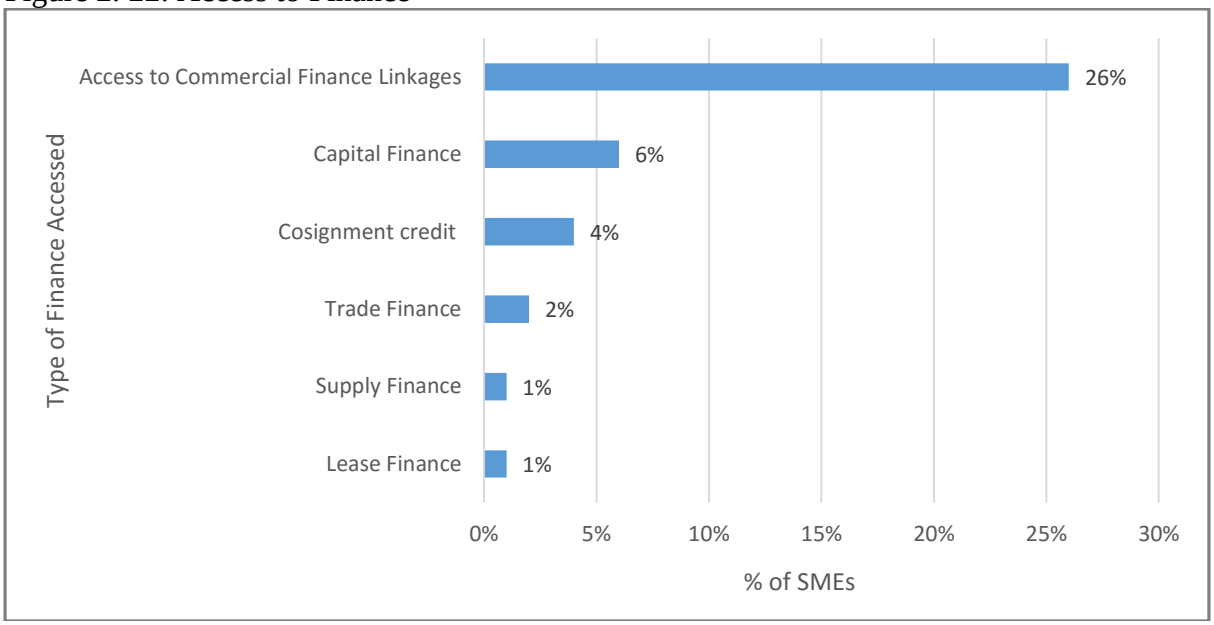
Figure 2. 21: Linkages to LSA



Source: AAI 2021 data and authors' computations

Only 26% of the interviewed SMEs highlighted having been linked to commercial finance for their businesses. With 6% of the interviewed accessing capital finance (6%) followed by consignment credit at 4%. Access to finance is one of the major challenges affecting many SME businesses even though access to finance has proven to help many SMEs to grow their businesses. Some SMEs did access loans from financial institutions but it was not due to the AAI linkages, it was noted that some already had access to commercial finance and were servicing loans obtained before the inception of project implementation. Additionally, the majority of SMEs that had access to finance were already into partnerships with large agribusinesses that provided them stock on consignment, this could be one of the major reasons why these businesses did not access other types of loans despite being linked to commercial financial institutions. Nevertheless, as stated earlier, credit criteria for most financial institutions in lending to SMEs remains a key hindrance in enhancing access of finance by SMEs (BoZ, 2020).

Figure 2. 22: Access to Finance

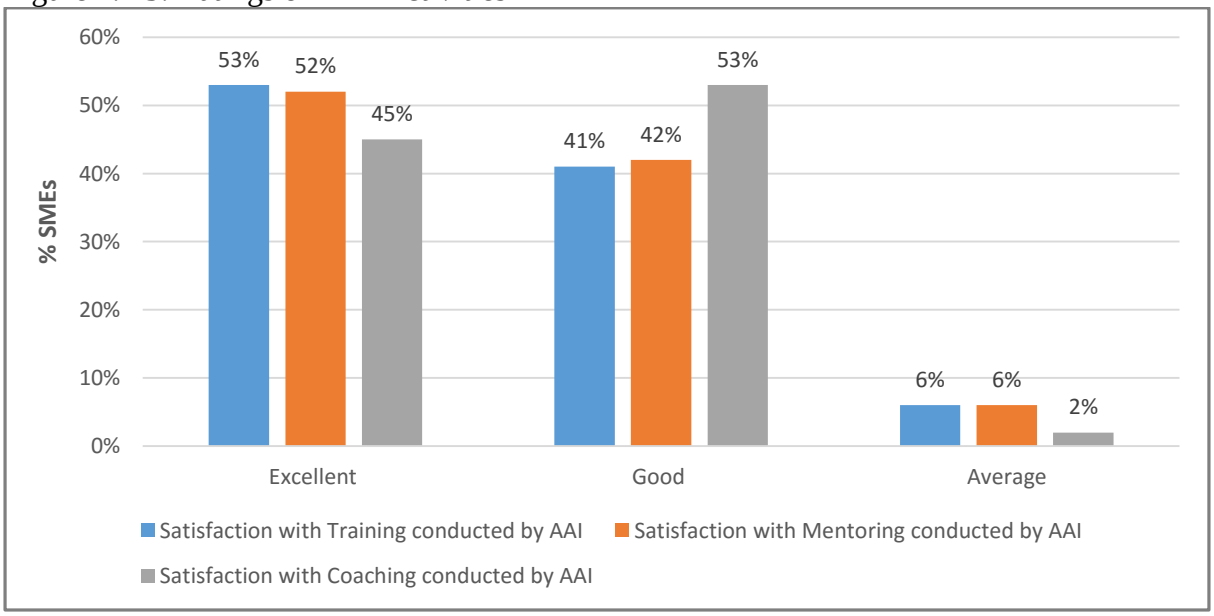


Source: AAI 2021 data and authors' computations

3.4.6 SME perceptions

The majority (53%) of the SMEs regarded the trainings received as excellent with only 6% regarding it as average. Almost half (52%) of the SMEs that have received mentoring from the AAI project felt that the sessions were excellent while the 53% regarded the coaching received as good, see figure 2.23 below.

Figure 2. 23: Ratings of AAI Activities

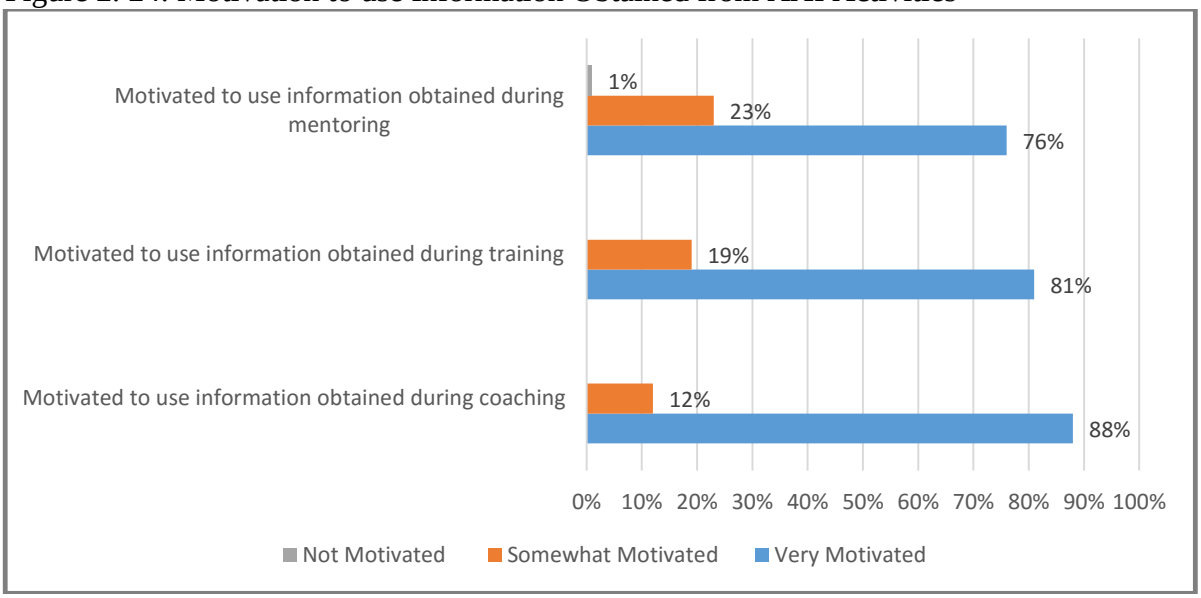


Source: AAI 2021 data and authors' computations

The majority of the SMEs mentored (76%) and coached (88%) were very motivated to use the information obtained from the AAI project, respectively. In this regard, 81% of the SMEs were very motivated to use the information obtained during the trainings as shown in figure 2.24.

One explanation for this outcome could be that the information received was relevant, and had improved their business operations and skills. The small minority (1%) of SMEs that were not motivated did not understand some of the topics and/or missed the majority of the mentoring sessions due to various reasons. Some of the reasons cited by most SMEs for being very motivated to use the information obtained from mentoring and coaching included, among others, improved business management, business growth, relevant/practical information, competent mentors/coaches, increased accountability and attracting commercial finance. Furthermore, those that were somewhat motivated cited insufficient time and language barrier as the main reasons.

Figure 2. 24: Motivation to use Information Obtained from AAI Activities



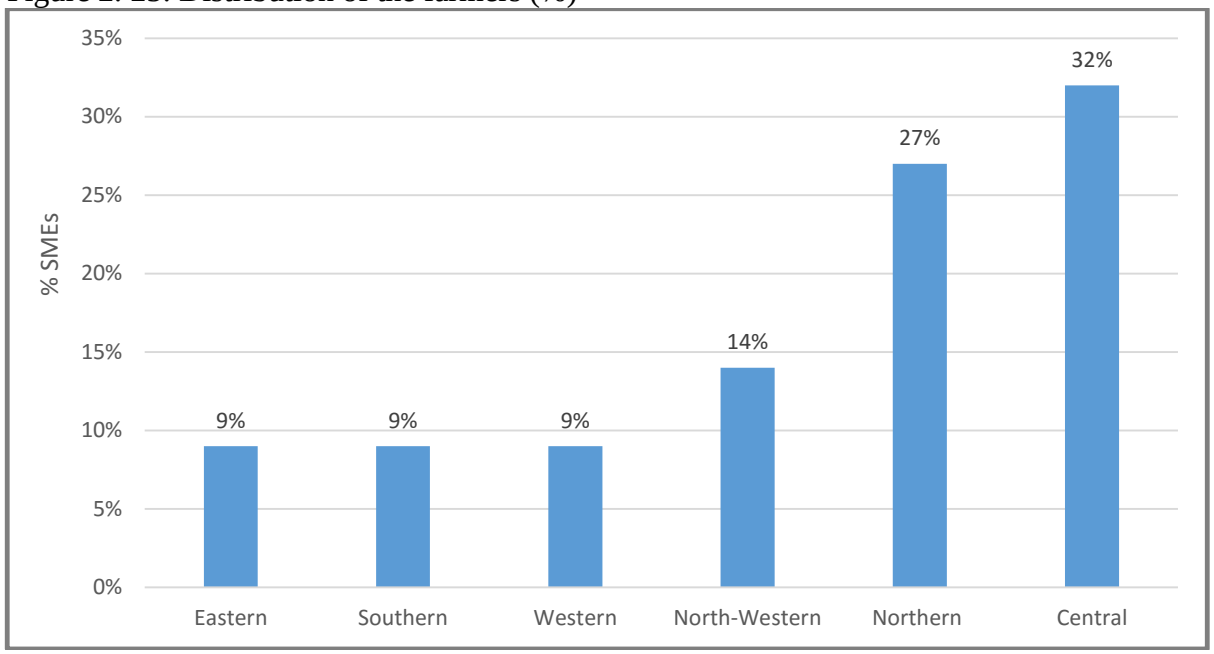
Source: AAI 2021 data and authors' computations

3.5 Farmer Level Impacts

The study also assessed the indirect impacts of AAI activities on smallholder farmers that were customers to the agri-business SMEs. A total of 22 farmers were interviewed, and qualitative data was collected from 6 provinces and 10 districts, with Central province having the highest representation at 32%, as can be seen below. The study sample had 23% female and 77% male farmer/customer representation. The average age of the respondents was 46 years. It was found that the majority of the farmers (82%) accessed mainly inputs/products/services for their farming activities from agro-dealers while 5% accessed inputs and services from aquaculture SMEs.

Additionally, 95% of the farmers interviewed stated that they benefitted at different levels from their engagements with SMEs under the AAI, it is important to note that while most of the respondents benefitted they also cited some challenges and itemized recommendations that the SMEs could consider in order to improve the delivery and provision of services.

Figure 2. 25: Distribution of the farmers (%)

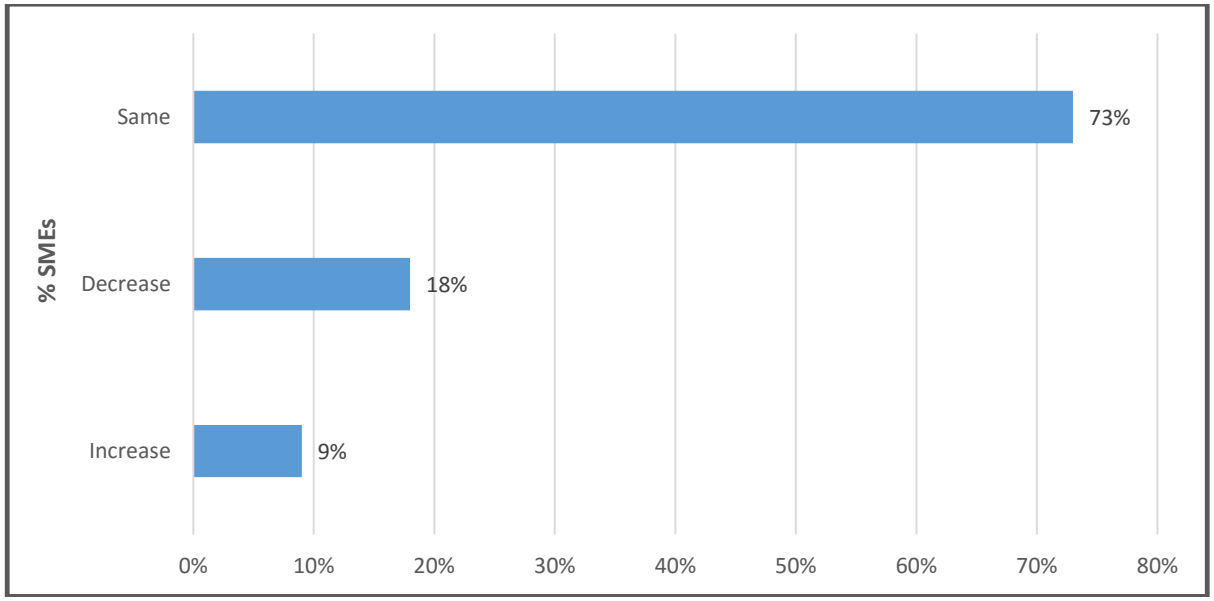


Source: AAI 2021 data and authors' computations

3.5.1 Farmers' perception on market availability for inputs and commodities

The majority of the farmers (73%) indicated that the distance to the market access points whether seasonal or permanent did not change since they started working with the SMEs under the AAI project, however, 18% stated that they observed a decrease in the distance to the access points since they started working with the SMEs while 9% stated having had an increase in distance instead. As can be seen in the figure below; this increase in distance could be attributed to the downsizing of businesses due to prevailing harsh macroeconomic conditions as well as the effects of COVID-19 regulations and public health protocols.

Figure 2. 26: Distance to the Market Access points (% SMEs)

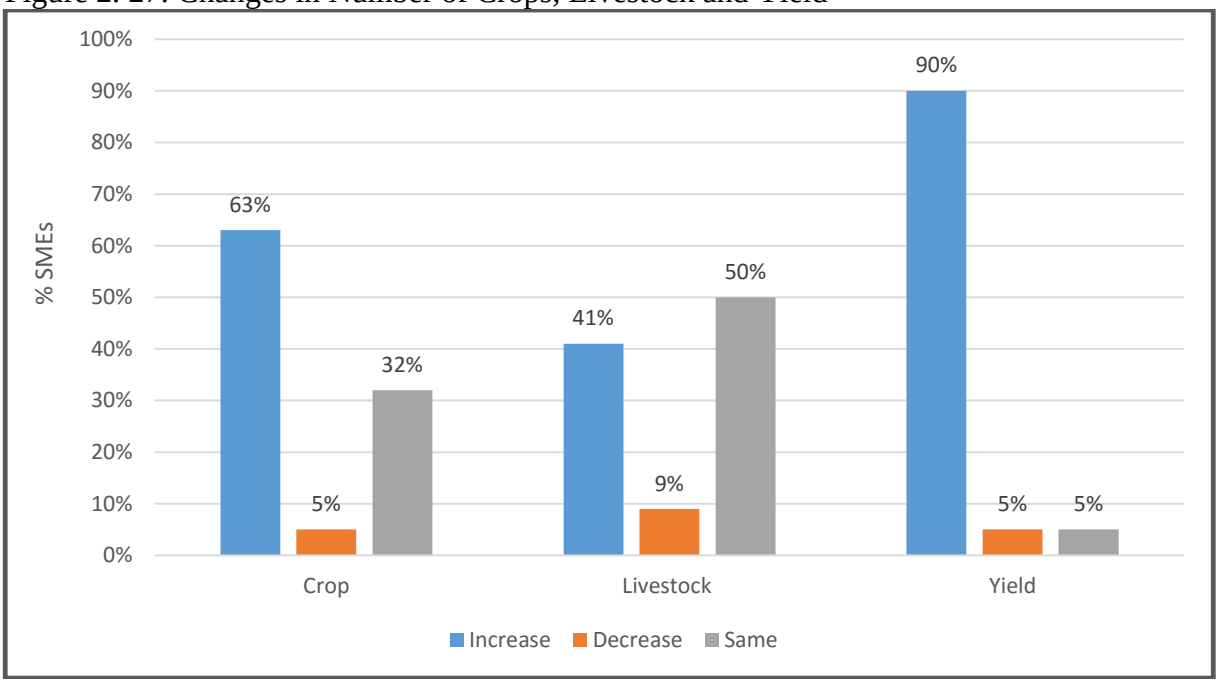


Source: AAI 2021 data and authors' computations

3.5.2 Farmers' perception on changes in yields as a result of market linkages

The majority of the farmers (63%) stated that they increased the number of crops grown since they started working with the SMEs under the AAI project, while 90% of the farmers observed an increase in yield, and attributed it to working with the SMEs under the AAI project. This could largely be attributed to the fact that 95% of the farmers stated having received extension information from the SMEs with 56% accessing this information through in person consultations. However, 9% of the respondents stated having experienced a decrease in the number of livestock they reared partly due to the low availability of veterinary drugs as a result of import challenges for certain drugs by the SMEs.

Figure 2. 27: Changes in Number of Crops, Livestock and Yield

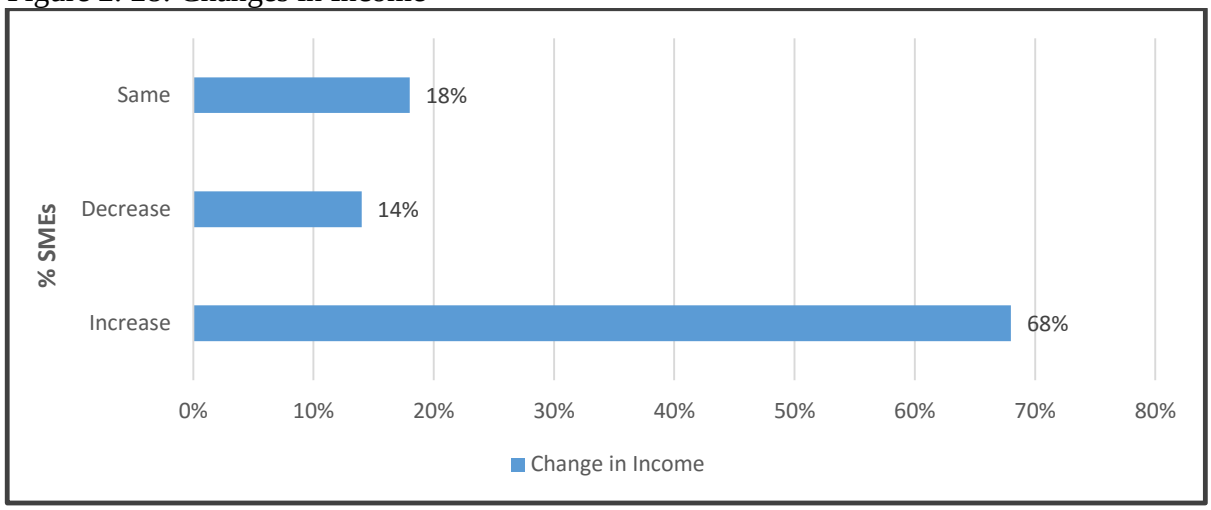


Source: AAI 2021 data and authors' computations

3.5.3 Farmers' perception regarding changes in income as a result of market linkages

More than half of the farmers (68%) indicated having observed an increase in the amount of income earned from farming activities as a result of working with SMEs under the AAI project whilst 14% stated having experienced a decrease in the income generated from agricultural activities in the 2019/20 agricultural season. The study further revealed that an average of ZMW25, 905 was earned from all agricultural activities by farmers during the 2019/20 agricultural season. A further breakdown of the average amount earned revealed that the farmers earned more from crops as compared to livestock, with ZMW21, 415 being the average amount earned from crop sales compared to ZMW4, 489 generated from livestock sales. Although this study did not delve into off-farm income, this result on agricultural income is not far off in corroborating the results from the RALS (2019) were the average household income among smallholder farmers in Zambia was estimated at ZMW21, 539 for the 2018/19 agricultural season.

Figure 2. 28: Changes in Income



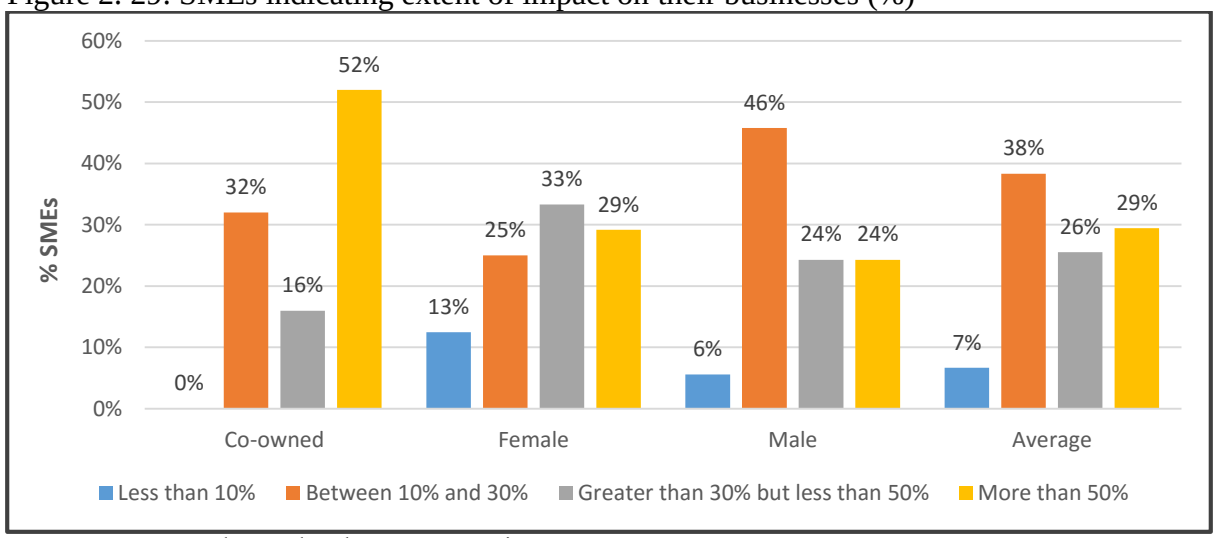
Source: AAI 2021 data and authors' computations

3.6 Impact of COVID-19 on the Businesses

The study found that 96% of the SMEs captured during the survey were affected by COVID-19, only 4% of the SMEs felt that the pandemic did not affect their business operations. Furthermore, 97% of the SMEs affected by the pandemic observed that the pandemic had a negative effect whilst a paltry 3% felt that the pandemic had a positive effect, the SMEs which were positively impacted were into aggregation, and food processing whilst one was being run as a cooperative.

And for the SMEs which were negatively affected, the majority experienced a reduction in their turnover between 10% and 30%. However, almost a third of the SMEs had indicated a reduction in revenues by more than 50% within 2020. Co-owned businesses were the most affected compared to singularly run businesses. In terms of gender, a higher proportion of female run enterprises had incurred higher losses than male led enterprises, see figure 2.29 below.

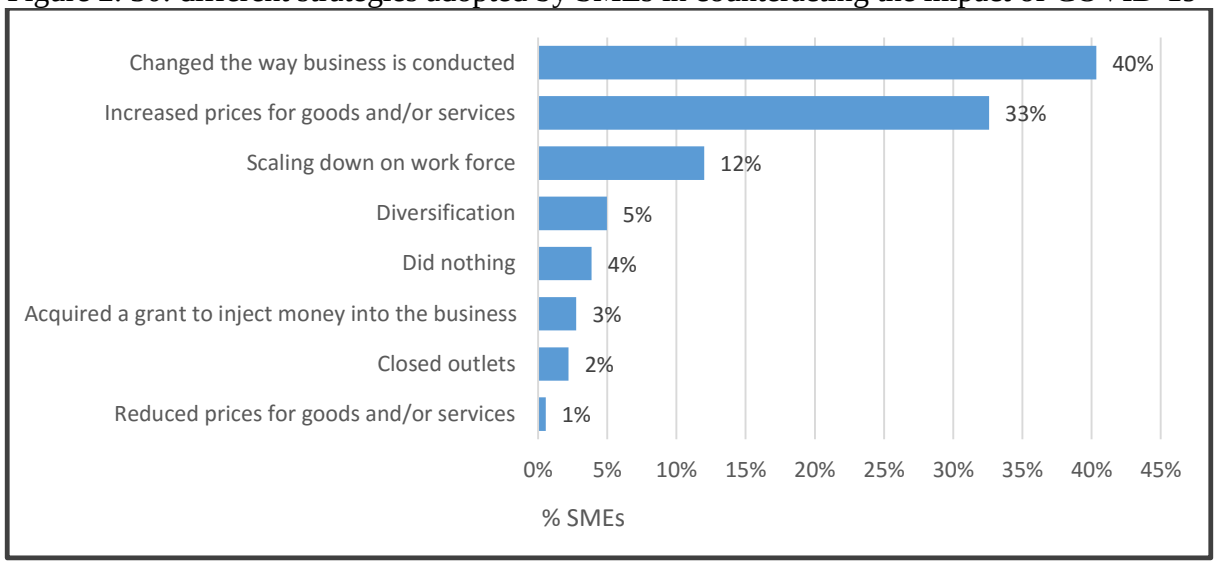
Figure 2. 29: SMEs indicating extent of impact on their businesses (%)



Source: AAI 2021 data and authors' computations

In cognisance of the effects of COVID-19, various strategies were devised by enterprises to counteract the effects of the pandemic. The majority of the SMEs (40%) adapted, changed the way they conducted businesses i.e. bought stock in bulk to avoid shortages, devised credit options to customers, increased stakes in commission based engagements with suppliers etc. the second most common strategy (33%) was to pass on the costs of goods and services onto the customers, increased the prices of goods and services. A measly 3% acquired a grant to cushion the effect of the pandemic on their businesses. None of the SMEs stated the acquisition of a loan to help finance their businesses as a result of the pandemic. The Targeted Medium-Term Refinancing Facility is one facility which has not significantly benefited the agriculture stakeholders as only 2.6% of the borrowers from the agriculture sector had accessed the funds, and in the case of generalized beneficiaries from wholesale and retail trade, only 3.5% accessed the funds[9].

Figure 2. 30: different strategies adopted by SMEs in counteracting the impact of COVID-19



Source: AAI 2021 data and authors' computations

[9] https://www.boz.zm/tmtrf_report_as_at_18_january_2021.pdf

4 Conclusions and Recommendations

4.1 Conclusions

Following the implementation of the Agribusiness Accelerate Initiative (AAI) for the past three (3) years, its effect on the key stakeholders could be stated to have been significant especially the trainings as shown by the empirical evidence. However, access to finance and augmenting linkages to large agribusinesses remain areas needing more exploitation. Furthermore, the study garnered results that showed that smallholder farmers were impacted, albeit qualitatively. Some of the observations by smallholder farmers included a reduction in distance to access agricultural products and services. And more importantly, smallholder farmers observed increased crop yields and improved incomes as a result of their engagements with SMEs under the AAI.

4.2 Recommendations

Capacity building trainings: this activity was found to significantly affect the profitability of agribusinesses. Potential areas of focus could be the fulfilment of legal requirements, over half of the SMEs did not fulfil legal requirements in operating their businesses. Closing the gap in the proportion of the SMEs operating without critical legal documentation can affect their level of access to finance as an enterprise. Perhaps, the project could consider prioritizing critical document acquisition and showcasing the value proposition thereof i.e. basic documents which could help in recognising the enterprise, officially and legally.

Augmenting the distribution linkages: a good proportion of SMEs were linked to input suppliers to supply agricultural products on their behalf on consignment basis, this form of partnership has significant potential of offsetting costs which could be incurred in the conventional procurement and sales. The capacity building provisions could look at enhancing such linkages which have the potential of positively contributing to the financial performance of the rural enterprises. Emphasis and priority in recommendations could also target the SMEs in the Gold, and perhaps the Silver category.

Enhancing Out-grower Arrangements: a good proportion of high performing SMEs had relatively high number of farmers to whom the enterprises reached out in terms of extension provision. Establishing such linkages, although relatively costly in the short term, could pay off in the long term. This could strengthen customer loyalty whilst broadening the catchment of the SMEs, seed multiplication could easily be exploited with such an arrangement. Furthermore, this arrangement could be integrated with the distribution partnerships with primary firms.

Trainings to financial providers: need to consider provisions of capacity building trainings to Financial Service Providers. These trainings could include trainings to key FSP personnel who interface with SMEs to help them better meet the specific needs of SMEs. Thus BDS could be extended to banks or FSPs willing to exploit the SME space. This might also involve piloting a scheme were Musika buys down some of the risk for loans accessed by the “Gold category” SMEs. This could initiate innovations in developing SME-specific credit services.

Pilot an SME revolving fund to nudge financial access: perhaps another iteration to the preceding recommendation could be that Musika pilots an SME fund, Musika creates a revolving fund where the funds are used to guarantee loans within the AAI platform, and this could be piloted with specific regions in collaboration with a bank willing to partner on such an arrangement. The pilot could target only Gold SMEs with the hope that if the pilot is successful, this encourages the graduation of the other SMEs into the gold category.

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Annex 1

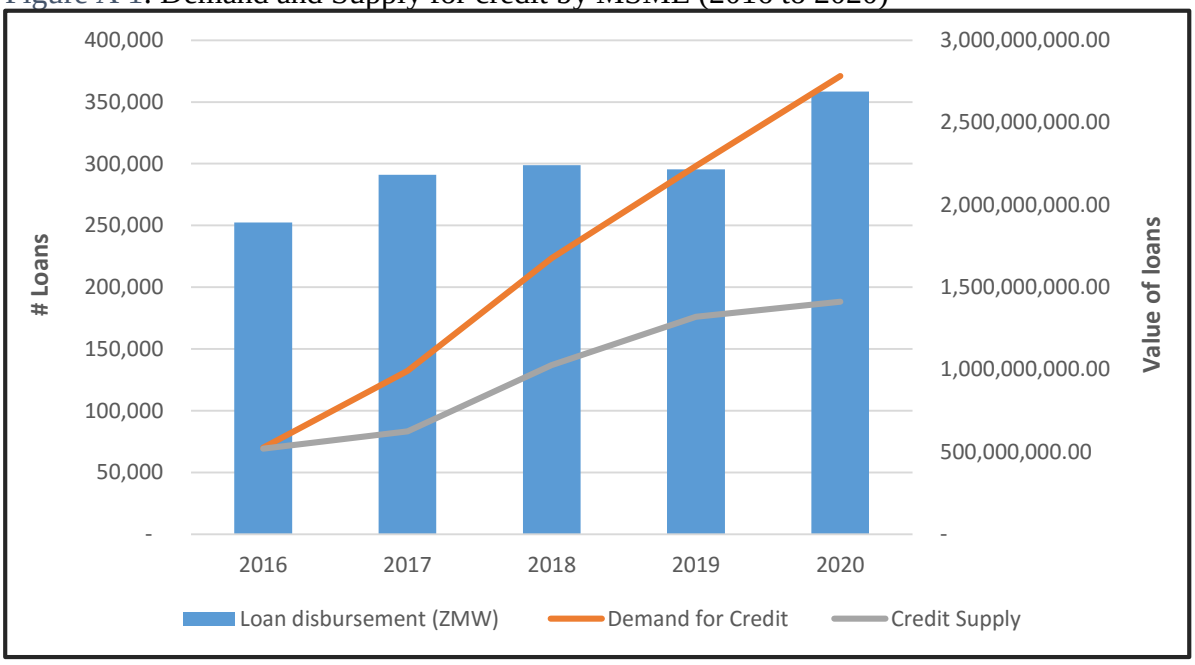
Table A 1: Panel data models results (2018 to 2020)

Variables	*Standard Fixed Effects*	*Standard Random Effects*
Dependant variable = Gross Profitability		
Gender (Base=Co-Owned)		
Male (Yes=1)	(omitted)[10]	425974.4
		(418869.7)
Female (Yes=1)	(omitted)	151751.1
		(530816.8)
Number of Outlets	-33254.2	60144.7.
	(46092.5)	(36308.4)
Number of Market Services	87011.6	166676.9
	(107415.4)	(103764.3)
Total Costs	-0.9***	-0.8***
	(0.0)	(0.0)
Number of Employee	5886.8	52520.9***
	(16966.2)	(14117.4)
Number of Customers	197.0***	357.3***
	(34.9)	(32.4)
Number of Records	32965.1	7918.9
	(90977.8)	(75623.6)
Access to Credit (1=Yes)	241246.8	-6314.0
	(353294.8)	(33020.5)
Years in Operations	82857.8	28559.8
	(25906.5)	(33855.9)
Number of Trainings	43094.2**	42570.6**
	(14080.8)	(19246.7)
Record keeping	54383.9*	33575.6
	(19018.4)	(30494.8)
Financial Management	46959.2	74921.0*
	(43614.8)	(44844.4)
Marketing	-14951.3	-29205.8
	(36309.6)	(30963.2)
Legal Compliance	-23427.7	-4623.7
	(31240.2)	(30397.6)
Building Customer relationship	-7099.9	-36273.1
	(38577.0)	(34912.4)
*, **, *** Significant at 10 %, 5% & 1 %, respectively		
Number of observations = 205		
Number of groups =104		
Fixed Effects: F(14,93) = 129.41***		
Random Effects: Wald chi2(16) = 992.93***		

Note: Values in parenthesis are standard errors.

[10] The time-invariant variables are dropped i.e. each SMEs' value of gender does not change over the three (3) year, it has time-invariant effects.

Figure A 1: Demand and Supply for credit by MSME (2016 to 2020)



BoZ, 2020 & authors' computations

Table A 2: Average Turnover by Main Line of Business and Gender Between 2018 and 2020 (ZMW)

Line of business	2018				2020			
	Co-owned	Female	Male	Average	Co-owned	Female	Male	Average
Agent/Distributor	800,000.00	-	-	800,000.00	-	-	26,000,000.00	26,000,000.00
Aggregator (crop)	806,203.33	811,132.51	559,346.20	726,217.91	-	3,950,000.00	1,320,500.00	2,197,000.00
Aggregator (livestock)	-	-	40,000.00	40,000.00	-	-	60,000.00	60,000.00
Agro-dealer	7,030,647.80	478,546.76	1,724,706.70	2,571,510.90	578,044.78	908,373.10	1,740,283.40	1,396,354.50
Cooperative	-	-	58,622.50	58,622.50	99,366.67	215,000.00	-	128,275.00
Food-Processing	-	-	950,156.00	791,796.67	6,402,600.00	1,200,000.00	532,500.00	3,215,600.00
Transport	-	-	4,313,333.30	4,313,333.30	-	150,000.00	-	75,000.00
Veterinary services	-	-	400,500.00	400,500.00	-	-	498,586.00	498,586.00
Average Earned Turnover (ZMW)	**5,888,238.90**	**494,925.00**	**1,529,043.30**	**2,202,069.00**	**1,223,891.40**	**986,485.35**	**1,813,851.70**	**1,517,912.00**

Table A 3: Average Profit by Main Line of Business and Gender Between 2018 and 2020 (ZMW)

Line of business	2018				2020			
	Co-owned	Female	Male	Average	Co-owned	Female	Male	Average
Agent/Distributor	500,000.00	-	-	500,000.00	-	-	350,000.00	350,000.00
Aggregator (crop)	64,780.00	193,856.03	111,309.61	140,525.35	-	807,500.00	329,250.00	488,666.67
Aggregator (livestock)	-	-	22,000.00	22,000.00	-	-	35,000.00	35,000.00
Agro-dealer	300,246.26	112,082.84	347,704.97	280,346.69	237,253.33	162,568.71	405,852.08	324,543.36
Cooperative	-	-	10,454.63	10,454.63	23,750.00	36,000.00	-	26,812.50
Food-Processing	-	-	216,630.40	180,525.33	72,450.00	360,000.00	476,666.67	259,975.00
Transport	-	-	927,333.33	927,333.33	-	40,000.00	-	20,000.00
Veterinary services	-	-	46,128.00	46,128.00	-	-	123,500.00	123,500.00
Average Earned Profit (ZMW)	**271,052.46**	**116,734.84**	**308,399.35**	**288,460.20**	**159,528.67**	**184,214.94**	**386,566.86**	**129,469.60**