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IMPACT ASSESSMENT OF THE EFFECTIVENESS OF AGRO-DEALER DEVELOPMENT ACTIVITIES CONDUCTED BY USAID-AIMS PROJECT IN MOZAMBIQUE

Agricultural Input Markets Strengthening (AIMS) III

June 2015



Shop of AIMS-Trained Agro-Dealer in Sussendenga

This publication was produced for review by the United States Agency for International Development. It was prepared by Latha Nagarajan, Agricultural Economist for IFDC, supported by the IFDC Mozambique Country Team comprised of Alexander Fernando, Wilson Leonardo, Aniceto Matias and Ginga Goncalvez. The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



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**USAID-AIMS-Trained Dealer Certification Display
in Lyoma Village, Gurue District, Zambezia Province**

DISCLAIMER

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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Acronyms and Abbreviations

AGRA	Alliance for a Green Revolution in Africa
AIMS	Agricultural Input Markets Strengthening
AMPIA	Associação Moçambicana de Provedores de Insumos Agro-pecuários
BOM	Banco Oportunidade de Moçambique
CADECO	Capacity Development Consultants
CPPs	Crop Protection Products
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GPS	Global Positioning System
IFDC	International Fertilizer Development Center
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
MADD	Mozambique Agro-Dealer Development
MFC	Mozambique Fertilizer Company
MZM	Mozambique meticais
NGO	Non-Governmental Organization
PASS	Program for Africa's Seed Systems (AGRA-PASS)
ROI	Returns on Investment
SEMOC	Sementes de Moçambique Ltda (Mozambique Seed Company)
SSA	sub-Saharan Africa
USAID	United States Agency for International Development

Impact Assessment of the Effectiveness of Agro-Dealer Development Activities Conducted by USAID-AIMS Project in Mozambique

Executive Summary

While extensive work on agro-dealer development has been undertaken, the focus has been more on training large numbers of agro-dealers to stimulate agro-input supply rather than understanding and addressing the specific market constraints agro-dealers face. Often, these programs on enterprise development and technology transfer are criticized for their limited scale of operation, high transaction costs and lack of a clear plan for achieving long-term sustainability. In particular, assessments are limited comparing the impact of such investments related to “agro-input dealers and business linkages” on increased use of agro-inputs. Lessons learned from such an evaluation would answer questions related to “how to improve farmers’ access to and use of agro-inputs, on a large-scale, at an affordable cost and in a more sustainable way.”

Agro-dealer development was one of the key components of the USAID-funded Agricultural Input Market Strengthening (AIMS) project implemented by IFDC in Mozambique. AIMS focused on creating an extensive network on input suppliers/retailers, equipping them with business and technical knowledge and strengthening their capacity through credit, information and policy to meet the demand. Since 2006, AIMS has directly trained 201 agro-dealers covering both Beira and Nacala corridors. AIMS-IFDC staff in Mozambique conducted a rapid impact assessment of agro-dealers during July-September 2014. The purpose of this assessment is to profile and document the contribution of the AIMS project toward establishing sustained agricultural input networks and providing inputs accessible to smallholders in Mozambique. This was done on a limited scale by comparing a few key parameters with the baseline conducted in 2006 before the start of the program, and subsequently by a detailed survey assessment among dealers who were trained by the USAID-AIMS project vs. those who were not trained but are operating agro-input businesses in the project areas.

Prior to conducting the impact assessment, an extensive exercise was undertaken to profile the existing agro-dealer network (N=105) in the project areas across 10 target districts from four provinces in Beira and Nacala corridors. The provinces and districts are: Zambezia (Alto Molocue, Gurue), Nampula (Malema, Ribaué), Sofala (Buzi, Nhamatanda, Dondo) and Manica (Manica, Sussendenga, Gondola). We found that nearly 50 percent of the agro-dealers (of the total 201 AIMS-trained dealers) are still in business, selling inputs worth nearly 20 million MZM per cropping season. During the profiling, we also noted that there is a 30 percent increase in the number of small retailers, i.e., “new” or “non-trained” agro-dealers in the surveyed districts.

Followed by the profiling exercise, a final detailed assessment was conducted among 65 agro-dealers in all the profiled districts and provinces. Our sample included three type of agro-dealers: dealers who were trained by AIMS and still in business (n=35); dealers who were trained by AIMS but could not continue due to various reasons (n=11) and dealers who are “new” or “not trained” by AIMS or any other programs (n=19). Survey instruments were designed to capture socio-economic characteristics of the dealers, the nature and coverage of their business operations, effectiveness of dealers’ participation in capacity-building activities, technology transfers, and any improvement in their performance since training.

In general, the agro-dealers have observed an increased demand for agricultural inputs among farmers in the last five years. Sixty percent of the sample in our survey (both trained and non-trained) said their businesses have doubled in the last three to four years. Demand for improved varieties of maize and beans have gone up along with use of fertilizers (NPK and urea) for these crops. Distances traveled by farmers to access farm inputs have reduced substantially with improved dealer networks.

A. Key Impacts of USAID-AIMS Project Since 2006

1. In project districts, the numbers of input suppliers have increased from as few as 150 in 2006 to over 600 input suppliers operating in Beira and Nacala corridors alone. This is partly due to capacity-building activities of donor-sponsored programs such as USAID-AIMS and AGRA-supported MADD projects.

2. The seasonal nature of the agro-input trading has improved modestly since 2006; currently, 30-35 percent of the dealers in the surveyed districts are operating inputs businesses year-round compared to 90 percent of seasonal input operations in 2006.
3. The portfolio of inputs sold by the input dealers has also increased since 2006. Nearly 90 percent of the input traders surveyed during 2006 were engaged in selling seeds only in their shops; this is compared to 37 percent of the dealers in these districts that now sell more than one input (up to four inputs) in their shops.
4. The women-owned agro-input shops have slightly increased from as low as 6 percent in 2006 to nearly 15 percent among AIMS-trained dealers and 9 percent among non-AIMS agro-dealers.
5. A significant reduction in distance traveled in sourcing inputs by farmers has been observed since 2006. The average distances traveled by farmers to access inputs were as high as 179 kilometers (and minimum distance was 36 km) in 2006; currently, this distance is reduced to as low as 30 km to access inputs (the maximum distance to access inputs is 60 km).

B. Effectiveness of USAID-AIMS Agro-Dealer Development Programs

Of the trained dealers, we found four different types of input retailers in our sample. They were grouped as very small retailers (26 percent) who sold directly to farmers, mostly in Sofala province of Beira corridor, had seasonal operations and gross sales less than U.S. \$1,000 per annum; and small retailers (37 percent) who also sold directly to farmers, were located in Nampula and Manica provinces (mostly in Nacala corridor), with sales ranging from U.S. \$1,000 to \$5,000. The small dealers also operated seasonally. They were situated far from the main roads and bought inputs from wholesale dealers in provincial headquarters. Nearly 14 percent of dealers surveyed were medium-sized with annual gross sales of inputs ranging from U.S. \$5,000 to \$10,000. They were situated very close to district headquarters and major towns in both the corridors. Twenty-three percent of trained dealers surveyed were large dealers with gross sales of over U.S. \$10,000 (maximum \$50,000) located in district headquarters. They usually supplied inputs to all the other types of dealers, and sourced their inputs through importers and input firms directly. A few large-sized dealers were also seed processors with their seed multiplication and distribution outlets. Almost all the non-trained dealers in our sample were very small retailers, highly seasonal with gross sales of U.S. \$1,000 per year.

In our assessment areas, we found that in general the AIMS-trained dealers have had significant years of experience in selling agro-inputs (9.7 years) with established micro-retail networks (30 percent of them) that include an average of four micro-retailers per dealer. An operation through established micro-retailers was highest among dealers in Sofala province, covering up to five villages with distances as far as 57 km from their location. The non-trained dealers, who had a little over six years of experience (6.2 years), had relatively little micro-retailing operations in their business. The radius of business operations in terms of distance covered by AIMS dealers was also significantly higher (30 km average) than non-trained dealers (17 km). This is partly due to the ability of trained dealers to extensively reach through micro-retailing operations.

Only 30 percent of the trained dealer shops sold agro-inputs exclusively as they also sold groceries and other food items in their shops. Though this number was higher among non-trained dealers (53 percent), they operated seasonally with less technical knowledge about agro-inputs and their sales. Fifty-two percent of AIMS dealers sold inputs only during the cropping season (vs. 43 percent among non-trained). As the demand for agro-inputs are seasonal, diversified business operations, which include engagement in output trading among AIMS-trained dealers, could be seen as measure of risk reduction and improved sustainability.

Income from seed sales remains the primary source for most of the shops in Beira and Nacala corridors. However, in Nacala corridor, fertilizer sales were dominant (over seed sales) among trained dealer shops as they are located in and around intensive vegetable- and tobacco-growing regions. In terms of input sourcing, 90 percent of the dealers traveled to the nearest market town located as far as 75-90 km distance. The dealers in Beira sometimes traveled to Zimbabwe to purchase seeds; in Nacala, the retail traders traveled as far as Malawi to source fertilizers (especially ammonium sulfate). In general, there are several small-to-big market towns in Beira corridor, compared to Nacala, as the extent of the input suppliers network is more established in Beira than Nacala corridor.

The agro-dealers sourced their inputs from different types of traders depending on the volume of purchase. Most of the trained and non-trained dealers sourced seeds from retailers located in towns and also from seed producers. In the case of fertilizers, the trained dealers sourced

fertilizers from different types of traders, viz., retailers, wholesaler, importers and also directly from manufacturers. In the case of non-trained dealers, they mostly sourced from only manufacturers and importers; a few of them were supplied through NGO programs also. The chemicals were sourced mainly from retailers, wholesaler and importers of inputs. Mostly chemicals were purchased for vegetable cultivation in both the corridors. Of the dealers surveyed, 49 percent of AIMS-trained dealers (vs. 26 percent of non-trained) participated in at least one or two years of the voucher programs to supply fertilizers. The participation in the input voucher program was higher among dealers in Beira corridor than in Nacala as the percentage of dealer network is very thin. Sixty-five percent of the AIMS-trained dealers also indicated that sales of improved maize seeds in their shops have increased three times since their participation in the voucher program in 2009-2010.

Seventy-seven percent of AIMS-trained dealers and 63 percent of non-trained dealers provided input credit to farmers toward the purchase of seeds and fertilizers. The dealers also received credit from suppliers toward purchase and stock of inputs. Apart from sale of inputs, the dealers also have engaged in grain trading operations. Sixty percent of AIMS-trained dealers (vs. 26 percent of non-trained) were engaged in output trading with an average annual grain sales value of 440,000 MZM per trader. The trained agro-dealers also conducted farm demonstrations to effectively disseminate technologies and used this as a tool to attract customers toward purchase of inputs in their shops.

The agro-dealers in general earned moderate to higher returns on their investment from the sale of agro-inputs. This is evident from comparing their initial investment to current sales of inputs in both Beira and Nacala corridors. The average initial investments made by AIMS-trained dealers were slight higher (18,000 MZM) to non-trained dealers (14,000 MZM). However, the current sales of inputs in trained dealer shops were substantially higher in value (both in stock and sales) at 280,000 MZM per shop compared to non-trained dealers whose sales averaged at 95,000 per shop annually. Generally, the medium and large dealers have more business experience and also sold more inputs in value. Of the total input sales, very small traders earned their income mostly from selling seeds and also stocked and sold vegetable seeds year-round by covering many villages or locations to sustain their sales income. The small-sized traders in general were engaged in both seeds and fertilizer sales, as they were able to finance their

operations through input credit from input suppliers. They were confined to selling inputs within 20-25 km of their communities, as covering large distances would increase their transport costs. These traders sold fertilizers in small packets (1-5 kilogram packages) for vegetable growers throughout the season and were able to sustain their business operations, though on a seasonal basis. The relative contribution of fertilizer sales to total input sales was higher among other trader types as most of them are involved in supplying fertilizers through input voucher program. Usually, the small traders were not able to participate in voucher programs due to finance constraints. The medium-sized dealers were able to participate in input voucher programs and have extensive micro-retail networks to cover more communities – which had significant impact on their sales income. To sustain their agro-input operations, they also are actively engaged in output trading. The large-sized dealers, mostly able to finance their operations on their own, extend credit to the retailers and also are able to supply inputs to very small, small, and medium retailers year-round.

Our surveys also indicate that both trained and non-trained agro-dealers availed input credit from their suppliers to run the business during the peak demand period. The major constraint faced by both groups of agro-dealers was lack of financing to expand their business operations. Agro-dealers have limited access to finance. High interest rates and 150 percent collateral requirements make it difficult to borrow funds for business development. Commercial banks are reluctant to lend to agro-dealers because they consider agriculture a risky business. The agro-dealers, due to weak business linkages, often fail to secure funding from importers and wholesalers. Though efforts were undertaken during AIMS to provide linkages with financial/credit institutions, obtaining non-guaranteed funds from banks is still an issue. It was evident that shops owned by trained agro-dealers were performing better than non-trained and new agro-dealers, who had less experience in business. Most of the trained agro-dealers (90 percent) attributed their business management skills – especially skills in finance and networking with suppliers – to AIMS agro-dealer training. The conduct of the business at the shop was rated based on display of stock, variety of products offered, product knowledge, customer flow and recordkeeping habits of the agro-dealers. In general, the conduct of the business at the shop premises of trained agro-dealers was rated “good to excellent” compared to non-trained agro-dealers with an “average” rating.

To conclude, three major lessons can be inferred from the assessment of agro-dealer development programs in Mozambique:

- (i) Though there exists a low and fractured demand for input use, still “accessibility to input supply is too low” in Mozambique, i.e., the existing network of input suppliers in number and availability. In the absence or presence of a weak extension system, input retailers are the major alternatives in many of these communities for technology transfer and in the supply of improved agro-inputs.
- (ii) The seasonal nature of demand for agro-inputs and insufficient scale of business operations are major setbacks toward sustaining input business operations by input retailers. In this regard, it is important to focus any agro-dealer capacity building toward the “ideal type of trader” who can generate sales year-round by diversification (which includes linking with existing input voucher programs), output trading and effective technology transfer mechanisms.
- (iii) However, with higher costs of credit (35-40 percent interest rates) and limited access and opportunities for agro-input business operations among those who are engaged in this business already, it is evident that sustainability of the agro-dealer business model in Mozambique primarily depends on their scale of operations. This is heavily dependent on their ability to finance or obtain business credit.

Impact Assessment of the Effectiveness of Agro-Dealer Development Activities Conducted by USAID-AIMS Project (2006-2013) in Mozambique

1. Introduction

Agriculture remains the largest sector in the Mozambican economy, engaging 80 percent of the population and contributing a quarter of the nation's GDP. Though Mozambique's agricultural sector has experienced strong growth over the past two decades, opportunities exist for significant further development (IMF, 2014). Agricultural transformation is ongoing, based on private investment and the gradual introduction of commercial models.

Agricultural productivity, central to smallholder farmers' welfare, is often held back by inadequate use of modern inputs, improved technologies and appropriate farming practices. Growth in productivity of staple crops has been low with yields averaging less than a ton per hectare for major cereal crops. Less than 10 percent of Mozambique's staple crop area is planted with certified seed. Fertilizer use is concentrated on a few cash crops, especially tobacco and sugarcane, with minimal usage by small-scale farmers due to high fertilizer prices in rural areas. Fertilizer use in terms of nutrients applied is very low, at 4.3 kilograms per hectare (compared to 9.5 kilograms in Ghana and 8.2 kilograms in Ethiopia). This level is well below the African Union's 2006 *Abuja Declaration on Fertilizers for an African Green Revolution*, which set a target for sub-Saharan Africa of 50 kilograms per hectare by 2015. Input use and agricultural productivity are often linked (World Bank, 2008). If an agricultural transformation is to occur in Mozambique, smallholder farms will have to develop either as viable agribusinesses or will need to be linked to commercial enterprises that support the use of modern inputs and facilitate access to markets (ABI, World Bank, 2012). Millennium Development Goals (2005) also articulate the need for building efficient input delivery mechanisms and improved technologies to poor farm households in order to improve food security. This can be achieved by creating effective demand for improved technologies and inputs among poor farmers, by providing increased access to inputs through efficient marketing and lowered transaction costs. Since the late 1990s, several investments by donors and governments have been made in various sub-Saharan African nations

on building efficient and adaptive input delivery mechanisms. A strong input delivery system through a vibrant retail network is crucial to achieve better yields. These local retailers serve as the primary conduits of farm inputs such as seeds and soil nutrients, and knowledge about their safe and efficient use in their local communities (AGRA, 2006). The government of Mozambique’s new agricultural sector strategy for 2011-2020 aims to achieve 7 percent annual growth in agriculture through a combination of increased farm productivity and area expansion under food crops. The strategy also promotes the creation of an enabling environment conducive to stronger private sector participation in the various value chains.

1.1 AIMS and Agro-Dealer Development

The purpose of the USAID-funded Agricultural Input Markets Strengthening (AIMS I, II & III) projects implemented by IFDC from 2006 to 2014 was to establish open and competitive markets and dealer networks – as the primary mechanisms to improve farmer access to appropriate technologies for accelerated growth in agricultural production. The overall goal of the project was improving access to, availability of, and increased incentives for the use of fertilizer and other agro-inputs. The AIMS project in its third (AIMS III) phase (October 2012-September 2014) continued its focus on strengthening the capacity of private sector enterprises toward building sustainable input and output markets. In addition, AIMS III also aimed at strengthening the existing public sector capacity to develop and transfer best practices (profitable technology practices) through commercialized farming systems.

Table 1.1 Agro-Dealer Development Activities Implemented by IFDC (2006-2014)

Agro-Dealer Development Program	Years of Operation	Areas of Operation	Donors
Agricultural Input Markets Strengthening (AIMS I)	Oct. 2006-Sept. 2009	Beira and Nacala Corridor (Manica, Sofala , Zambezia, Nampula Provinces)	USAID
Agricultural Input Markets Strengthening (AIMS II)	Oct. 2009-May 2012	Beira and Nacala Corridors (Manica, Sofala and Nampula Provinces)	USAID
Mozambique Agro-Dealer Development Program (MADD I)	Oct. 2009-Sept. 2012	Beira Corridor (Tete and Manica Province)	AGRA-PASS
Agricultural Input Markets Strengthening (AIMS III)	Oct. 2012-June. 2015	Beira and Nacala Corridor (Manica, Sofala and Nampula Provinces)	USAID

The work of AIMS in Mozambique has been well complemented by the AGRA-funded Mozambique Agro-Dealer Development (MADD I) project in Manica and Tete provinces (2009-2012) to train agro-dealers in the provision of technology and inputs to small farm households in the region. This was accomplished through creating demand toward increased use of yield-enhancing inputs, promotion of sustainable crop production technologies, business networking and reduction in marketing costs of agricultural commodities in rural markets. In its second phase (May 2013-2015), MADD continued its focus on building efficient input supply systems through improved access to finance and business partnerships. In short, the major objectives of the above programs were:

- Improved access of small farmers to agro-inputs.
- Improved adoption of best input technology packages toward increased yields by farm households.
- Reduction of transaction costs (both at farm and for entrepreneurs).
- Sustainability of agribusiness enterprises and farming systems.

1.2 Objectives of the Assessment

While much work on agro-dealer development has been undertaken, the focus has been more on training large numbers of agro-dealers to stimulate supply of agro-inputs than in understanding and addressing the specific market constraints faced by agro-dealers. These include the low purchasing power of farmers, high cost of capital, high cost of inputs, and analysis of the relative profitability of different agro-inputs in order to maximize overall agro-dealer profits by balancing bulky and low-value fertilizers with other goods.

Often, programs aimed at technology transfer and enterprise development are criticized for their limited scale of operation, high transaction costs and lack of a clear plan for achieving long-term sustainability. In particular, assessments to compare (and contrast) the impact of such investments related to “agro-input dealers and business linkages” on increased use of agro-inputs (or adoption of technologies) and improved crop productivity levels are limited. Lessons learned from such an evaluation would answer questions related to “how to improve farmers’ access to and use of agro-inputs on a large-scale, at an affordable cost and in a more sustainable way.” Further, it would inform policy and scaling up of the interventions that would create demand for such agro-inputs through innovative partnerships among different stakeholders in the agro-input

value chain. In this context, the purpose of this exercise is to assess the impact of the effectiveness of agro-dealer development initiatives (which includes capacity building and enterprise building) undertaken by the USAID-AIMS project in Beira and Nacala corridors. This was done in two ways:

First, *the impact of the agro-dealer development* was captured on a limited scale wherever possible by comparing a few key parameters with the baseline conducted in 2006 before the project began.

Second, *the effectiveness* was measured mainly by relating the experience of AIMS project participants – i.e., dealers trained by AIMS vs. non-trained dealers or non-participants and new agro-dealers entered the business in the same geography or locations covered by the project.

The major objective of this assessment is to identify strategies/mechanisms that ensure farmer accessibility to agro-inputs and thus increase demand for major agro-inputs in a more sustainable manner. The assessment attempted to answer questions such as:

- To what extent were the agro-dealer development programs effective in improving the efficiency and delivery of agro-inputs and in dissemination of knowledge among farmers?
- How sustainable are these agro-input businesses and what are the factors that ensure the delivery of agro-inputs to smallholders?
- Are there documented success stories on the effectiveness of dealer development programs and associated technology transfer?

1.3 Limitations of Assessment

Though significant efforts were made to compare the current survey results to the baseline, we could not capture precise information on input sales and its demand pertaining to a specific location or dealer. The reasons are: (i) the baseline survey did not capture the exact location coordinates of the input traders; (ii) most of the traders questioned during the baseline survey did not conduct their businesses in as organized a manner as they are now; the survey could not distinguish between retailers vs. micro retailers; the survey included farmers' associations and farmers who sold "grains" as "seeds"; in few places (such as Ribaue district), there were no dealer shops that sold agro-inputs, and tools were sold mostly in weekly local markets through

informal traders. The input providers as a category have different “vendor types” depending on the size and nature of business operations. This include large-scale input producers (seed, fertilizer and chemical firms) and suppliers, wholesale suppliers and retail operations. In our assessment, we focused mainly on medium-to-large input suppliers and retailers. Despite differences in scale, there are a few common issues faced by all types of vendors in the supply chain.

Hence, it was difficult to compare the agro-dealer characteristics before vs. after the AIMS project on an individual basis as our sampling consisted of different populations than the baseline. However, to maintain the integrity and to make effective conclusions, we included dealers, sampled from the same geographies and locations where the baseline was conducted. To compare the functioning and the effectiveness of capacity-building activities through AIMS, a control group of those who did not participate in the AIMS program was needed. Ideally, it would have been better to compare AIMS dealers with non-AIMS dealers in non-project areas. Due to time and logistical constraints, we decided to compare dealers trained through AIMS with untrained dealers in project areas. Yet, this provided an opportunity to determine the growth of agro-input businesses in the project areas since the AIMS training occurred and the demand for inputs increased.

2. Sampling and Conduct of the Assessment

The current agro-dealer impact assessment was carried out in two stages; during the first stage, we profiled the existing agro-dealers in all the project areas. This was followed by a detailed impact assessment of sampled agro-dealers from the profiled dealers using pre-tested survey instruments.

2.1 Baseline Comparison

We made efforts to compare the existing input supply situation since the starting year (2006) or before AIMS began on a few key parameters. This was possible to a limited extent built on the information collected through baseline surveys conducted prior to the start of the AIMS project in 2006. The survey was initiated in July 2006 to evaluate the existing status on agro-input access, marketing and its use in potential areas of Beira and Nacala corridors. The information from baseline surveys was used for identifying priority locations/participants toward implementing the AIMS project. Results from the baseline survey were compared wherever possible to draw implications regarding the change in the input supply situation since 2006.

2.2 Current Status of AIMS-Trained Agro-Dealers

Between 2006 and 2012, AIMS trained 201 agro-dealers in Beira and Nacala corridors. The dealers were trained in 15 target districts from four provinces: Nampula (Malema, Ribaue, Murrupula, Mogovolas, Monapo); Zambezia (Gurue, Alto Molocue); Manica (Manica, Sussendenga, Gondola, Barue) and Sofala (Buzi, Dondo, Nhamatanda, Gorongosa).

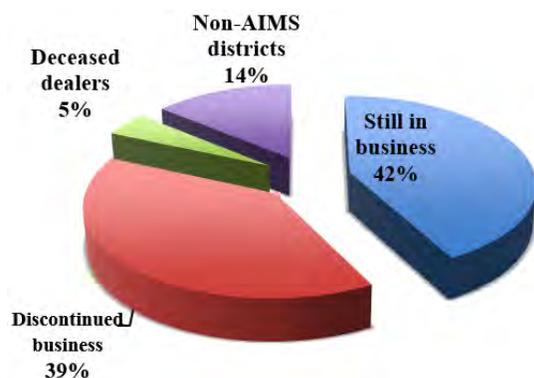


Figure 2.1 Current Status of AIMS-Trained Agro-Dealers

Of the 201 agro-dealers trained, nine dealers died, and 28 trained dealers were not trained through AIMS (three districts) project areas; these were not covered during AIMS II. Seventy-nine trained dealers (39 percent) could not continue their agro-input business operations due to various constraints. This also included participants in the dealer training programs that never started a business after the training.

This left us with 85 trained dealers who still remain in the business. Our final sampling for profile and final impact assessment were drawn from these 85 trained dealers. One should also note that even in developed economies like the United States, small agribusiness failure rates are inevitable and range between 44 and 47.4 percent (Statistics Brain, 2015 & Smallbiztrends.com). Usually, the business failures occurred between four to five years after the start of the business.

2.3 Profiling of Agro-Dealers

The major purpose of this agro-dealer assessment is to profile and document the contribution of the AIMS project in the last five years toward establishing sustained agricultural input networks and in providing inputs accessible to smallholders in Mozambique. Hence, prior to final assessment in July 2014, we conducted an extensive profiling exercise among agro-dealers from 12 districts in four provinces¹. The final profiled agro-dealer sample consisted of 72 trained and 36 non-trained agro-dealers. All the profiled agro-dealers were mapped using GPS coordinates (Annex Maps 1 and 2) and the maps of dealers in each corridor.

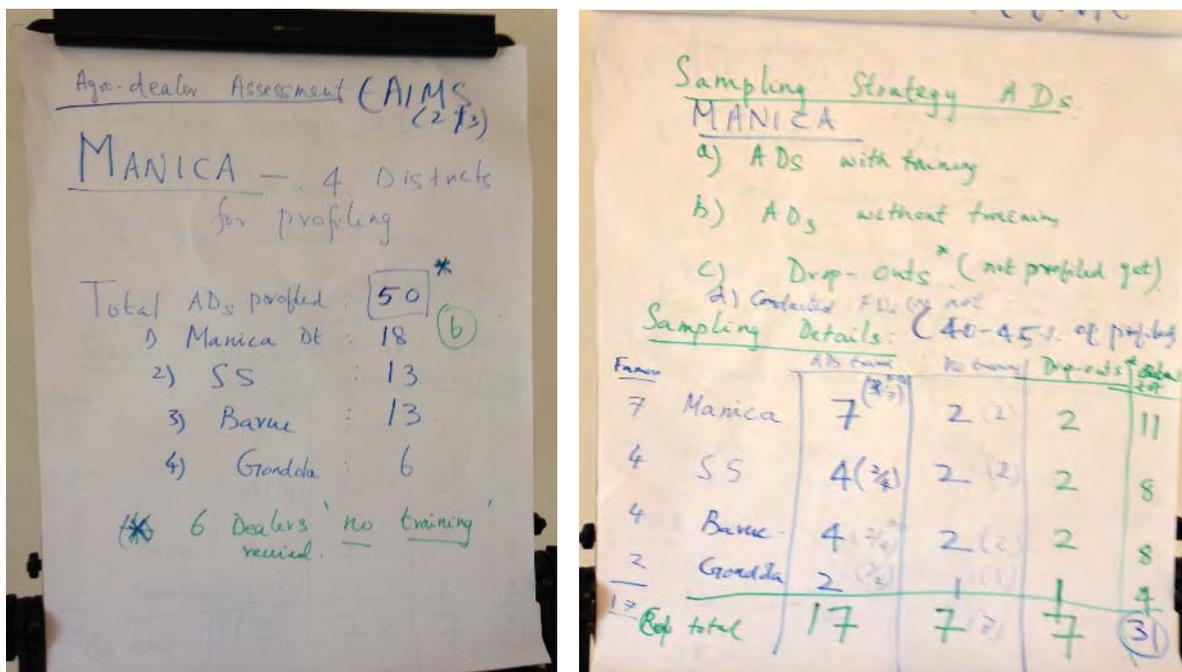
The objectives of the profiling exercise were to determine: (i) how many of the trained dealers are still in business; and (ii) how many new (or in other words “non-AIMS trained”) agro-dealers have started agro-input business operations in the project area. Profiling of agro-dealers collected a few key characteristics, which included the location of their shops with GPS coordinates, nature of their business operations, experience and access to finance and involvement in technology transfer to farmers. The profiling exercise was very helpful in determining the current status of agro-input dealers in general and their business operations, and also in choosing the sampling strategy for the final impact assessment, carried out subsequently during the months of August and September 2014. The summary of agro-dealer characteristics profiled is given in Annex Table 1. We found around 42 percent of the agro-dealers (of the total 201 AIMS-trained dealers) are still in business, selling inputs worth nearly 20 million MZM per cropping season. A total of 85 trained dealers were considered for profiling and for final impact assessment survey. A 30 percent increase in the number of small retailers was also evident in the surveyed areas. These are “new” or “non-trained agro-dealers,” who are currently selling agro-inputs and were

¹ Our profiling did not cover dealers from Murrupula, Mogovolos and Monapo because these were trained only under AIMS I and not in AIMS II, as the districts do not belong to targeted areas of operations under AIMS.

not previously engaged in “formalized means of agro-input trading.” Additionally, we profiled non-trained (or new) dealers to use as a comparison group to determine the effectiveness of AIMS capacity-building activities.

2.4 Sampling and Final Assessment

The entire assessment was carried out during the months of July-September 2014. As discussed, the assessment began with a profiling of agro-dealers (July-August) in the project areas followed by a detailed agro-dealer impact assessment (August-September). The profiling exercise collected a few indicators regarding agro-dealer characteristics, mainly to determine the current status or presence of agro-dealer operations in the AIMS service districts. All agro-dealers were profiled with their geo-referenced coordinates (Annex Maps 1 and 2) followed by a brief interview. From profiling, we finalized sampling details toward final impact assessment, which represented three major types of participants.



Sampling Strategy for Agro-Dealer Assessment – Discussion

For the final assessment, 66 agro-dealers from 12 districts in five provinces were surveyed. Our sample included three types of agro-dealers, namely dealers who were trained by AIMS and still in business (n=36); dealers who were trained by AIMS but could not continue due to various reasons (n=11) and dealers who are “new” or “not trained” by AIMS or any other programs

(n=19).² The sampling for the final agro-dealer assessment was carried out based on profiling data, and the agro-dealers were randomly selected from the list of trained and non-trained agro-dealers. Our final assessment sample collected information from 41 percent of trained agro-dealers who are still in business and 51 percent of new or non-trained agro-dealers. In addition, we also interviewed 11 agro-dealers, representing 14 percent of those who discontinued their agro-input business operations. In addition, focus group discussions were also held among farmers (n=153) in 10 locations to assess the impact of technology transfer through agro-dealers among farmers in the adoption and use of inputs.

Table 2.1 Sampling Details and Proportion of Agro-Dealers Surveyed During Profiling and Final Assessment

S No	Survey Details	Trained Dealers					Non-Trained
		Discontinued	Still in Business	Deceased	Non-AIMS Districts [#]	Total	
1	Total agro-dealers trained under AIMS I & II	79	85	9	28	201*	37
2	Agro-dealer profiling	0 (0%)	74 (87%)	-	-	74 (87%)	35 (95%)
3	Final assessment surveys	11 (14%)	35 (41%)	-	-	65 (40%)	19 (51%)

Note: # indicates the operations were discontinued after the AIMS I phase due to logistical constraints. Figures in parentheses indicates % of dealers sampled during profiling and final assessment (% to (1)).

The survey instruments were designed for both trained and non-trained agro-dealers separately and also pre-tested before implementation. The focus of the survey was to capture the effectiveness of dealers' participation in capacity-building activities offered through AIMS, including technology transfer to farmers occurring from their participation in AIMS-related programs, and any improvement in their business operations (income or sales) and improvement in the demand for agro-inputs in the regions where they serve. The surveys consisted of questions related to a few socio-economic characteristics of the dealer, the nature of their business operations and their location and coverage of business operations. In addition, questions

² To compare the functioning and the effectiveness of capacity-building activities through AIMS, a control group or non-participant of the AIMS program was needed. We also included "dropouts" – dealers who did not continue their businesses – primarily to determine the factors affecting the long-term sustainable nature of these agro-input businesses and the extent of demand for inputs among smallholders in the project areas.

related to their access to finance and the status of business operations (sales related) with regard to seeds, fertilizers and chemicals were noted. We also included questions on their participation in voucher programs – to derive the influence of vouchers on sales as well as their ability to conduct farm demonstrations – a tool of technology transfer to improve their sales operations.

Finally, we also assessed the overall effectiveness of the training program offered to dealers through AIMS. We also discussed in detail regarding the constraints faced by dealers in the conduct and continuity of agro-input businesses in the areas where they serve. The overall performance of dealers in terms of their business conduct and performance was rated through a few key attributes for both trained and non-trained dealers. The survey instruments used for the final assessment are provided in Annex 2. Besides interviewing trained and non-trained agro-dealers, we also held rapid focus group discussions among farmers who benefited directly and indirectly through farm demonstrations conducted by the trained agro-dealers. These discussions allowed us to further probe and design detailed surveys to assess the impact of technology transfers that occurred through the AIMS project. This work was implemented subsequently during November-December 2014 by the IFDC-Mozambique team.

3. Findings

3.1 Characteristics of Agro-Dealers

One of the objectives of the AIMS project is to improve business and entrepreneurship skills among women and provide them opportunities to participate in economic decision making as well. Of the total dealers trained through AIMS since 2006, nearly 18 percent of the participants were female. The participation of women in agro-input business operations has increased since the beginning of the project in 2006; we found that about 6 percent of traders were women engaged in some type of agro-input trading during the baseline survey.

Table 3.1 Gender Composition of Profiled Agro-Dealers

Gender	Trained by AIMS (n=35)			Non-trained (New) (n=19)		
	Beira	Nacala	All	Beira	Nacala	All
Female	18%	0%	15%	12%	5%	9%
Male	82%	100%	85%	88%	95%	91%

In our sample, 15 percent of trained agro-dealers' shops were owned and managed by females; the rest of the shop owners were male. The proportion of male to female was higher among trained dealers (to non-trained) in Beira corridor than districts surveyed in Nacala.

Almost all the shops (95 percent) are owner managed; 3 percent of the shops belong to associations and the rest are owned through partnerships. Usually, family members assist the owner-managed shops on a part-time basis. All the paid employees were men, and the part-time employees were mostly women, family members. Each agro-dealer shop, irrespective of trained or non-trained, were staffed with one person in addition to one more family member who participates in day-to-day activities of the shop in the absence of the owner. Further, it was evident that all the dealers are literate, and more than half have completed between six to 10 years of schooling (Table 3.2). A few dealers in both regions completed 12 years of schooling.

Table 3.2. Education Level of Sampled Agro-Dealers

Education level	Trained Agro-Dealers (n =35)			Non-trained Agro-Dealers (n =19)		
	Beira	Nacala	All	Beira	Nacala	All
Primary	34%	0%	29%	20%	7%	12%
Secondary	53%	78%	57%	60%	93%	80%
Post-sec	11%	22%	13%	20%	0%	8%
College	2%	0%	2%	0%	0%	0%

3.2 Types of Business Operations

During the profiling exercise, we found that most of the agro-dealers in our sample could be categorized as “retailers” who sell inputs directly to farmers and their business operations. The retailers were usually small-to-medium sized, with or without a micro-retailers network. We found a few (5 percent of them) seed producers, who also managed to sell seeds and conduct retail operations. In our final assessment, of the 35 trained dealers surveyed, 69 percent of them were small retailers who sold inputs directly to farmers; 29 percent were retailers who also established micro-retailers networks in addition to main shops in market towns. Two percent of them were wholesale traders. The proportion of small retailers was the highest among non-trained dealers (79 percent) who sold directly to farmers, and only 16 percent of dealers sold through micro-retailers. Almost all the non-trained dealers surveyed were very small (16 out of 19) in their size of operations. One small and two large dealers were also present.



Shop Premises of a Typical, Large Input Supplier (Chimoio & Sofolo province)

We further grouped them in to four categories: very small, small, medium and large traders. The gross revenue sales of very small traders were less than U.S. \$1,000 per cropping season. The small dealers' profit ranged from U.S. \$1,001 to \$5,000; medium (U.S. \$5,001 to \$10,000) and large dealers' earned revenue up to a maximum of U.S. \$50,000 in our sample.

Table 3.3 Typology of Trained Agro-Dealers in Our Sample (N=35)

Type	Sales Range (U.S. \$)	Beira	Nacala	All
Very small	<1,000	32%	0%	26%
Small	1,001-5,000	36%	43%	37%
Medium	5,001-10,000	11%	29%	14%
Large	10,000-50,000	21%	29%	23%

In our sample, 36 percent of trained dealers were small and mostly found in Nacala. This was followed by the presence of very small dealers, mostly in Beira corridor. We did not come across any such type in Nacala. The medium and large

dealers were found in equal numbers in Nacala and a higher proportion than Beira corridor. On further analyzing the dealer types at the provincial level, we found that very small dealers were mostly prevalent in Sofala province and its districts. This is largely due to the presence of small, seasonal agro-dealers who sell vegetable seeds throughout the year, as districts in Sofala are major vegetable-growing areas and very close to Beira port, the trunk road connected to Maputo and other major towns. The Manica and Nampula province has mostly small-sized dealers as most of the districts are situated far from the main roads and served mostly by seasonal dealers who buy inputs from provincial headquarters. Also in Manica, the demand for inputs are mostly for field crops and in Nampula, the input demand is mostly for commercial crops such as cassava, onion and tobacco. The large and medium-sized dealers are usually present in district headquarters and they are very few in number.

Though agro-input sales were the predominant activity among dealers, only 30 percent of the (trained) dealer shops sold exclusively agro-inputs. Seventy percent of trained dealers also sold groceries or other food items in their premises. Nine percent of the dealers interviewed had small storage in their premises for grains and other products next to their shop. Of the new agro-dealers, 53 percent established shops exclusively to sell agro-inputs; the remaining sold agro-inputs along with groceries in the same shop premises. During our interviews, it was also evident that trained agro-dealers are much more specialized in selling agro-inputs with a deep knowledge on business and technical knowledge in contrast to the new dealers with no training. Trained

dealers also had much more diversified business operations to reduce the risks from the sale of inputs. As the demand for agro-inputs are seasonal, diversified business operations are often seen as a measure of risk reduction and improved sustainability.

3.3 Business Experience and Coverage

The trained dealers from both the corridors have had an average business experience of 9.7 years in the sale of agro-inputs. The “new” dealers have been selling inputs for a little over six years, with dealers from Nacala have significantly higher business experience (7.5 years) than Beira. The business experience among trained agro-dealers were substantial (9.7 years) compared to non-trained (new) traders. In fact, new agro-dealers began their operations from 2009-2010 onward, which coincides with the implementation of input voucher programs to improve the adoption and use of improved seeds and fertilizers among rice and maize growers in Northern Mozambique.

Table 3.4 Business Experience and Coverage by Agro-Dealers

Mean values	Trained			Non-Trained		
	Beira	Nacala	All	Beira	Nacala	All
# of years in business	9.6	10	9.7	5.7	7.5	6.1
# of micro-retailers	4	3	4	1	na	1
# of villages covered	5	7	5	3	na	3
Distance covered (km)	21.1	59.3	29.5	15	25	17

As discussed above, most of the agro-dealers were retailers and around 30 percent of them have established micro-dealer networks as a part of their business expansion operations. The trained agro-dealers with sufficient business experience have also established micro-retailer networks in both Nacala and Beira. Since non-trained dealers are relatively “new” to the business, they do not have a sufficient sub- or micro-retailer network established in these regions. The micro-retailer network established by agro-dealers in Sofala was the highest, covering up to five villages, with distances as far as 57 kilometers (km) from their shop location. This provides an indication regarding dealer density (availability of input shops) and ease of access to inputs by farmers in the province. The same holds true to an extent with Manica province. In the case of Zambezia, the dealer networks are sparse (three micro-dealers covering eight villages) and farmers travel as far as from 120 km to access inputs. Nonetheless, the situation with regard to

access to agro-inputs has improved considerably since 2006 and the average distances traveled by farmers have been reduced from 36 to 28 km across all the four provinces in the surveyed regions. In Nampula province alone, the improved dealer density has reduced the distance of coverage per agro-dealer shop from as high as 306 km (in 2006) to 50 km (2015). The traders also revealed that the longest average distance traveled by farmers to access inputs across four provinces in 2006 was about 180 km; currently the distance has been reduced to 150-155 km.

3.4 Nature of Business Operations

Fifty-two percent of the trained dealers surveyed sold inputs primarily during the cropping season, i.e., conducted their businesses during peak cropping seasons only. Of the new dealers, 57 percent sold inputs throughout the year. The seasonal sales were more pronounced in Nacala corridor (64 percent), among the AIMS trained dealers. This is in contrast to the non-trained category, in which the dealers from Beira were found selling inputs seasonally compared to Nacala.



**Seasonal Agro-Dealer Shops in Sussendenga District, Manica Province
(AIMS/AGRA-MADD Trained Dealers)**

Table 3.5. Nature of Agro-Input Business Operations

Business Nature	Trained Agro-Dealers (N=71)			Non-Trained Agro-Dealers (N=35)		
	Beira	Nacala	All	Beira	Nacala	All
Seasonal	50%	64%	52%	62%	26%	43%
All year	50%	36%	48%	38%	74%	57%

A major reason that can be attributed to the seasonal nature of trained agro-dealers is the diversified nature of business operations, which includes engagement in output trading and sales of other items in their shop premises. In addition, the number of agro-dealers as such are low in Nacala compared to Beira because of poor market infrastructure facilities such as roads and remotely situated villages. Most of the dealers in the Nacala region are operated primarily from district headquarters.

3.5 Number of Inputs Sold in Shops

In general, the dealers sold four types of agro-inputs such as seeds, fertilizers, pesticides and agricultural implements. Depending on the size, demand and nature of the business (retailer or wholesaler, seasonal or year-round), the traders sold one or more inputs. Of the dealers, 37 percent of AIMS-trained dealers stocked more than one type of input (up to four) in their shops compared to non-trained dealers (17 percent), whose primary business is from the sale of only one type of input.

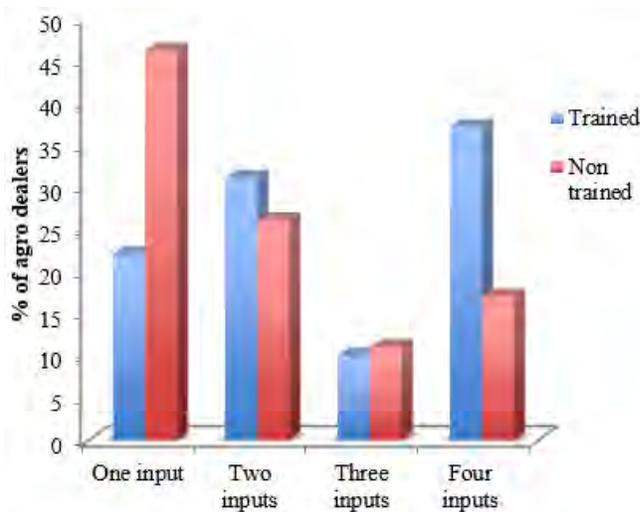


Figure 3.1 Number of Inputs Stocked per Agro-Dealer Shop (%)

In general, all the shops stocked seeds – especially vegetable seeds. Dealers prefer to stock and sell them because the demand for vegetable seed is year-round and since it is less bulky, it can be sold in small packets compared to grains that require additional storage space. The dealers who sold seeds often also stocked fertilizers in their premises. Especially with implementation of the input voucher program, more dealers are stocking fertilizers in recent years than before.

Previously, not many farmers demanded fertilizers for field crops such as maize, rice or beans. The demand was mostly for small packages of fertilizers for vegetable cultivation (5 kg – 50 kg package).

3.6 Major Sources of Income from Input Sales

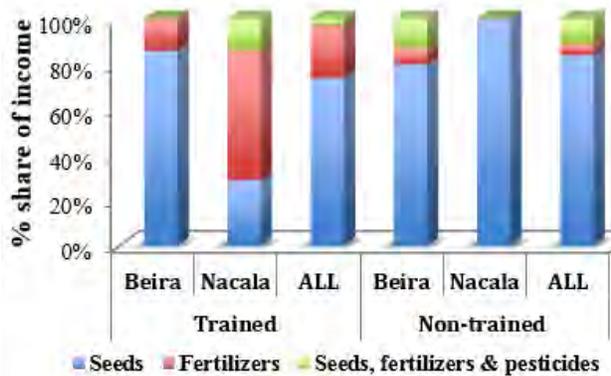


Figure 3.2 Major Sources of Agro-Input Income in Dealer Shops

Income from the seed sales remains the primary source for most of the agro-dealer shops in Beira and Nacala corridors. However, in Nacala corridor, the primary source of income for AIMS-trained dealers is from the sale of fertilizers instead of seeds. The dealers from the sampled districts in Nacala are located in and around intensive growing regions of vegetables, tobacco and soybean.

The demand for fertilizers for these crops is more substantial than in maize-growing regions in the Beira corridor. For example, retail-traders in districts of Malema and Gurue traveled as far as the Malawi border to bring ammonium sulfate fertilizer required for the cultivation of onion.

3.7 Sourcing of Agro-Inputs: Location and Channels

In terms of input sourcing, 90 percent of the dealers traveled to the nearest market towns (district headquarters mostly) – located as far as 75-90 km distance. The retailers in Beira corridor sometimes traveled to Zimbabwe to buy inputs; in Nacala, the retail traders traveled to Malawi to buy fertilizers – especially to buy ammonium sulfate. In general, retailers located in small towns in Nacala traveled longer distances (100-150 km) than in the Beira region, due to the thin nature of agro-input markets and poor road networks.

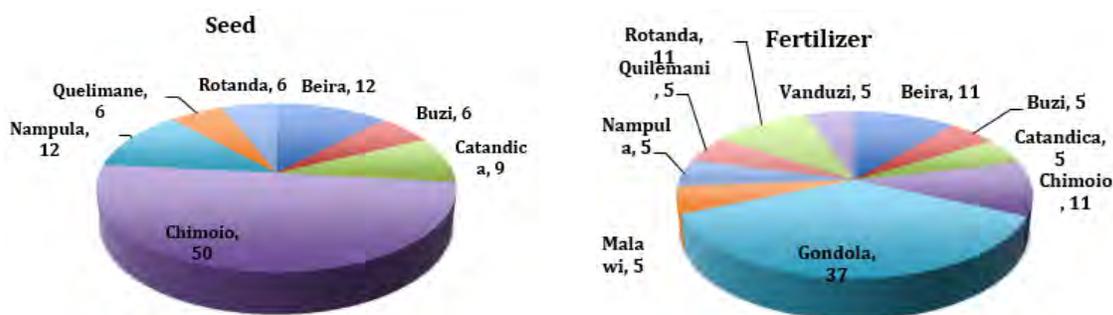


Figure 3.3 Input Sourcing among AIMS Dealers (% of Dealers who Sourced from Locations)

Chimoio is the major market town in Beira corridor where most (more than 50 percent of seeds) of the AIMS and non-AIMS dealers purchased their inputs for further sales among farmers. The town has more than five input suppliers and wholesale traders operating year-round, selling inputs to retailers and farmers through their main shops. For example, dealers who would like to stock larger supplies of seed always purchased seeds from Chimoio – as they can directly buy from wholesale dealers or seed firms’ authorized distributors. In the case of Nacala corridor, all the dealers prefer to purchase seeds from Nampula market town, which is the largest in the corridor. Nearly 21 percent of the non-AIMS dealers also traveled to more than one market to purchase seeds – depending on the availability and type of seeds. A few dealers located in Manica and Barue also sourced seeds of maize and vegetables from a neighboring Zimbabwe town (Mutare).

Compared to seeds, the fertilizer purchases of non-AIMS dealers are mainly concentrated in the major market towns of Beira and Nacala corridors. In general, Nampula is the major market in Nacala corridor for fertilizer purchases. However, a few AIMS dealers (in and around Gurue) informed us that they travel to Malawi border towns to purchase fertilizers like ammonium

sulfate. In general, there are several market towns supplying agro-inputs in Beira compared to Nacala. This shows the extent of the input suppliers' network is more well-developed in Beira corridor compared to the Nacala corridor.

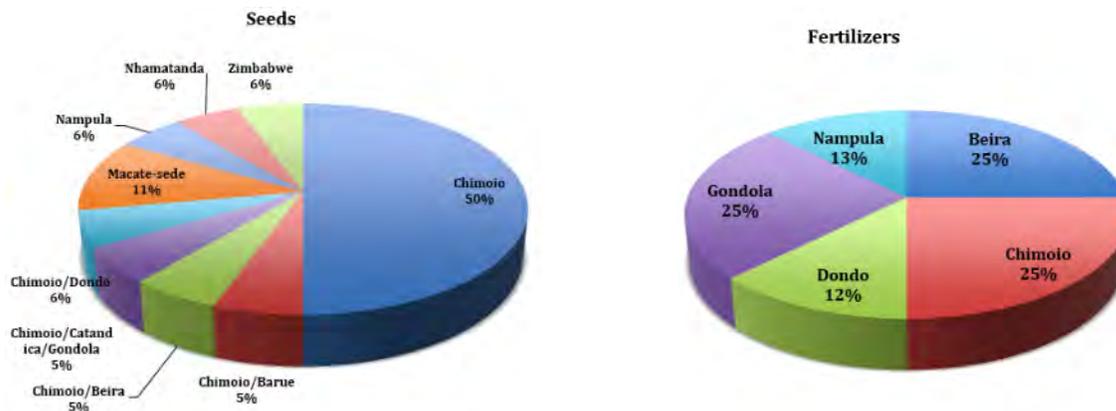


Fig 3.4 Input Sourcing Among Non-AIMS Dealers

In general, dealers purchased their inputs from wholesale traders located in market towns – located mostly in Chimoio (Beira) or in Nampula as discussed above. Forty percent of the AIMS dealers bought directly from seed producers (e.g., Dengo Commercial, Nzara Yaperera) and wholesale traders (Savon, IAV); in addition, seeds (20 percent) were also purchased directly at the seed firms outlets or authorized distributors of seed companies (Pannar, Moz Seeds, Prime Seeds [Zimbabwe based] and SEMOC). The non-AIMS dealers mostly (45 percent of dealers) purchased seeds from wholesale cum retailer networks in district headquarters, followed by purchases through seed firm outlets. A few of the non-AIMS dealers also purchased seeds from NGO-sponsored schemes (e.g., CADECO) and the combination of different traders.

Table 3.6 Input Sourcing from Different Trader Types

Seeds Sourcing %			Fertilizers Sourcing %			Chemicals Sourcing %		
Trader Type	T	NT	Trader Type	T	NT	Trader Type	T	NT
Seed firms	20	31	Retailers	20	0	Retailer	41	0
Seed producers	40	8	Wholesale	27	0	Wholesale	41	50
Retailers	40	45	Importer	21	38	Importer	18	50
NGO	0	8	Manufacturer	32	50			
WS, Firms & NGO	0	8	NGO	0	13			

Note: T- AIMS-Trained dealer; NT- Non (AIMS)-trained dealer; WS refers to wholesale dealer.

Depending on the volume, dealers purchased through different outlets. AIMS-trained dealers purchased from fertilizer manufacturers or firms such as MFA or Green Belt to purchase through importers (Agri Focus, Pros Agro), wholesalers and retailer dealer outlets. Usually the small and very small dealers purchased quantities ranging from one bag to 10 bags directly from retailers, mainly for supply to vegetable growers. Retailers usually stocked up to 50-70 bags of fertilizers in their shops, with no or very low storage capacity. Wholesale dealers stocked up to 150 bags of fertilizer and usually had a small storage facility located in their shop premises. Non-AIMS dealers also indicated that they purchased fertilizers supplied through NGOs; these were mainly dealers who participated in a few development programs in their areas of operation.

3.8 Input Sales Performance

3.8.1 Investment and Returns from Agro-Input Sales

The trained agro-dealers invested an initial capital of 18,462 MZM into agro-input shops. These were investments made on the agro-inputs inventory only, not including the capital or fixed cost. This is slightly higher than new agro-dealers, who started their operations in the last five to six years. Of the trained dealers, the investment varied significantly across provinces, with dealers from Zambezia investing as little as 3,575 MZM compared to dealers from other regions (13,000 to 25,000 MZM). The dealers in Manica, in general, have invested higher quantities, with an average investment of 24,600 MZM per dealer compared to other districts.

Table 3.7 Investment and Returns from Sale of Agro-Input Business (MZM/U.S. \$)

Average Business Investment (MZM/U.S. \$) ³	Trained Dealers			Non-Trained Dealers		
	Beira	Nacala	All	Beira	Nacala	All
Initial investment (current value terms)	21,035 (701)	6,883 (229)	18,462 (615)	10,372 (346)	27,750 (925)	14,031 (468)
Current (2014) business sales of inputs – gross sales (mean)	286,994 (9,566)	289,426 (9,648)	287,480 (9,583)	79,186 (2,640)	175,000 (5,833)	95,155 (3,172)

Note: Figures in parentheses indicate U.S. \$ (exchange rate @30 MZM/U.S. \$).

However, in the case of non-trained dealers, the dealers from Manica invested as low as 400 MZM to start their agro-input business, compared to dealers from other provinces (1,000 to

³ The business investment figures in U.S. \$ converted at the exchange rate equivalent of 1 U.S. \$ = 30 MZM. The value of initial investment at the start of the business operations represents the current value terms to adjust for inflation trends.

45,000). New dealers from Sofala province made the highest investment; the province is closer to the Beira port, and demand for agricultural inputs are substantial, especially among vegetable growers. In both categories of dealers, 82 percent of the dealers surveyed used their own personal funds, and 18 percent indicated taking personal loans from relatives and friends when they started the agro-input business operations.

It is further evident from Table 3.7 that dealers in both categories in Beira and Nacala corridors earned moderate to higher returns to their investment from agro-input business. This is to say that comparing their initial investments (in the current value terms) in agro-input stock to the current (gross) sales of inputs was found positive and significant. It is to be noted that the average business experience among trained dealers is 9.7 years and 6.1 years for non-trained dealers. The trained dealers' gross sales were significantly higher than non-trained dealer shops. Among the corridors, the sales through shops in Nacala corridor were slightly higher among those trained and significantly higher through non-trained dealer shops. This implies the presence of more dealers and shops – higher competition in Beira than in the Nacala region.



Figure 3.5 Sales Proportions of Different Inputs among Trained vs. Non-Trained Dealers

It was also evident during our interviews⁴ that on average the dealer spends 38 to 40 percent of their sales toward the purchase and stock of agro-inputs; 10-15 percent for shop-keeping (staff salaries and shop maintenance) and the rest he/she considers as margin from sales. In general, the proportion of investment in various categories also

differs among dealers depending on their size of operations. The medium and large dealers normally spend substantially on stocking/storage and transportation and retail networks – up to 60 percent compared to small and very small dealers.

⁴ This information was collected from only a few representative trained dealers, as it was difficult to get this information from all the dealers.

On further analysis, it was found that of the total inputs sales value of trained dealers, 55 percent was earned from seed sales, 45 percent from sale of fertilizers and 5 percent from selling chemicals and tools. On the contrary, the non-AIMS dealers' share of fertilizer sales was around 55 percent, and the rest was from seed sales in the total value of input sales. However, these results should be interpreted with caution as the number of non-trained dealers in our sample is small (N=19) and only four dealers in our sample represented Nacala. In addition, only seven of the 19 dealers provided individual sales of inputs. The average fertilizer sales among non-trained dealers are much higher compared to trained dealers. Most of the non-trained dealers sold input vouchers during the last cropping season.

Table 3.8 Mean Sales Value of Different Agro-Inputs Sold During 2013-2014 Cropping Season (MZM)

Mean Sales Value of Inputs Sold (MZM), 2013-14 Season	Trained Dealers		Non-Trained Dealers	
	Beira	Nacala	Beira	Nacala
Fertilizer sales	263,256	285,000	386,000	120,250
Seed sales	119,728	109,857	93,250	12,031
Chemical sales	18,918	19,497	na	na

Note: na refers to no responses.

Seeds purchased by farmers in these shops mostly included vegetables and maize. The most demanded vegetable seeds were onion, tomato, kale, cabbage and cauliflower. Most of the dealers stocked two varieties of maize viz., matuba – an open-pollinated variety and Pannar hybrids (63 & 67). The seeds supplied through input voucher programs are mostly maize varieties – matuba and Pannar. A few dealers also sold seeds of other crops such as sesame, beans and rice – on a limited scale. In the case of fertilizers, two major types were sold mostly by all dealers viz., urea and NPK (12:24:12). Apart from this, dealers also sold a few liquid fertilizers (mostly growth hormones) for vegetable crops and also ammonium sulfate (mostly for onion growers in Gurue and Malema region). Most of the fertilizers sold for maize were supplied mainly through input voucher programs. Of the crop protection chemicals, pyrethroids were sold primarily for controlling vegetable pests and diseases in both the regions. A few trained agro-dealers also sold herbicides – glyphosate (one dealer in Nampula and one in Chimoio).

3.8.2 Input Sales Based on Typology of Dealers



Shop Premises of a Seed Producer cum Input Supplier (Alto Molocue)

We further analyzed the characteristics of the agro-dealers in terms of the size of sales operations, i.e., average input sales turnover. Further analysis of a few key indicators that depict the sales behavior of different types of dealers are presented in Table 3.9. At large, the medium and large dealers have more business experience and also sold more inputs in value terms. They have extensive business operations through wider coverage and also sold more inputs. The more striking evidence from segregating the dealers based on sales or

revenue has implications in their ability to market products efficiently, i.e., economies of scale of their operation. From the table, it is also evident that of the trader types, the medium-sized traders have covered sufficiently larger clientele and geographical areas through micro-retailers compared to other types.

Of the total input sales, revenue earned through selling seeds formed the major portion of very small traders as discussed in the above section. This is true as small retailers always stocked and sold vegetable seeds year-round to earn cash income. The relative contribution of fertilizer sales to total inputs was much higher among other dealer types. This is because most of them are involved in supplying fertilizers through input voucher programs. Usually due to lack of finance for storage facilities and to manage the procured stock, very small retailers do not participate in the input voucher programs. The agro-dealers who accessed finance did so in the form of loans mainly through two formal sources that include Banco Oportunidade de Moçambique (BOM) and government-sponsored agricultural credit schemes.

Table 3.9 Key Indicators of Sales of Agro-Dealers (Trained) Based on Their Size of Operations

Indicators (Mean)	Very Small	Small	Medium	Large
Business experience (Years)	4	7	13	13
Fertilizer sales (MZM)	4,667	80,225	215,000	566,194
Seed sales (MZM)	8,994	33,000	138,560	364,828
Chemical sales (MZM)	4,500	13,720	33,827	18,813
Input sales (MZM)	11,050	87,647	244,856	949,834
Loan amount (MZM)	14,500	38,000	67,500	160,000
Vouchers participation (# of years)	1	2	2	2
Micro retailers (#)	3	3	7	4
Villages covered (#)	4	4	8	6
Distance covered (km)	12	22	56	46
Type of inputs sold in the shop (#)	1	2	2	3

3.8.3 Input Vouchers and Agro-Input Sales



Shop Premises of a Dealer who Participates in Input Voucher Program (Barue)

Input voucher programs were implemented during the year 2009-2010 on a pilot basis, funded through the European Union (EU) and Food and Agriculture Organization of the United Nations (FAO). The program covered 200,000 farmers in Northern Mozambique districts. The program continued for the last three seasons (except 2011-2012 and 2012-2013). The crops covered are maize and rice, and the farmers are provided with 15 kg of improved maize seed variety and 100 kg fertilizer (50 kg urea + 50 kg NPK). The farmer share is around 30 percent of the total voucher value of 4,500 MZM. The implementation of the input voucher program also coincided with agro-dealer training programs conducted by the second phase of the AIMS project. The input voucher program mostly covers the maize-growing regions of Beira and Nacala, and rice growers of Zambezia.

Of the dealers surveyed, 49 percent of AIMS-trained dealers have participated in at least one or two years of the voucher program since it began in 2009-2010. However, only 26 percent of non-AIMS dealers participated in voucher programs. Of the total dealers who participated, the participation rate was higher among dealers from Beira corridor (90 percent). Implementation of

the voucher program was much more extensive through retailers with a wider coverage in Beira than in Nacala, where the presence of the agro-dealer network is very thin.

Table 3.10 Vouchers Supplied Through Surveyed Agro-Dealers – 2013-2014 Cropping Season (Mean Values)

Vouchers Supplied by Dealers (Average)	Trained Dealers		Non-Trained Dealers	
	Quantity (kg)	Value (MZM)	Quantity (kg)	Value (MZM)
Urea vouchers	4,940	123,500	1,000	25,000
NPK vouchers	4,330	129,900	750	22,500
Maize seeds	1,142	51,390	465	20,925

The dealers who participated in the voucher program observed improved sales of maize seeds in the subsequent seasons. Sixty-five percent of trained agro-dealers, who participated in the input voucher program, indicated that purchases of improved maize seeds have increased by three times since the 2010 cropping season. During the planting season, the average number of customers (per dealer shop) who purchased improved maize seeds was about 200 in Beira corridor; in Nacala, the customer flow was around 100-120 farmers per dealer shop.

3.9 Access to Business Finance

The dealers accessed finance in a number of ways. Agro-dealers mostly acquired credit from the buyers in sourcing inputs to stock before the cropping season. Agro-dealers also offered (extended) credit to farmers during the planting season toward purchase of inputs (especially fertilizers). In addition, to sustain the agro-input business all through the cropping season and in some cases to expand the business operations, dealers often seek finance from other sources. Any credit for improving or expansion of business operations was either funded through their own means, or by borrowings from relatives or friends. However, increasingly traders also received loans from formal institutions such as banks to finance these operations.

Of the AIMS-trained dealers surveyed, 89 percent have bank accounts and 37 percent of them accessed loans with an average amount of 87,462 MZM from the banks or other sources such as NGOs or government schemes to expand their businesses. The amount of credit accessed by dealers varied from as low as 2,000 MZM (in Zambezia) to as high as 400,000 MZM (in Manica). All loans were accessed on or after 2010, which coincides with BOM assistance to

dealers who were the members of district-level agro-dealer associations initiated through the Associacao Mocambicana de Provedores de Insumos Agropecuarios (AMPIA) and further strengthened during AIMS II/MADD I with guaranteed funds for loans through the AGRA-MADD program. Most of the credit-guaranteed loans were given only in Manica province. Dealers from other provinces (mainly Sofala) accessed loans without any credit guarantee, using their own land or other assets as collateral. The dealers in Nampula and Zambezia province mainly accessed loans from NGOs (AMODER – NGO-sponsored micro-credit schemes) and government-sponsored schemes (FDD), because credit access through banks was not as familiar to them as in Beira corridor. Only 63 percent of non-AIMS dealers surveyed had access to banks and accounts in their name; 21 percent of them accessed loans. All the dealers who received loans were from Manica district in Beira corridor. One of the reasons for improved access to bank finance among trained dealers is due to their exposure to agro-dealer development training offered through USAID-AIMS and AGRA, which trained them in credit access and tools related to financial management and business planning.

Table 3.11 Business Finance for Agro-Input Business Operations

Purpose	Input Credit to Farmers		Supplier Credit from Traders	
	Trained	Non-Trained	Trained	Non-Trained
Seeds only	44	62	40	57
Fertilizers only	0	8	10	0
Seeds & fertilizers	56	30	50	43

Both input credit (to farmers by the dealers) and supplier credit (from buyers) are offered mostly on a loyalty basis. The credit typically was given on an interest-free and short-term basis, not exceeding a cropping season. The dealers also revealed that they extended input credit mostly to farmers who purchase inputs from them regularly; in many cases, these farmers also sell their outputs through them. In our sample, 77 percent of the trained and 63 percent of non-trained dealers offered input credit to farmers in all four provinces. The trained dealers offered credit to purchase of all three types of inputs (52 percent), which included seeds, fertilizers and pesticides; 44 percent was given to purchase of seeds alone.

The trained dealers, in turn, also received credit from suppliers towards the purchase of inputs; half of them received credit for the purchase of both fertilizers and seeds. The suppliers are mostly wholesale dealers or private input firms, located in district headquarters. Though the suppliers of inputs did not charge any interest, often the credit was offered on a short-term basis (three to four months), with higher price margins – up to 20 percent higher than existing prices. However, dealer-retailers have paid cash in full, especially when they purchased seeds from established seed firms such as Pannar and SEMOC. The supplier credit was often extended to retailers when the purchases were done through wholesale input suppliers.

3.10 Output Trading

Apart from selling inputs, the dealers also have engaged in grain trading operations to supplement their income. Sixty percent of the AIMS-trained dealers have output sales as a part of their business activity. They mostly buy maize, beans and other commodities from farmers in their own villages or from surrounding locations. Most of the clients are local farmers who purchase inputs (seeds, fertilizers, etc.) regularly from these agro-dealer shops.



Agro-Dealer Involved in Output Trading – with Storage House (Barue District)

Secret Recipe for Sustainability: Training + Micro-Retail of Inputs + Output Sales?

Louis Benedito of Alto Molocue district, Zambezia province, is one of several hundred agro-dealers trained by the USAID-AIMS program. The participation in AIMS agro-dealer training program changed his life – particularly sharpened his business skills and knowledge and helped him to expand his business operations for both inputs and output trading. In 2012, he expanded his business to include crop trading (maize, beans and onions). “I had one small shop in Malema. Farmers asked me if I could open a shop in Naule – and after the AIMS training, I was confident.” In 2013, he opened a new shop in Naule.

Today, his annual turnover is over 600,000 MZM. His customers, some of whom travel 60 kilometers to do business with him, buy inputs from Benedito and also sell their harvest to him. Next, Benedito applied his training to form a local agro-dealer association supported by AIMS. It has 10 members from Alto Molocue and Nauela. Benedito says the training also helped him secure contracts. For example, he has supplied vegetable seeds worth 100,000 MZM to World Vision and government projects. He has also sold irrigation pumps and other small farm implements to farmers.

Table 3.12 Output Trading and Income

Output Trading	Trained Dealers			Non-Trained Dealers		
	Beira	Nacala	All	Beira	Nacala	All
Dealers in output sales (%)	57%	71%	60%	20%	50%	26%
Mean output sales (MZM) 2013-14 season	476,850	342,038	440,900	33,750	145,000	89,375
Range of sales (MZM)	(12,500 - 2,725,000)	(38,150 - 670,000)		(32,500- 35,000)	(5,000- 285,000)	

Note: Figures in parentheses indicates minimum and maximum sales.

Dealers in Nacala in general are actively engaged in output trading in both categories. The AIMS-trained dealers with their higher participation earned more from output trading (440,000 MZM/season) compared to non-trained dealers. Perhaps the non-trained dealers are still new to business, and not many dealers have engaged as such in output trading. Of the crops bought and sold, maize and beans are the primary commodities in both corridors. Eighty percent of the dealers engaged in output trading sold maize. The dealers in Nacala were more diversified than Beira, and they also traded soybeans and cassava apart from maize.

3.11 Agro-Dealer Association(s)

To promote advocacy, communication, and education among trained dealers, an association of agro-input suppliers called AMPIA (Associacao Mocambicana de Provedores de Insumos Agropecuarios) was established in 2008 toward the end of AIMS I. To improve AMPIA's outreach, 14 district associations (DDA) across five provinces of northern and central Mozambique were established during AIMS II (2009-2012). These DDAs have 131 members, of which 16 are female. Main activities undertaken by DDAs relate to their registration for legal status and interaction with suppliers to improve input supply. The associations in the central provinces were found very active, especially in Manica compared to other provinces. This was mainly due to complementary activities of the AGRA agro-dealer development program, MADD. The AGRA-funded MADD program in Manica made extensive efforts to link financial institutions in offering credit for business expansion to the members of agro-dealer associations. In other regions, the associations were not as active as in Manica due to the absence of credit linkages and also administrative issues.

Of the 35 trained dealers surveyed, 40 percent were members of an agro-dealer association; the highest membership was found in Manica (65 percent) in contrast to Sofala and Zambezia where only 18 percent and 20 percent of dealers were members of agro-dealer associations. Of the non-AIMS dealers interviewed, we found that only one dealer from Beira (Macate sede/Manica district) was a member in a Manica agro-dealer association. Agro-dealers who were members of an association benefited (43 percent) from training given by IFDC on different subjects (business, finance and technical) as well as business and credit linkages. As often is the case, agro-dealers who were members of trader associations were more likely to participate in the loan market than those who did not have such affiliations (Olomola, 2014).

However, currently none of these district-level (DDA) or national-level (AMPIA) associations are operating effectively. The reasons are two-fold; first, the members of these associations were not contributing their membership fees and did not show interest in the activities of the association. The members showed no interest because of the inability of associations to lobby or influence for effective input related policies; that includes credit access for agribusiness operations at lowered interest rates and quality control for the inputs supplied through various programs and the private sector. To an extent, the DDAs in Beira corridor were much more active as they accessed finance through a credit guarantee provided through AGRA. However, once the AGRA program was completed, BOM could not continue to extend credit to these associations as many members default to pay the loans they received through the AGRA-credit guarantee initiative.

Box: Effectiveness of Agro-Dealer Association in Manica – Highlights from MADD I Evaluation

Agro-dealer associations created at the district level provide dealers the confidence in building strong partnerships with different stakeholders in the supply chain. While doing so, the agro-dealers also acquired additional skills as well as benefited through improved business negotiations and participation with government-related programs.

- The agro-dealer association in Chimoio succeeded in negotiating a contract to supply inputs with the Provincial Directorate of Agriculture.
- Realizing the importance of credit toward increased agro-dealer growth at the retailer level (to reach more farmers), the district traders association signed a contract with BOM to enable credit guarantee on their behalf to finance the activities of small retailers in rural areas.
- The association also found field demonstrations and field days organized through them were very effective for improved and increased agro-input adoption by farmers.
- Further, agro-dealers realized that linking with local and village-level organizations and operating through them were very efficient in the dissemination of knowledge as well as in creating effective demand for agro-inputs in villages.

3.12 Effectiveness of Agro-Dealer Training Programs

3.12.1 Technology Transfers – Conduct of Farm Demonstrations⁵

The agro-dealers trained by the USAID-AIMS project (64 percent) demonstrated the use of improved varieties and fertilizer use in field crops (maize and beans) and other crop management practices in their own fields or in farmer fields. They used farm demonstrations as a technology transfer tool to enhance crop productivity levels and increase the adoption of improved inputs among smallholders. All the dealers interviewed agreed that these demonstrations have helped

Secret Recipe for Sustainability: Farm Demonstrations?

Rosa Carlos is a 47-year-old widow with two young children, a model input retailer and a farmer. She owns two homes, one in Chimoio town and one in Vanduzi in Manica Province.

The key to Rosa's prosperity is the use of improved fertilizer blends being promoted by the USAID AIMS III project. Rosa explains, "With the usual fertilizer, I was harvesting 900-1,000 kg per hectare and with the improved fertilizer blend, I harvested 2,400 kg per hectare." Rosa has set aside a small plot within her farm, where she conducts demonstrations with the help of USAID-AIMS and its partners. Farmers visit Rosa's demonstrations through the season, seeing first-hand how the new technologies can increase yields, reduce production costs and raise profits.

Rosa says she feels energized when farmers adopt a new technology or improved practice after visiting her farm. "It means that I am doing something good for my community." What is good for the community is also good for business. More adoption of fertilizers, herbicides and quality seeds means more customers for Rosa's farm inputs store in Macadera.

them significantly to improve sales of inputs in their shop. The demonstrations served as marketing tools for their shops. It also improved the continued demand for seeds of maize, beans, rice and vegetable crops. In the case of fertilizers, the dealers indicated that "a positive and significant awareness has been created among farmers on the use of fertilizers for maize." Even after training, 50 percent of the trained dealers have continued demonstrating

technologies to promote the sales of improved seeds and fertilizers in their communities. These are conducted either in collaboration with private firms or through their own efforts.

Almost all the technologies demonstrated aimed at improving the use and adoption of fertilizers with proper agronomic/crop management practices – which included spacing, right time and measure of fertilizer application, herbicide use and inter cropping. The non-AIMS dealers (23 percent) also have conducted farm demonstrations in the use of improved seeds and fertilizers in maize. These demonstrations were conducted through government extension programs. Most of the dealers who conducted these demonstrations also participated in input voucher programs.

⁵ A detailed analysis on the effect of farm demonstrations in the adoption of inputs and yields is discussed in another report on the impact of AIMS technology transfer mechanisms.

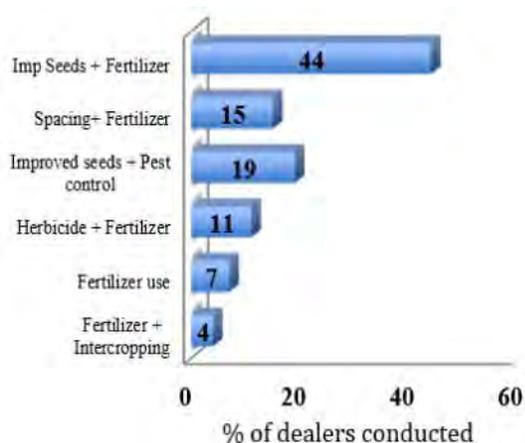


Figure 3.6 Technologies Demonstrated by Trained Agro-Dealers (%)

As part of technology demonstrations, 37 percent of agro-dealers also organized field days, during different stages of crop growth. Thirty-six percent of dealers conducted a minimum of one field day, and the rest conducted two or more field days. An average of 40 participants attended per field day from two to three villages in and nearby the demonstration location. Immediately after technology demonstrations, the agro-dealers (54 percent) observed an increase in sales of seeds, and 38 percent had increased fertilizer sales.

Of the four provinces, the effect of farm demonstrations was more prominent among dealers in Beira corridor (Manica and Sofala provinces) than Nacala. The agro-dealers who conducted these demonstrations observed a mean yield increase of 3.6 times the control plots wherever conducted. The control plots typically used traditional, un-improved seeds with no application of fertilizers or any crop management practices. This was also reflected in improved adoption of seeds and fertilizer use, particularly for maize production among 4,100 farmers (158 farmers adopted per demonstration) in the communities where the dealers conducted their demonstrations. Thirty-seven percent of the agro-dealers still (after training) conduct farm demonstrations using their own resources to promote the use and sales of inputs in their shop.

3.12.2 Services Offered by Agro-Dealers

The agro-dealers under AIMS were trained in two major areas, namely product knowledge, business and financial management. In addition, several ad hoc trainings were also provided (e.g., in pesticide poisoning, warehouse management) as a part of capacity-building efforts. The training covered all aspects of crop management related to seeds, fertilizers and chemical use and offered both theoretical and practical knowledge to deal with agro-input business operations. The dealers were also trained to manage their enterprises efficiently through good bookkeeping, stock management, exposure to credit institutions (banks), sales and marketing techniques. Dealers were provided training in developing business relationships and networks apart from safe

handling of agro-inputs and their storage. The dealers were also encouraged to provide services related to arranging transport and sales of output to markets, continued technical advice over the counter to customers, input credit (short-term during planting season) and demonstration of improved technologies.

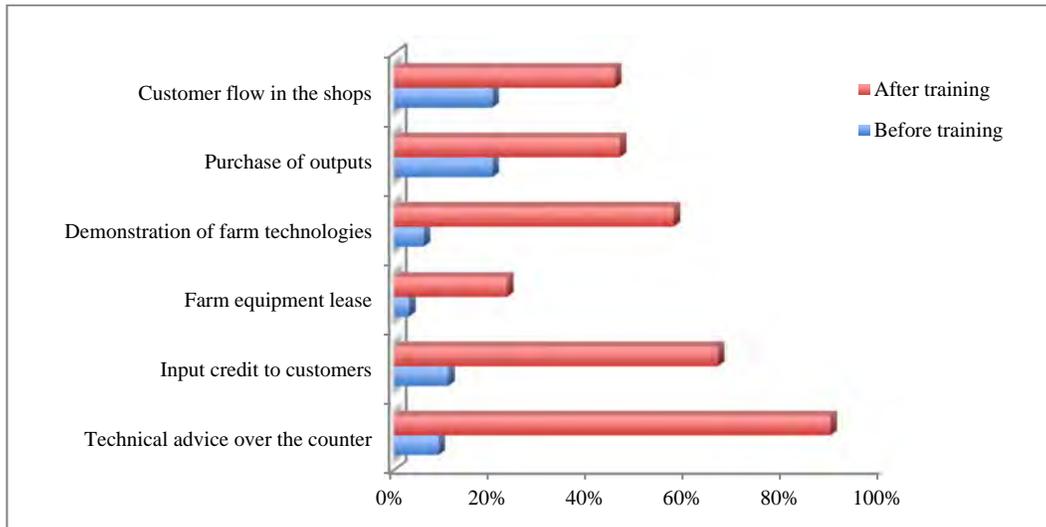


Figure 3.7 Change in Services Offered by Trained Agro-Dealers (Before vs. After Training) N=35

The services offered by dealers have improved in general after trained through the AIMS project. This has improved the sales in their shops, and they indicated that purchases, i.e., customer flow in their shops, have nearly doubled since they were trained, due to various services offered by them. The dealers also have gained confidence in offering technical advice – especially in the use of inputs after they received the training. The dealers also have used farm demonstrations and input credit as marketing tools to improve sales in their shops.

4. Constraints Faced by Agro-Dealers

The agribusiness indicators report (2012) on Mozambique states that the continued prevalence of low agricultural productivity and underdeveloped input supply networks are primarily due to the fact that Mozambique has still not nurtured the emergence of an input supply network led by the private sector. The reasons range from low demand for inputs among farmers, primarily due to higher input prices, particularly fertilizers, with relatively poor supply chain. Relatively less-developed commercial markets for the output of food crops also lead to limited use of agro-inputs. Additionally, many of these rural input suppliers lack the financial capability to meet the costs involved in establishing the business, running the businesses, building input storage facilities (e.g., for storing fertilizer), and transporting farm input long distances to rural areas where road infrastructure is poor. Also, agro-dealers lack knowledge and technical skills in business management, safe product handling, crop husbandry practices and the formation of agro-dealer business associations; these skills can be acquired via attending training programs (Odame and Muange, 2010).

4.1 Ranking of Constraints

During pre-testing of the survey, most of the dealers often complained about five to six constraints that prevent them from expanding or sustaining the business year-round. Based on the feedback during pre-testing, we further asked them to rank the three major constraints they encounter on a regular basis. There were significant differences among the constraints faced by trained vs. non-trained agro-dealers. Almost all trained dealers (90 percent) complained about lack of access or non-availability of credit to expand their business operations. In general, agricultural lending through formal institutions is very poor in Mozambique, and access to credit is difficult. In addition, because most of the agro-dealers are very small and operate seasonally, they were not able to provide any collateral for getting the loan. Even when loans are available, they are expensive. Nominal interest rates on commercial bank lending range from 23-30 percent. Lending to agriculture operations through commercial banks is only 6.5 percent (ABI, World Bank, 2012). Even if there is access to credit, 36 percent of the trained dealers interviewed reported very high interest rates. Not many schemes or institutional arrangements exist to either guarantee or enable small business operators to avail loans.

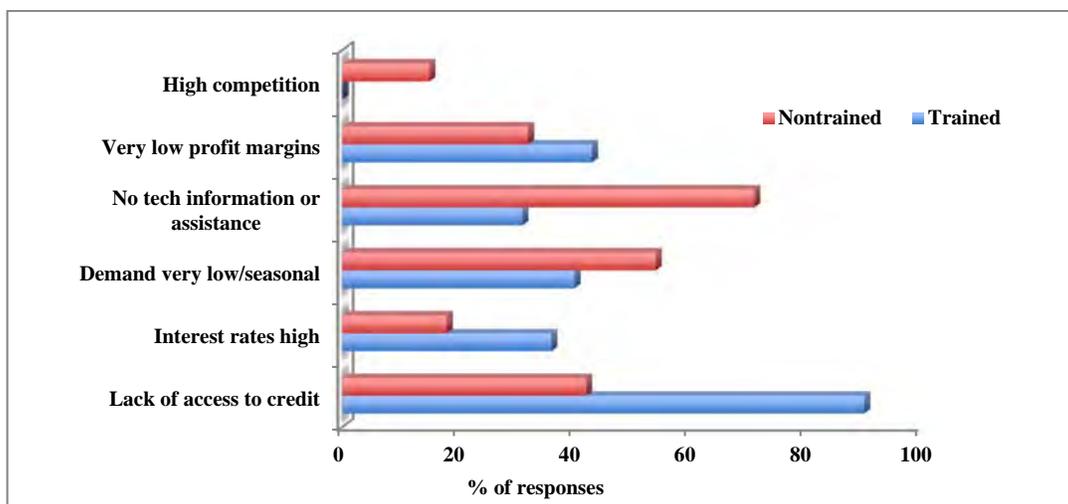


Figure 4.1 Constraints Faced by Agro-Dealers (Trained vs. Non-Trained) % Responses

In addition to problems in accessing finance, agro-dealers often earned very low profits or they sold their products at very low margins. The reasons are manifold; transport costs are still high with very poor roads and connectivity. Though road infrastructure has improved in the recent years – especially closer to Beira corridor and major trunk roads – the tertiary roads connecting the major towns to villages or rural areas are still weak and often impassable due to floods, especially during the rainy season or just before planting time. The Rural Access Index for Mozambique, between 24 percent and 32 percent depending on which measure you use, is far lower than Ghana’s. Field surveys by the World Bank and others (IFPRI) suggest that transport costs are a major component of delivered input costs in rural areas and in marketing of agricultural produce.

Hence, most of the time, in order to attract customers, dealers tend to keep very low or no margin for the products sold in their shops. In addition, both trained and non-trained dealers face very low or seasonal demand for selling agro-inputs, especially seeds of major field crops – maize and beans, and other inputs associated with them.

Unknown, low or fractured demand of the farming community is the associated major constraint that restricts the supply of agro-inputs by providers in many of these communities. The willingness to purchase capital intensive inputs such as fertilizers, chemicals and hybrid seeds is limited among smallholders, especially those who grow food crops such as maize, cassava or other legume crops. Besides vegetables and a few commercial crops such as sugarcane and

tobacco, currently the demand for purchased inputs for other crops is highly seasonal and restricted to a few varieties and small quantities of fertilizers and chemicals. Both groups agreed that their profit margins usually come from selling vegetable seeds year-round. The agro-dealer model in general needs sufficient scale to continue the business all through the year. Further, the dealers need to include sufficient portfolio of inputs to profit from agro-input business operations.

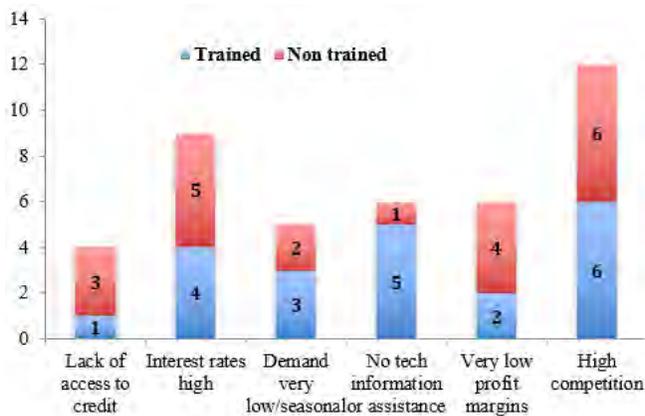


Figure 4.2 Ranking of Constraints among Dealers (Trained vs. Non-Trained)

Among the non-trained dealers, the major constraint was lack of skills or knowledge (71 percent) about new technologies or input use. Most of them are farmers and started their business operation during or just before voucher programs began. They did not receive any technical assistance from either the department of agriculture extension or from any other sources. Even though they sell agro-inputs in their shops,

most handle them with other products (food items/groceries). Most of the non-trained dealers started the agro-input business operations in their own field (farm) premises, bulking inputs from suppliers in major towns and supplying at a nominal rate/margin to the neighboring farmers in their communities. Though still in business, they are not skilled to provide timely advice on the use of improved seeds or fertilizers/chemicals due to lack of technical knowledge. Very few non-trained dealers (37 percent) participated in farm demonstrations conducted by other trained dealers in their community, and only 29 percent of such dealers had experience in conducting one. In general, both groups felt there is need for more agro-dealers or retailers in their communities as the demand for purchased inputs is on the rise among farmers. There is no heavy competition as such where they operate, except during the planting season for a few items.

4.2 Agro-Dealers Who Discontinued Operations

Of the total dealers trained through AIMS, 39 percent of them did not continue to be an agro-dealer due to various reasons. A few participants (10-12 percent) of the AIMS agro-dealer training program were never engaged in agro-input businesses before or after the program. These

are participants who were selected as potential candidates for trading or engaged in non-agriculture related trading activities who were interested in receiving training in agro-input business operations. In spite of their efforts to improve their technical skills and knowledge, they could not engage in agro-input sales due to lack of financial support and, in a few cases, personal reasons.

A total of 11 dropout agro-dealers from four provinces in 11 locations were interviewed during our assessment. They were all trained during the first and second phase of AIMS. Eight out of 11 (73 percent) agro-dealers were trained in 2008: two during 2011 and one agro-dealer during 2012. All of them were literate – most of them (73 percent) have secondary school education. Eight out of 11 were part-time traders; with farming as their main occupation, they owned an average 5 hectares of land. Although the remaining three attended the training, they never initiated or started an agro-input shop due to lack of finance. A few of them were engaged in maize seed production activities with SEMOC/ Moz Seeds. None of them owned any “shops” while they were agro-dealers – the sales were done mostly through “small carts or kiosks” during the cropping season. Most of their sales were seeds of maize (supplied through voucher programs), a few packets of vegetable seeds and five to 10 bags of fertilizers.

The average business experience of an agro-dealer was around 3.2 years before they dropped out of business. All of them were engaged in input sales – seasonally. Sixty-four percent (seven dealers) started their business either during or after attending the training in 2008. The average investment in the inputs business was about 7,000 MZM (ranging from 2,000 to 12,000 MZM). On leaving the business, their net worth was 3,400 MZM/dealer (ranging from 500 to 6,000 MZM). Calculating the yearly returns based on their years in business (mean number of years in business was three) provided *negative returns to the investment* – ranging from (-) 535 MZM to (-) 3,400 MZM.⁶ Thirty-six percent (four out of 11) of these traders conducted farm demonstrations on the use of “improved seeds and fertilizer” for maize in their farms. They all participated during the 2009-2010 pilot voucher program. Nearly 65 percent of them left their agro-input business during the year 2010-2011. Most of them left or closed their business operations immediately after the voucher program ended.

⁶ This was calculated by doing a simple benefit-cost analysis for each year they were involved in business operations. The dealers were asked about their yearly or seasonal investment in the agro-input business against sales of inputs for the season, and returns on investment (ROI) were calculated based on that.

To summarize, the reasons for discontinuing agro-input businesses are primarily due to lack of credit access and the high cost of credit to sustain their operations. The cost of inputs also became much more expensive due to an inefficient or poor supply chain, thus reducing the profit margins. Almost all the agro-dealers are seasonal, with very low sales volume as there was very low demand for inputs, especially for field crops in their communities. Another major factor was the over-dependence on the input voucher program. Most of the dealers could not continue when the voucher program was discontinued for a year after the pilot (2011-2012) due to the resulting low sales volumes. During voucher programs, as it happened in many other countries, many new or short-term business operations were initiated and acted mainly as suppliers of “inputs distributed through voucher programs.”

4.3 Agro-Dealer Accreditation

Normally, trained agro-dealers receive a certificate linked to a national accreditation program, which would allow them to participate in selling agricultural inputs. This will allow the agro-dealers to participate in various development schemes extended by the government for input promotions – such as the input voucher program. Also, certified agro-dealers are linked to major agricultural input supply firm by credit guarantees to be supplied with inputs on credit bases, and this would allow them to pay after 30 to 60 days. Therefore, certified agro-dealers have a guaranteed input demand and profit margin for supplying farm inputs in rural areas, which reduces risks and uncertainties in their business and increases business working capital (Tiba, 2010). In Mozambique, except for a few large input suppliers (at the level of wholesale trading) and registered seed producers, small-to-medium sized agro-dealers or retailers are not yet accredited (even after attending the training programs and participating in voucher programs for distribution of inputs). This is a major issue, especially for small to medium retailers, to access business finance through private sources in the absence of formal credit availability.

5. Sustainability of Agro-Input Businesses

In general, the adoption of an agro-dealer input delivery model to improve smallholders' access to modern inputs is based on several studies that signal the problem of low agricultural productivity due to low or lack of farm input use in rural areas. There are few programs that build the capacity of agro-dealers in the provision of affordable services to poor farmers in rural areas through assisting them to acquire training in business skills, recordkeeping, sales and marketing, stock management, managing business working capital, input market search, customer service and knowledge on the proper use of modern technology (AGRA 2007; Chianu et al. 2008; Chinsinga 2011). Furthermore, these capacity development programs also link agro-dealers with formal financial institutions and farm input suppliers or wholesale traders for credit purposes and thus improve their working capital base. Nevertheless, the effectiveness of such businesses depends on its sustenance and the efficiency in which they supply inputs to remote rural areas at affordable prices by smallholders.

In Mozambique, fertilizer or seed prices paid by farmers are often high compared to neighboring countries in the region (IFDC 2011; World Bank, 2012; Benson et al, 2013). This is primarily due to inefficiencies in the supply chain and distribution network, in large part caused by high transport costs. Given the high cost, the use of fertilizer may not always be profitable at the farm level, meaning that the revenue of incremental production is insufficient to pay for the fertilizer (World Bank, 2012; Benson et al., 2013). In addition to higher costs, availability of good quality seeds itself is a major constraint. This in turn affects the demand for agro-inputs and its use by farmers, which gets transmitted to the input supply chain and its actors with very low sales volume and poor economic returns to both ends of the value chain.

5.1 Characteristics that Determine a Good Agro-Dealer

From our assessment, it was evident that there are a few key indicators that determine the sustainability of agro-input business operations irrespective of their size (Table 3.9). Building on the results and to determine the strength of relationship that exists between the size of dealer operations (based on sales) and other factors that determine their sustenance in the market, we

conducted a *simple correlation analysis* among trained agro-dealers between sales and the way they conduct business operations.⁷



Shop Premises of a Typical Small Dealer in Barue District (Seeds + Chemicals)

Irrespective of the size of operations, access to finance is a major factor in improving the sales of agro-dealers. Several studies have identified access to credit as a major factor that influences decision making of an individual or small firm (Olomola, 2014). Many individuals and small firms (agro-dealers and agro-businesses) have limitations that affect their access to finance due to lack of collateral. Credit is an important ingredient, which can boost the business working capital via increased business stocks to enhance availability of all farm inputs in the amount demanded. AGRA (2009), on comparing its experience in Kenya, Uganda and Malawi agro-dealer development programs, found that there is a positive correlation between access to credit and the volume of farm inputs supplied in rural areas. In addition to credit, there are also other factors that need to be considered to have a successful agro-dealer input supply network in rural areas.

The access to credit or loans was significant among small traders only, as it would allow them to expand and participate in input voucher programs. Even though loan money was helpful for all the dealer types, the very small and large dealers did not experience any impact from having

⁷ Note the correlation analysis simply measures the direction and strength of the relationship between two quantitative variables. In other words, correlation measures the degree to which two variables are related. With correlation, you don't have to think about cause and effect.

access alone. Here, access to loans refers to bank credit. For very small retailers, their operations are not big enough to approach banks even if available; for large traders, they have several means of credit (other than banks) available to finance their operations. For large traders, usually the input firms provide credit based on their storage and market strength. The very small retailers mostly sustained their businesses through selling seeds and availing loans mostly through input suppliers and informal means (borrowing from relatives and friends). None of the other factors had any linear or significant relationship towards increasing sales operations, except that the more villages they covered through frequent participation in weekly or local markets in and around communities helped to improve sales.

Table 5.1 Correlation Analyses of Key Indicators of Sales Among AIMS Agro-Dealer Types (n=35)

Key indicators of sales (Mean)	Very Small	Small	Medium	Large
Fertilizer sales (MZM)	(-) 0.3	(+) 0.9	(+) 1.0	(+) 0.6
Seed sales (MZM)	(+) 0.8	(+) 0.5	(-) 0.1	(+) 0.9
Chemical sales (MZM)	0	(+) 0.8	(-) 0.9	(+) 0.3
Business experience (years)	(-) 0.6	(+) 0.6	(+) 0.2	(+) 0.9
Loan access	(-) 0.6	(+) 0.7	(+) 0.3	(-) 0.4
Loan amount (MZM)	(+) 0.8	(+) 0.9	(+) 1.0	(+) 0.7
Voucher participation (#)	(-) 0.2	(-) 0.4	(+) 0.7	(+) 0.6
Output sales	(-) 0.2	(+) 0.3	(+) 0.6	(+) 0.4
Micro retailers (#)	0	0	(+) 0.8	(+) 0.8
Villages covered (#)	(+) 0.5	(+) 1.0	(+) 0.9	(-) 0.3
Distance covered (KM)	(+) 0.5	(-) 1.0	(+) 0.9	(+) 0.9

Note: The correlation coefficient will vary from -1 to +1. (-1) indicates perfect negative correlation, and (+1) indicates perfect positive correlation. Values between 0 and 0.3 (0 and -0.3) indicate a weak positive (negative) linear relationship; 0.3 and 0.7 (0.3 and -0.7) indicate a moderate positive (negative) linear relationship and values between 0.7 and 1.0 (-0.7 and -1.0) indicate a strong positive (negative) linear relationship.

From our analysis (Table 5.1), it is evident that except for very small retailers, sales of fertilizers do matter in dealers' revenue stream, with a very strong and positive relationship (ranging from 0.6 to 0.9). Most of these dealers, especially medium to large sized, also participated in the input voucher program, where fertilizers are supplied mainly for field crops, in bulk quantities compared to small bags or quantities consumed for vegetable cultivation. The number of years in the input business favored mostly large and small dealers, and it did not have any relationship towards the sales of medium and very small retailers.

Secret Recipe for Sustainability: Training + Credit + Input Vouchers?

Emilia Savaio, agro-dealer, farmer, seed producer and transport operator, is a good example of how the USAID-AIMS project can transform lives. She is 54-years-old, has homes in Chimoio City and Sussundenga (Manica province) and manages various enterprises. As she explains: “When my husband died, I thought I could never continue his business. Then in 2007, I participated in an AIMS agro-dealer training program, and that gave me courage. I continued to learn, thanks to more training on seeds, fertilizers, business management, finance and other areas. I became a better businesswoman. I bought a car, and this year I finished building a warehouse.”

Emilia was one of the first women retailers in her district to participate in a voucher program in collaboration with the USAID-AIMS program and EU/FAO. She did so in the 2009/10 and 2010/11 seasons, helping to promote the use of improved seeds and fertilizers. She expanded her business in 2011/12, with a loan from the Banco Oportunidade de Mozambique (BOM) – and she credits her IFDC training for teaching her how to prepare a business plan and negotiate with a commercial bank. In 2013/14 she again participated in the voucher program – but as a distributor, serving several smaller retailers across the district.



Sale of Small Amounts of Fertilizers for Onion Growers (Ammonium Sulfate from Malawi) by Very Small, Seasonal Traders (Gurue)

Table 5.2. Correlation Analyses of Key Indicators of Sales Among Non-AIMS Dealers (n=16)

Key Indicators of Sales (Mean)	Very Small
Fertilizer sales (MZM)	(+) 0.99
Seed sales (MZM)	(+) 0.12
Chemical sales (MZM)	(-) 0.16
Business experience (Years)	(+) 0.1
Loan access	(+) 0.2
Loan amount (MZM)	(-) 0.8
Vouchers participation (#)	(+) 0.2
Years of voucher participation	(-) 0.6
Output sales	0
Micro retailers (#)	0
Villages covered (#)	(-) 0.3
Distance covered (km)	(-) 0.1

Note: Please see the explanation in the above table for interpretation.

We also analyzed the factors influencing the sales of non-AIMS participants in our sample (n= 19). Almost all of them were very small (16 out of 19) in their size of operations. One small and two large dealers were also present. Both small and large dealers revealed similar characteristics as that of trained dealers, discussed above. Among the very small-sized dealers category, only fertilizer sales had significant and positive association in their sales. The sales of fertilizer have higher margins – as they sell in small packets (not in bulk) – in retailer mode than selling seeds or chemicals. Farmers usually purchased fertilizers in smaller quantities for vegetable farming or in many cases they bought and shared among neighbors or other farmers in the community. The demand for small-sized packets of fertilizers and seed is popular in these communities. Interestingly, the loans have had a negative association in sales – implying no effect of “finance” in their sales. The number of times the dealer participates in the input

voucher program impacted their sales negatively or had very weak association. All the other characteristics have very low or no significant association towards input sales (Table 5.2).

5.2 Overall Management of Business



Record and Bookkeeping by Trained Agro-Dealers, Malema, Ribaué

The following is a rating based on farmers who use these shops in their respective communities. Though the assessment is subjective, it was derived from the perceptions of customers who use the input shops on a regular basis. The questions were asked to customers or farmers in the communities where the agro-dealer shops were located. However, questions related to stock display, customer flow and recordkeeping were observed and recorded by interviewers on visiting dealer shops. The customer flow indicates the number of customers who visit and purchase inputs from these agro-dealer shops during the cropping season. This was measured using combined observations during the time of the survey and comments from the farmer-customers in the community. Overall, performance of trained agro-dealers in terms of their business conduct and performance was rated “average” vs. non-trained dealers, who were rated “poor” (Table 5.3). The bookkeeping habits were rated very poor among non-trained dealers. Though trained dealers did fairly well compared to non-trained, they also need considerable improvement in documenting financial information. Of the regions, the agro-dealer shops in Beira were rated better – in the overall conduct and performance – than in Nacala corridor.

The following is a rating based on farmers who use these shops in their respective communities. Though the assessment is subjective, it was derived from the perceptions of customers who use the input shops on a regular basis. The questions were asked to customers or farmers in the communities where the agro-dealer shops were located. However, questions related to stock display, customer flow and recordkeeping were observed and recorded by interviewers on visiting dealer shops. The customer flow indicates the number of customers who visit and purchase inputs from these agro-dealer shops during the

Table 5.3 Rating of Business Conduct and Performance of AIMS vs. Non-AIMS Trained Agro-Dealer Shops by Farmers

Shop Attributes	Bad	Average	Good	Excellent
Stock display	23% (75)	52% (15)	26% (10)	0%
Variety of products	29% (57)	48% (35)	23% (8)	0%
Product knowledge	13% (75)	42% (15)	45% (10)	0%
Recordkeeping	29% (87)	35% (13)	29%	6%
Customer flow	13% (45)	65% (55)	20%	0%

Note: Figures in parentheses indicate the percentage figures for non-trained agro-dealers and their shops.

Considering that agro-input businesses in Northern/Central Mozambique are still young and relatively new to most of the retailers, the overall performance of business operations can be rated as “moderate or average.” The changes that are evident (above) have occurred within a very short span of time since the training (from 2010 onwards). The average business experience of agro-dealers among those trained is 9.7 years (vs. 6.1 years for non-trained). Though some of these dealers have been engaged in business for longer periods (before training or 2006), they did not have proper technical knowledge to handle inputs or to conduct input business for profit. The dealers have especially improved the display of inputs in their shops and made considerable improvement in terms of providing technical information to farmers.

6. Conclusions

In general, the assessment provides a few key insights that can be drawn since the implementation of the USAID-funded AIMS project (2006 onwards) on agro-dealer activities in Beira and Nacala corridors.

a. Impact of USAID-AIMS agro-dealer activities (2006 baseline vs. now)

- In general, agro-dealers or input supplier numbers have increased in Mozambique in the last five to six years. This is partly due to agro-dealer capacity building activities carried out through government- and donor-sponsored programs, such as USAID-AIMS and AGRA-MADD. Currently, it is estimated that around 750-1000 agro-dealers (full time and seasonal) are in operation in Beira and Nacala corridors alone.
- At the time of AIMS I baseline surveys in 2006, not many organized small or medium retail operations that exclusively sold agro-inputs were evident in small towns or in district headquarters, with the exception of major input producing firms such as Pannar Semoc or AGRIFOCUS in major towns with distribution centers or whole-sale suppliers. The concept of micro-retailing was not evident among small- or medium-sized input suppliers.
- In recent years, this trend has improved with all the major towns and district headquarters having three or four major wholesale or input suppliers and each one of them having extensive retail networks of micro-retailers covering four to five villages.
- The baseline survey of 2006 also indicated that nearly all the traders at the time of the interview were seasonal and involved mostly through informal trading. Agro-input sales was not their major business operation. Most of them (90 percent of the interviewed traders) were very small retailers and seasonal.
- This trend has improved modestly in recent years. We found that 60-65 percent of the dealers interviewed in our sample belonged to very small and small vendor typology and all of them were trained. Almost half of the trained dealers operated their business operations year-round.
- In terms of number of inputs sold by the retailers, nearly 37 percent of the trained dealers sold more than one input (up to four). This is much higher during baseline surveys as more than 90 percent of the traders interviewed sold only seeds.

- In general, men owned most of the shops during both time periods, although the prevalence of women-owned shops has increased (15 percent among trained and 9 percent among non-trained). During the baseline assessment in 2006, less than 6 percent were women-owned shops.
- The major impact since the baseline is observed in terms of significant reduction in distance traveled in sourcing of inputs by farmers. During the baseline, it was found that the average distance traveled by farmers to access inputs was as high as 179 km and as low as 36 km. There is a significant reduction in the distance traveled to access inputs since 2006, and currently the average distance to access inputs is around 30 km (the longest distance is around 60 km). The minimum distance covered to access inputs is 21 km.

b. Effectiveness of agro-dealer development programs: AIMS-trained vs. non-trained dealers

Consequently, on analyzing the effectiveness of the AIMS project, we were able to compare two groups of agro-dealers who were trained by AIMS vs. those who did not receive any training but are engaged in agro-input business operations.

- The proportion of female ownership among trained dealers (15 percent) was in general higher than non-trained, which was only about 9 percent. The female proportion was also higher in Beira corridor for trained dealers than non-trained. There were no significant differences on the educational level of the agro-dealers across these categories; both trained and non-trained dealers were all educated, with the majority having at least secondary level of schooling.
- The trained dealers (70 percent) have much more diversified business operations (in addition to agricultural inputs) vs. non-trained dealers (only 53 percent of them were engaged in other businesses or sold other products in their shops). The trained agro-dealers are much more specialized in selling agro-inputs with extensive knowledge in business and technical skills in contrast to the new dealers with no training.
- The trained dealers also have more years of experience in selling agro-inputs (9.7 years) vs. non-trained dealers who have a little over six years of business experience. The trained dealers also have established micro-retailing networks (an average of four retailers) compared to non-trained dealers, which have relatively fewer networks (one retailer) and cover fewer communities (three vs. five villages covered by trained retailer). The distance covered by trained dealers is also significantly higher (30 km) than non-trained dealers, who

were able to cover an average distance of 17 km radius. This is partly due to the ability of trained dealers to operate through micro-retailing and cover extensively more area.

- Thirty-seven percent of the trained agro-dealers in our sample stocked more than one agro-input (up to four), compared to only 17 percent of non-trained dealers who sold more than one input; primarily, they all sold seeds. While both types of dealers are heavily dependent on seed sales, the sales of fertilizers and chemicals were evident in trained dealers' total gross sales. Of the total sales value of the inputs, seed sales were dominant (55 percent) among those trained; among the non-trained dealers (55 percent), fertilizer sales were dominant.
- In terms of initial business investment on agro-input stocks, the trained agro-dealers invested an initial capital of 18,462 MZM, which is slightly higher than non-trained agro-dealers (14,000 MZM), who started their operations recently in the last five to six years. The trained dealers from Manica have made higher initial investments. The non-trained dealers from Sofala province made the highest investment; Sofala is closer to the Beira port, and demand for agricultural inputs is substantial, especially among vegetable growers.
- In both categories of dealers, almost all of them used their own personal funds when they started the agro-input business operation. Dealers in both categories in Beira and Nacala corridors earned moderate to higher returns on their investment from agro-input businesses. The trained dealers' gross sales were significantly higher than through non-trained dealer shops.
- Nearly 49 percent of the trained agro-dealers surveyed participated in at least one season of the input voucher program; only 26 percent of non-trained dealers interviewed participated directly in the voucher program.
- Seventy-seven percent of the trained and 63 percent of the non-trained dealers in our sample provided input credit to farmers. Around 60 percent of the non-trained dealers provided credit to farmers and also received credit from input suppliers, especially towards purchase of seeds. Among the trained dealers, while the provision of credit exclusively towards seed purchases was around 40 percent, nearly 60 percent of trained dealers provided credit for farmers who purchased both seeds and fertilizers.
- Sixty percent of trained agro-dealers have engaged in output trading vs. only 26 percent of non-trained dealers. The average sale value of outputs through trained agro-dealers is 440,000 MZM, compared to 89,000 MZM among non-trained dealers.

- The trained agro-dealers (63 percent) also conducted farm demonstrations as a tool to effectively disseminate technologies and attract customers to their shop. Only 23 percent of non-trained dealers used farm demonstrations to transfer technologies among farmers in their communities.
- The major constraint faced by trained dealers in conducting agro-input business was lack of access to credit or non-availability of credit at nominal interest rates. In the case of non-trained dealers, their limited access to technical knowledge and lack of technical skills in the use of inputs were reported as the major constraints in expanding their business operations.
- Overall, the performance and conduct of the business operations in terms of stock display, variety of products offered, product knowledge, accounts keeping and customer flow were rated “average or better” by customers who visit the shops owned by trained agro-dealers; the non-trained dealers’ shops and their performance were ranked “very poor” by the customers who visit their shops.

c. Sustainability of agro-dealers

By analyzing the responses of dealers from our assessment, it was possible to characterize factors that are associated with the profit-earning capacity of different dealer types and their strength in the input market.

In the case of trained dealers:

- For very small retailers, selling seeds and the extent of geographic coverage (distance covered) determine sales income.
- Small-sized traders were able to sustain their operations through the sale of fertilizers and chemicals and less on seeds sales. Their ability to access and use finance also helped them to cope with financial difficulties.

Increased geographical coverage was more important than covering longer distances because travel increased their transportation costs.



Shop Premises of a Typical Medium-Sized Dealer Shop in Manica District (Vegetable Seeds, Chemicals and Small Equipment)

- For medium-sized dealers, fertilizer sales and input voucher participation contributed to their sales; their ability to cover longer distances and more clientele through micro-retailer networks is an added feature. They also participated actively in output trading.
- In the case of large dealers, their business experience and ability to raise funds for business expansion were key. In many cases, they extended input credit (supplier) to other small and medium retailers. They are active participants in output trading and participate in input voucher programs. Usually they are located in district headquarters and supply inputs directly to small, medium and very small retailers – who travel as far as 50 – 60 km.

For the non-trained dealers, who were predominantly small retailers, the sales of fertilizers had an important and significant relationship towards their income from business operations. Most of the non-trained dealers are relatively new and initiated selling inputs near the same time that input voucher programs were initiated.

7. Lessons Learned

Drawing from our analyses performed under this assessment, several lessons emerge that are more relevant to facilitating access by smallholder farmers to inputs at scale. Improving the existing delivery mechanisms requires a clear understanding of the issues and ways to overcome them, including improving sustainability of agro-input enterprises as well as improving the demand for agro-inputs among farming communities. Three major issues emerge from our analysis of agro-dealer delivery mechanisms:

Low density of agro-dealers or input suppliers in general: the ratio of dealers to farmer is very low in Mozambique (one dealer per 20,000-25,000 farm households) compared to other countries in eastern and southern Africa. For instance, Ghana (5,500) and Kenya (3,500) have an extensive network of agro-dealers established throughout their country for inputs distribution. The neighbors in the region, such as Malawi (1,500), Zambia (1,400) and Tanzania (2,800), also have more input suppliers who were trained to take up such activities. African Rising (2012) recommends an agro-dealer per every 500 to 1,000 farmers to improve access to and thus adoption of agro-inputs. Less than 150 dealers covered the whole country in 2006 (AIMS-Baseline, 2006), and currently this figure stands at around 580 dealers,⁸ which include trained and new dealers. While it is evident that the number of dealers serving farmers has increased in recent years, according to Mr. Fred Muhhuku of the AGRA-PASS Program, Mozambique still needs more input suppliers – around 3,000 agro-dealers – to cover all the ag-intensive districts. The estimates were based on the total number of farming households available and the realistic distances covered by the existing input supply networks.

Although one could see the low purchasing power of smallholders and/or low and fractured demand for input use, *“the question is how far is the existing input suppliers’ network adequate enough to take care of the availability of improved inputs or knowledge and improve the accessibility to agro-inputs?”* In this regard, considering the existing network of input suppliers (in number and availability), more support from donors and government agencies in establishing

⁸ The number includes all agro-dealers that have been developed by AGRA and partners, such as USAID, World Bank, European Union and governments following a similar philosophy but sometimes differing in the degree/depth of support (e.g., some are trained only in business management and not certified). Information provided and shared by Mr. Fred Muhhuku, AGRA-PASS Program officer, December 2014.

extensive supplier networks may be one way to answer this. In the absence or presence of a weak extension system, input retailers are the alternatives in many of these communities towards knowledge dissemination and technology transfer.

Seasonal nature of demand for inputs resulting in insufficient scale of business operations: In general, all dealer size types in our analysis faced seasonal or low demand for inputs, causing major setback in their operations. Still, this is more prevalent among very small to small retailers. Most of them conduct their business operation during peak cropping seasons only. The risk of “business closure or drop out” is also very high among such retailers. Nevertheless, it is important to have such small retailers in operation, especially providing inputs to remote areas or making inputs accessible during the planting season. These retailers at their current level of operations have limited resources to invest and stock inputs and expand the business, which affects their overall effectiveness in delivery of inputs at the right time or during the peak planting season. Lack of finance also prevents them from participating in input voucher programs. Also evident from our assessment was that access to finance is significantly tied to sales operations of even small retailers.

It was further evident from our analysis that fertilizers sales have significantly contributed to sales income of all the dealers irrespective of their size of operations. The margins from selling small fertilizer packs are usually high compared to seeds and CPPs. The small and medium dealers usually sell small packets of fertilizers (re-packing themselves) to vegetable growers year-round. The issues based on the seasonal/low demand nature of inputs can be overcome to an extent through linking them with existing input voucher schemes. However, in the current system, only medium and large input suppliers are able to participate in such voucher programs.

Higher costs of credit and limited credit opportunities for agro-input business expansion: As many countries in sub-Saharan Africa, commercial lending to agriculture and related business activities are extremely low in Mozambique. Commercial financial services have developed more rapidly in areas where export crops are produced, and finance is available for all the stakeholders in such value chains. Currently, most rural credit that goes to small agribusinesses and small-scale seed producers are through government-sponsored or donor-funded credit lines and guaranteed funds. Though these are offered at subsidized interest rates, they are not long-term or sustainable alternatives as it depends on the project duration. The extremely high costs of

credit to agriculture (25-30 percent per year + fees and commissions – 2-3 percent + transaction costs + need for collaterals) act to exclude entrepreneurship. In the absence of formal credit systems, which are not affordable at the moment, it is more important that input retailers are linked and backed up by “strong associations of their own” to bargain and negotiate credit and credit-based arrangements with private banks to enable continued input supply purchases and stock. Revamping regional and district-level agro-dealers’ associations (AMPIA and DDAs) and linking retailers through them for credit guarantee or input purchases might be an option.



**Fertilizer Sales in Small Packets
(1 kg of NPK and Urea)**

To summarize, the success or sustainability of the current agro-dealer business model in Mozambique primarily depends on their scale or size of their operations. In addition to improving demand for agro-inputs, there is a need for overall development of the agribusiness sector as a whole that includes linking input and output markets with commercial orientation among smallholders; certification of agro-dealer enterprises (accreditation)

would enable them access to financial and technical services and guarantee quality inputs, thus making it possible to offer inputs at affordable rates to the farming community as a whole.

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Annex 1

Annex Table 1. Profiled Agro-Dealer Characteristics

(Trained (T) vs Non-trained (NT)* in AIMS project areas (N=108))

Indicators	Sofala (N=27)		Manica (N=51)		Nampula (N=14)		Zambezia (N=16)	
	T (n=22)	NT (n=5)	T (n=39)	NT (n=12)	T (n=3)	NT (n=11)	T (n=8)	NT (n=8)
Female agro-dealers (%)	14	20	18	8	0	0	0	13
Education level (years)	7	8	7	9	10	7	8	8
Experience in agro-input sales (years)	7	7.4	7.8	4.6	8	6.5	7.4	7.1
Electricity in shop premises (%)	45	100	49	8	67	64	75	63
Nature of business (%)								
Retailers (#5% seed producers)	91	80	90 [#]	92	100	82	100	90
Wholesale/Retailers	9	20	10	8	0	18	0	10
Engaged in output trading (%)	64	60	49	25	67	55	88	65
Agro-dealers selling agro-inputs (%)								
Fertilizers	59	20	79	58	33	64	63	38
Seeds	100	80	100	100	100	64	100	100
Pesticides	27	20	59	33	33	36	38	13
Ag Implements	32	60	62	17	33	27	25	25
Seasonal sales of inputs (%)	64	60	41	67	67	18	63	38
Major income source from inputs (%)								
Seeds	64	60	50	83	67	34	75	88
Fertilizers	5	20	16	17	0	55	15	
Seeds, fertilizers & other inputs	31	20	34	0	33	11	10	12
Conduct of farm demonstrations (%)	77	20	72	33	67	9	13	38
Access to credit for business (%)	50	20	44	17	33	45	0	13
Source of credit (%)								
Banks (BOM)	18	0	94	0	0	0	0	0
NGOs (AMODER, AFAP)	0	100	6	0	0	50	0	0
Government (FDD)	82	0	0	100	100	50	0	100

Note: * “Non-trained” are dealers who received no dealer training and in many cases are “New” to business operations.



Annex Map 1. Geo-Location of Profiled Agro-Dealers in Beira Corridor



Annex Map 2. Geo-Location of Profiled Agro-Dealers in Nacala Corridor

Annex 2. Survey Instruments

Questionnaire No.



AIMS AGRODEALER EVALUATION (July 2014)

Name of enumerator Date

A. Background Information

Name and location of the shop:

Name of shop

Owner (Proprietor) name:

Province

District

Telephone

Locality:

1. Education level of the owner: (Pl. tick)

1. Primary (1-5 years of schooling)
2. Secondary (5-10)
3. Post secondary (11-12)
4. College or Diploma (> 12 years)
5. None (0)

2. Have you employed staff in the shop?

1. Yes 2. No.

2-a. How many persons are employed in your business?

1. Male ____ 2. Female ____

2-b. Type of workers

1. Full Time ____ 2. Part Time ____ 3. Seasonal contract ____

2-c. How many of them are family members in your employees? _____

3. When was the Current Business Begun?

Start Year of Business	Year of IFDC Training	Starting Capital (MZM)	Source of Investment*

*Please specify if its own or loans (private or bank)

4. Type of Business (tick as applicable)

1. Agri Inputs Only
2. Agri Inputs + Food items and other businesses (in the same premises)
3. Agri inputs + Agri output trading

5. Nature of Business (tick as applicable)

1. Retailer– sells to farmers directly
2. Retailer – sells to farmer directly + micro retailers
3. Wholesaler– sells to other retailers and farmers
4. Wholesaler – sells to retailers only

5-a. How many shops do you own? _____

5-b. How many micro retailers you have? _____

5-c. Number of villages covered by your shops _____ (or) coverage of your shop (distance radius in km) _____

5-d. Do you cultivate lands? 1. Yes 2. No

5-e. If Yes,

#	Total Land Owned (ha)	Crops Grown	Use Improved Seeds	Use Fertilizer
1			1. Yes 2. No	1. Yes 2. No
2			1. Yes 2. No	1. Yes 2. No
3			1. Yes 2. No	1. Yes 2. No
4			1. Yes 2. No	1. Yes 2. No
5			1. Yes 2. No	1. Yes 2. No

B. Business Finance Related Information

6. Do you have a Bank Account? 1. Yes 2. No

7. Have you taken a loan from a financial institution? 1. Yes 2. No

7-a If YES, please answer below

Year When Loan was Taken	Bank Institution	Loan Amount

8. What are the other sources of income other than AD business are you engaged in?

1. _____
2. _____
3. _____

9. Do you offer 'input credit' to farmers in your shop? 1. Yes 2. No

9-a. If yes (Pl. tick)

1. for seeds or
2. fertilizers or
3. both?

10. Do you get 'input credit' from your suppliers? 1. Yes 2. No

10-a. If yes (Pl. tick)

1. for seeds or
2. fertilizers or
3. both?

11. Are you a member of an agro-dealer association? 1. Yes 2. No

12. If YES to Qn. 11.

What are the **two** most important benefits do you find most valuable from being the member.

1. Training
2. Business advertisement
3. Credit/loan
4. Business linkages
5. Market information
6. Marketing
7. Input bulk sourcing

13. Where do you source your ag-inputs?

Ag Inputs	Where Do You Buy?	Type of Trader
Seeds		
Fertilizers		
Chemicals		

C. Sales Related Information

14. What is the major source of income in your shop? (Select one option)

1. Seeds (If seeds – specify the seed types)
2. Fertilizer (If fertilizers – specify the types)
3. Crop protection chemicals (If chemicals – specify the types)
4. Farm tools
5. Grain trading

15. Do you sell output commodities? 1. Yes 2. No Tick one

15.a If YES to Q.18,

Please list the **2 most important** commodities you sold **last year or season**?

Commodity	Volume Sold (Sacks)	Volume of Sacks	Total Quantity (kg)
Maize			
Beans			
Soya beans			
Sesame			

16. Did you sell fertilizers during last cropping season? 1. Yes 2. No

17. Please estimate the sales of fertilizer products during the last cropping season (2013-14)

Product Quantity/Price	Urea	Ammonium Sulfate	12-24-12 (NPK)
Quantity sold (total)			
Price per bag (50 kg)			
Quantity sold through vouchers (of the total quantity sold)			

18. Please list the name of crops for which the fertilizers are demanded in your location?

1. Vegetables (pl. specify the most important vegetable crop) _____
2. Maize
3. Other crops (Tobacco, rice or others- specify) _____

19. Please estimate the sales of seeds during the last cropping season (2013-14)

Crop	Variety Name	Quantity Sold (Non-Vouchers)	Quantity Sold Through Vouchers
Maize			
Rice			
Beans			

20. Please list the most important crops (4 crops only) for which seeds are demanded in your location?

1. _____
2. _____
3. _____
4. _____

21. What was the total amount (in MZM) of sales of crop protection chemicals in your shop last season or year?

_____ MZM

22. Do you sell herbicides in your shop? 1. Yes 2. No

23. If Yes to above,

1. Which year onwards?
2. Name of the herbicide _____

24. Trend in sales of Ag-inputs in your shop since you participated in AD training

(Please tick the relevant categories)

Inputs	Increased	How Much (by Quantity or # of Times)	Decreased	No Nchange
Seeds				
Fertilizers				
Chemicals				
Farm tools				
Vet products				

D. Vouchers and Farm Demonstrations

25. Are you a participant in the Voucher Program? 1. Yes 2. No

26. If YES to above, please answer

Years of voucher participation	How many per year
2009-10	
2010-11	
2012-13	
2013-14	

27. Has Voucher improved your sales in the shop? 1. Yes 2. No

28. If YES to above, which input sales, increased.

1. SEEDS
2. FERTILZERS
3. BOTH

29. Would you continue sales of ag-inputs without voucher program?

1. Sell SEEDS only
2. Sell FERTILZERS only
3. Will sell BOTH

30. Have you conducted any farm demonstrations? 1. Yes 2. No

If yes, when was the first demo conducted?

Season/Year	Crop	Technology	Yield of Improved Technology	Yield of Control Plot

31. Location of demonstration (pl. tick)

1. Own field
2. Farmer's field
3. Next to my shop

32. Source of assistance for conducting demo. (pl. tick)

	Technical	Financial
Own		
IFDC		
Other projects		
Department of Agriculture(Government)		

33. Number of field days and participants

Field Days (No.)	Participants/Field Day	# of Villages from Where Participated

34. Did your sales in the shop increased or decreased after conducting farmer demos?

1. Increased
2. Decreased

35. If increased sales, which of the following; (pl, tick)

1. seed sales
2. fertilizer sales
3. herbicide sales
4. others

36. How many farmers (approximated estimate) in your village/location have adopted the technology demonstrated since participation or observed your FD? _____

37. Do you still continue to conduct any demonstrations? 1. Yes 2. No

E. Feedback on Training

38. What kind of training have you received from IFDC program? (Pl. tick all the relevant)

1. Product knowledge
2. Business and financial management
3. Both
4. Others

39. Which was the above training subject was most beneficial to you till now?

1. Product knowledge
2. Business and financial management
3. Both
4. Others

40. Services offered by your shop to customers before and after agro dealer training (Please tick one)

Services	Before Training	After Training
Purchase of output or grains		
Technical advice		
Input Credit to customers		
Farm Equipment leasing		
Demonstration of the products		
Others specify		

41. What are the three major constraints faced by Agro dealer or input sale business?

1. No finance or credit available for business expansion
2. Bank interest rates are high
3. Demand for ag inputs is low
4. Demand is only seasonal
5. No technical information or assistance is available
6. High competition
7. Very low profitable margins

THANK YOU VERY MUCH

(THE INTERVIEWER SHOULD FILL THE SECTION BELOW BASED ON HIS/HER OWN OPINION OF THE AGRO-DEALER'S BUSINESS)

Kindly give your opinion regarding the agro-dealer's business premises and conduct regarding the following;

	#	1	2	3	4
1	Display of stock	Bad	Average	Good	Excellent
2	Variety or products	Bad	Average	Good	Excellent
3	Product knowledge	Bad	Average	Good	Excellent
4	Record keeping	Bad	Average	Good	Excellent
5	Customer flow	High	Medium	Low	



**AGRODEALER WITH NO TRAINING EVALUATION
(July 2014)**

Name of enumerator Date

A. Background Information

Name and location of the shop:

Name of shop

Owner (Proprietor) name:

Province

District

Telephone

Locality:

1. Education level of the owner: (Pl. tick)

- 1. Primary (1-5 years of schooling)
- 2. Secondary (5-10)
- 3. Post secondary (11-12)
- 4. College or Diploma (> 12 years)
- 5. None (0)

2. Have you employed staff in the shop? 1. Yes 2. No.

2-a. How many persons are employed in your business?

1. Male ____ 2. Female ____

2-b. Type of workers

1. Full Time ____ 2. Part Time ____ 3. Seasonal contract ____

2-c. How many of them are family members in your employees? _____

3. When was the Current Business Begun?

Start Year of Business	Starting Capital (MZM)	Source of Investment*	Current Business (Stock) Worth (MZM)

*Please specify if its own or loans (private or bank)

4. Type of Business (tick as applicable)

4. Agri Inputs Only
5. Agri Inputs + Food items and other businesses (in the same premises)
6. Agri inputs + Agri output trading

5. Nature of Business (tick as applicable)

1. Retailer– sells to farmers directly
2. Retailer – sells to farmer directly + micro retailers
3. Wholesaler– sells to other retailers and farmers
4. Wholesaler – sells to retailers only

5-a. How many shops do you own? _____

5-b. How many micro retailers you have? _____

5-c. Number of villages covered by your shops _____ **(or) coverage of your shop (distance radius in km)** _____

5-d. Do you cultivate lands? 1. Yes 2. No

5-e. If Yes,

#	Total Land Owned (ha)	Crops Grown	Use Improved Seeds	Use Fertilizer
1			1. Yes 2. No	1. Yes 2. No
2			1. Yes 2. No	1. Yes 2. No
3			1. Yes 2. No	1. Yes 2. No
4			1. Yes 2. No	1. Yes 2. No
5			1. Yes 2. No	1. Yes 2. No

B. Business Finance Related Information

6. Do you have a Business Bank Account? 1. Yes 2. No

7. Have you taken a loan from a financial institution? 1. Yes 2. No

7-a If YES, please answer below

Year When Loan was Taken	Bank Institution	Loan Amount

8. Do you offer 'input credit' to farmers in your shop? 1. Yes 2. No

8-a. If yes (Pl. tick)

1. For seeds or
2. Fertilizers or
3. Both?

9. Do you get 'input credit' from your suppliers? 1. Yes 2. No

9-a. If yes (Pl. tick)

1. For seeds or
2. Fertilizers or
3. Both?

10. Where do you source your agri-inputs?

Ag Inputs	Where Do You Buy?	Type of Trader
Seeds		
Fertilizers		
Chemicals		

11. Are you a member of an agro-dealer association? 1. Yes 2. No

C. Sales Related Information

12. What is the major source of income in your shop? (Select one option)

1. Seeds (If seeds – specify the seed types)
2. Fertilizer (If fertilizers – specify the types)
3. Crop protection chemicals (If chemicals – specify the types)
4. Farm tools
5. Grain trading
6. Non-agri related businesses

13. Do you sell output commodities? 1. Yes 2. No Tick one

13.a If YES to Q.18, Please list the 2 most important commodities you sold last year or season?

Commodity	Volume Sold (Sacks)	Volume of Sacks	Total Quantity (kg)
Maize			
Beans			
Soya beans			
Sesame			

14. Did you sell fertilizers during last cropping season? 1. Yes 2. No

15. Please estimate the sales of fertilizer products during the last cropping season (2013-14)

Product Quantity/Price	Urea	Ammonium Sulfate	12-24-12 (NPK)
Quantity sold (total)			
Price per bag (50 kg)			
Quantity sold through vouchers (of the total quantity sold)			

16. Please list the name of crops for which the fertilizers are demanded in your location?

1. Vegetables (pl. specify the most important vegetable crop) _____
2. Maize _____
3. Other crops (Tobacco, rice or others- specify) _____

17. Please estimate the sales of seeds during the last cropping season (2013-14)

Crop	Variety Name	Quantity Sold (Non-Vouchers)	Quantity Sold Through Vouchers
Maize			
Rice			
Beans			

18. Please list the most important crops (4 crops only) for which seeds are demanded in your location?

1. _____
2. _____
3. _____
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19. What was the total amount (in MZM) of sales of crop protection chemicals in your shop last season or year?

_____ MZM

20. Do you sell herbicides in your shop? 1. Yes 2. No

D. Vouchers and Farm Demonstrations

21. Are you a participant in the Voucher Program? 1. Yes 2. No

21-a. If YES to above, please answer

#	Years of voucher participation	Please tick the year
1	2009-10	
2	2010-11	
3	2012-13	
4	2013-14	

22. Has Voucher improved your sales in the shop? 1. Yes 2. No

23. Have you conducted any farm demonstrations? 1. Yes 2. No

(If Yes, pl. answer Q 25 – 30)

24. If you are not conducting FD, please tell us where do you get your technical advice and information?

1. Government extension officer
2. NGO's extension officer
3. Private companies

25. If yes, when was the first demo conducted?

Season/Year	Crop	Technology	Yield of Improved Technology	Yield of Control Plot

26. Location of demonstration (pl. tick)

1. Own field
2. Farmer's field
3. Next to my shop

27. Source of assistance for conducting demo. (pl. tick)

	Technical	Financial
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Other projects		
Department of Agriculture (Government)		

28. Number of field days and participants

Field Days (No.)	Participants/Field Day	# of Villages from Where Participated

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1. Increased
2. Decreased

30. How many farmers (approximated estimate) in your village/location have adopted the technology demonstrated since participation or observed your FD? _____

THANK YOU VERY MUCH

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