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VALUE CHAIN AND BUSINESS CASE ANALYSIS OF AGRO-DEALERS IN THE BEIRA CORRIDOR, MOZAMBIQUE

Agricultural Input Markets Strengthening (AIMS) III

June 2015



Agro-dealer Helder Nivivel in his shop in Ribaue District, Nampula Province

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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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Value Chain and Business Case Analysis of Agro-Dealers in the Beira Corridor, Mozambique

Executive Summary

The main purpose of this study is to provide a business-case analysis for informed discussions and future activities of IFDC, AGRIMERC and all partners involved in developing the agro-input value chain in Mozambique as well as for other interested stakeholders of the industry.

Intervention on distribution and logistics sometimes requires investment beyond the scope of a single project, because problems arise mostly from shortages and deficiencies in infrastructure, communications, transportation, storage and market information. Even local or regional-level interventions must take into account that input and output markets are dependent on national logistical and distribution value chains with all their constraints, especially if international trade is also relevant.

Market creation and access in the context of physical and logistical barriers to trade will always limit intervention in the short term as necessary investments in warehousing, transportation and infrastructure require stakeholders to take high risks.

The reviewing team included some insights on how the input packages are being delivered (value proposal) and on how the agro-input value chain is structured. We identified additional constraints, namely (1) expensive input packages and inadequate delivery formats (value proposal constraint); (2) lack of funding both at the farmer level to invest in agro-inputs and the agro-dealer level to purchase outputs from producers (customer relations and cash flow constraints); (3) inadequate market practices as agro-dealers are reluctant to sell on credit to farmers and farmers require credit); (4) lack of trust between agro-dealers and input suppliers and lack of commercial credit for agro-dealers, which limit sales; and (5) overfocus on maize – farmers and dealers would benefit from a larger product focus, which would mean business year-round.

Value chain development initiatives to solve a distribution problem should prioritize agents already active in distribution, who can scale up operations and reduce costs and inefficiencies of agents who do not specialize (nor want to specialize) in logistics. Hub dealers must be capitalized as they also have a role in output taking. And output taking leverages the adoption of new varieties of seed and improved packages by farmers.

Agro-Dealers in the Beira Corridor

Value Chain Integration and Business Case Analysis

Using Value Chain Analysis to Assess Opportunities and Inefficiencies

FRAMEWORK

1. Introduction

The value chain concept was introduced 30 years ago by Michael Porter in his 1985 best-seller, *Competitive Advantage: Creating and Sustaining Superior Performance*.

In Michael Porter's description of the value chain, he identifies the various steps, or links, in the generic value chain:

- **Inbound logistics:** The receiving and warehousing of raw materials and their distribution to manufacturing as they are required.
- **Operations:** The process of transforming inputs into finished products and services.
- **Outbound logistics:** The warehousing and distribution of finished goods.
- **Marketing and sales:** The identification of customer needs and the generation of sales.
- **Service:** The support of customers after the products and services are sold to them.

A value chain is thus a chain of activities. Products pass through all activities of the chain in sequence, and at each activity the product gains some value. The chain of activities gives the products more added value than the sum of added values of all activities. It is important not to mix the concept of the value of the product with the costs of producing it.

The value chain analysis can be applied to pure descriptive studies, where the purpose is to describe a process and, for example, allocate portions of the costs to the various elements. But it can also be used as a model in more analytical studies, where relationships and mechanisms are described. The latter is the focus of this work.

2. Context

Agro-dealers are key to scaling up farmer's use of improved fertilizer blends and input packages, but despite social investment made so far, capacity remains weak and agro-dealers still require major support from donor-based programs.

Therefore, agro-dealer development has been a priority in IFDC's intervention in Mozambique. Cooperation with USAID and AGRA resulted in setting up a network of over 600 agro-dealers. IFDC aims to build agro-dealers capacity and abilities to compete sustainably in the agro-input market.

Through specific programs, IFDC collaborates with FIPS, iDE, SNV and IITA in demonstrating upscaling strategies, to promote new and improved seed and fertilizer blends to farmers.

So far, results are encouraging, and dissemination of improved seeds and fertilizer blends is expanding rapidly in the Beira Corridor.

Additionally, IFDC cooperates with AMITSA and AfricaFertilizer.org, providing input price collection, training and strategic workshops with agro-dealers. Data is shared with SIMA and "Quente Quente" and is available to the public through the AMITSA.org website. IFDC also participated in the validation of fertilizer data (importation, blending and consumption).

This assessment is carried out under IFDC's continuous improvement strategy, aiming to assess market-related constraints and opportunities to agro-dealer development in the Beira Corridor and to identify new strategies to catalyze agro-input uptake by farmers in the region.

3. Objectives

Our objectives for this assessment are:

- Value chain analysis (at the activity level with a business case per example).
- Recommendations for business value chain development and implications for:
 - Capacity building.
 - Agro-dealer development programs.
 - Relations to partners and beneficiaries.

4. Methodology

Steps in the value chain analysis included:

- Mapping activities and processes in the value chain (per level) and gathering data directly from primary sources (interviews and visits).
- Identification of key short- and medium-term end-market opportunities in the target value chains at activity level, per type of agro-dealer.
- Identification of factors constraining the maximization of these opportunities.
- Discussion of activities to address these constraints and maximize opportunities for agro-dealers and other agents in the value chain.
- Debate and feedback from agro-dealers, who can then organize a market.

5. Value Chain Concept and Approach

5.1. Concept

The concept of the value chain is really quite simple. It just means that we link all the steps in production, processing and distribution together and that we analyze each step in relation to the preceding steps and the steps that follow.

5.2. Value Chain Analysis as Description of Linkages Between Activities

The value chain describes the full range of activities that are required to bring a product or service from conception through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers and final disposal after use.



The most important implication of applying the value chain approach, however, is the fact that all decisions made at one step in the process have consequences for the following steps.

The value chain does not only include a straight line. There are external activities that influence activities within the value chain proper. For the sake of simplicity, we call these external parts of the value chain upstream activities and downstream activities. If we include the surrounding environment in this model, then we are, in a way, expanding the value chain.

In such an expanded model, we may distinguish between the core activities, which include the industry’s own activities and upstream and downstream activities. Upstream activities provide inputs into the industry, while downstream activities relate to the outputs from the industry.



The challenge for every intervention in the value chain is to understand the opportunities represented by the surrounding environment.

Obviously, there are business opportunities in the upstream and downstream activities. If a company has the resources, it may enter into some of these activities as a strategic initiative.

Many large companies and corporations have adopted or co-opted some or all such external activities into their business concept. For example, a large producer may take on the role of producer of supplies, such as packaging material, either because it is not readily available locally or because it represents a substantial saving.

Some of these external activities may be highly profitable, and one might therefore ask: “Why are we not involved in these activities?” The usual answer is: “It is not part of our core business.” While that may be a valid reason, the decision to go into parts of the “external environment” of the value chain should be based on an analysis of the value chain and the technologies involved in relation to the company’s capabilities and resources.

Many previously integrated companies have decided to divest themselves of external activities or outsource these activities. Usually, such decisions are based on profit center thinking or on the belief that others can undertake these activities more efficiently and at less cost to the core activities.

5.3. Value Chain Analysis as Means to Identify Driving Forces

Industries may differ according to the prevailing perspective that the industry actors have. For example, we may distinguish between a producer-driven value chain and a buyer-driven value chain.

- Producer-driven commodity chains are those in which large, usually transnational manufacturers play the central roles in coordinating production networks (including their backward and forward linkages). This is characteristic of capital- and technology-intensive industries such as automobiles, aircraft, computers, semiconductors and heavy machinery.
- Buyer-driven commodity chains refer to those industries in which large retailers, marketers and branded manufacturers play the pivotal roles in setting up decentralized production networks in a variety of exporting countries. This pattern of trade-led industrialization has

become common in labor-intensive consumer goods industries such as garments, footwear, toys, housewares, consumer electronics and a variety of handicrafts.

5.4. Applications

Using value chain analysis highlights the importance that every company has efficient and working linkages, both backward and forward, in the value chain. This means having good, reliable suppliers as well as good customers. Consequently, value chain development initiatives may use this analysis to decide in which parts of the value chain each company should be involved.

It is also important that the necessary upstream and downstream elements are in place. If they are not, the core agents in the value chain may have to provide them itself, and that can be a costly undertaking.

Finally, all agents must be market-oriented. Preferably, marketing begins well ahead of production, because you have to produce what the customer wants/can afford.

Value chain analysis provides a systematic and analytical tool that can help management observe and understand the relevant processes and especially know the costs and added value related to the various steps in the chain. Experience has shown that proper cost control is crucial. One must know the costs at every level and work continuously to reduce costs wherever possible. As we shall see, value chain analysis helps uncover this knowledge.

DATA COLLECTED

6. Country and Sector Background

6.1. Socio-Demographic and Economic

According to the National Institute of Statistics (NIS), the 2007 population census showed a population of 20.9 million inhabitants (INE), with a population growth rate of 1.8 percent. Latest government reports cite a population of 25 million in 2014. The average age was estimated at 17.4 years, and the proportion of the population living in urban areas was estimated at 35 percent. Poverty is ubiquitous in Mozambique. Due its pervasiveness, reduction of absolute poverty has been made a government priority in key policy and poverty reduction strategy documents. Successive five-year Plans of Action for the Reduction of Absolute Poverty (PARPA) have been implemented. These strategic plans at the macro-level, which also rely on the medium-term expense and finance (MTEF) scenery, allowed the government to renew their commitments directed at developing human capital.

Mozambique has been described as a case of success among African economies and has a distinctive performance in Southern Africa. Due to its strategic location, the country is reported to be a platform for entry in the SADC market, which aggregate 250 million consumers. GDP per capita is about U.S. \$500 but has been growing steadily in the last 10 years. GDP is growing at 7-8 percent rates annually, with macroeconomic stability. Growth has been pushed by various extractive projects (aluminum, electricity, natural gas, titanium and coal), by the growth of the agricultural sector and by the investment in basic infrastructure.

No changes are expected in the trends of the Mozambican economy in subsequent years. The Economist Intelligence Unit (EIU) expects growth rate of 8.5 percent for the current year and 8 percent and 7.5 percent for 2014 and 2015, respectively. Investment in infrastructure and efforts to improve current lower productivity of the agriculture sector (investment in commercial harvests and in the growth of the traditional small farmers) will contribute to high rates of GDP growth. Sustainable growth in the transport, communication tourism, industry and finance sectors is also expected.

Inflation has been controlled as a result of decreased food price indexes and fuels and depreciation of the Rand. An accelerated rise in prices is expected in subsequent years as a result of an increasing internal aggregate demand and petrol index.

Fiscal policy will be expansionary in the next five years, with the government investing in infrastructures and improved social facilities. Economic growth and increase in income arising from an extractive sector will increase tax revenue. Conversely, budget constraints that affect the donors may cause stagnation of inflows of foreign aid. On the expenditure side, the EIU expected a significant investment in the current inadequate national infrastructure. As the general elections approach in 2014, this investment in infrastructure will obviously increase but fall in subsequent years.

Coal has become the second source of export income from mid-2012, as it is surrounded by the required transport infrastructures. It may overtake aluminum within three years. Gas, which is currently exported to South Africa, may turn into one of the main sources of income by 2017. Realized investments in agriculture may be reflected in increased exports of tobacco, cotton and cashew. Given the current scenario, EIU expects that the Mozambican exports will increase more than 60 percent between 2012 and 2017.

Imports, which are increasing significantly, may increase above the exports until 2015, given that capital goods for extractive and gas sectors will continue to be the main drivers of increased purchases abroad in the next years. An increase of 50 percent is expected in the next five years. The need for specialized technical services from abroad is also expected to rise significantly, which will lead to a deficit of balance of service from 8.2 percent of the GDP in 2012 to 10.1 percent in 2017, according to EIU.

The balance of services deficit may rise from 2.2 percent of the GDP in 2012 to 2.7 percent in 2017 as foreign companies start to expatriate crescent profits resulted from investment in extractive industry projects.

With respect to monetary policy, the main objective of the central bank will continue to focus on inflation contention, which represents a threat to the economic stability of the country. With an abrupt fall in the consumer price index reported in 2012 and 2013, the Bank of Mozambique initiated a phase of adjustment of its policy in order to facilitate access to finance by decreasing borrowing interest rates by 5.5 points. However, this expansionary policy, along with increased imports and foreign direct investment flows, constitutes a risk of an inflation pressure.

6.2. The Mozambican Agricultural Sector

Mozambique's agriculture is predominantly rainfed with low use of external inputs, including improved seeds. Agriculture is largely subsistence, and availability and accessibility of quality seed for both smallholder and commercial farmers is a major challenge. The latest agricultural census conducted in 2009 and 2010 shows that smallholder farmers account for 97 percent of the total cultivated area and 99 percent of all farms (INE, 2010).

Mozambique's efforts to expand agricultural productivity through increased access to and use of inputs have not yet yielded significant results and have not fostered the emergence of a robust and vibrant input supply network led by the private sector.

In short:

- Seed supply is constrained by inadequate production of breeder seed and foundation seed. The low use of certified seed for basic grains, particularly maize and rice, causes yields of rainfed crops such as maize to be lower than yields in most other countries in sub-Saharan Africa (SSA). Private sector seed multiplication is expanding, though slowly.
- The vast majority of fertilizer is applied to leaf tobacco and sugarcane. Application to bananas and food crops is rising, reducing the proportion of fertilizer allocated to tobacco and sugarcane. Nevertheless, maize and rice likely receive less than 5 percent of all fertilizer applied to crops in Mozambique. Recent time-series data show that fertilizer use grew by 8.8 percent per annum from 2000 to 2010.

Mechanization to prepare soil for timely planting is used very little outside of large commercial farms and estate production systems; most farmers practice labor-intensive cultivation. Some

animal traction is used in the south but is virtually non-existent in the northern half of the country.

Access to agricultural finance is difficult. Even when loans are available, they are expensive. Agriculture receives much less attention than other economic sectors from commercial banks. Nominal interest rates on commercial bank lending are in the 20-30 percent range. Many financial service providers hesitate to lend to the agricultural sector due to a long history of nonpayment of subsidized loans, thorny land tenure issues and the risky nature of rainfed agriculture.

Transport along trunk roads in the Beira Corridor is efficient, competitive and of reasonably low cost, but transport beyond trunk roads is costly. The Rural Access Index for Mozambique (between 24 and 32 percent, depending on which measure you use) is far lower than Ghana's, for example. The numerous rivers, tributaries and streams cutting east to west make rural transport costly and render some rural roads impassable (often flooded) during certain months of the rainy season. Mozambique's transportation sector outside of major east-west (seaport-interior) roads is not well-developed. Rural and feeder roads that are important for agriculture are often not in good operating condition. Despite increases in funding for road maintenance, several challenges remain.

6.3. Agro-Input Sub-Sector

Fertilizer use is rare. Manure use is similarly rare as few households own cattle, goats or donkeys. Most cultivation is done by hand. Land is not a significant constraint in most areas. The speed and extent of crop area growth depends mostly on the availability of family labor and the associated costs of developing new fields.

6.3.1. Fertilizers

The country's national strategy for the development of the fertilizer market is contained in the 2012 National Fertilizer Strategy. This strategic program sets its goal to increase fertilizer use in the development of agriculture and environmental protection. It is the culmination of prior

commitments to which the Government of Mozambique is signatory, including the Dar es Salaam, Maputo and Abuja Declarations.

The primary fertilizers used in Mozambique are urea (46 percent N) and NPK (12:24:12) for food crops (maize, rice and vegetables). For tobacco, the most common fertilizers are urea (46 percent N), NPK (10:24:20) and CAN (26 percent N). For sugarcane the most common fertilizers are urea (46 percent N), NPK (1:0:1; 1:0:2), CAN (26 percent N), DAP, MOP and ammonium sulfate.

All inorganic fertilizer used in the country is imported. There has been a rising trend in total fertilizer consumption, but a number of factors affect the consumption of fertilizers in Mozambique. These include high fertilizer prices, adverse climatic conditions, farmers' and agro-dealers' lack of knowledge and skills, poor fertilizer quality, inappropriate package sizes for small farmers, inadequate procurement and transportation systems, etc. These factors affect both demand and supply as described below.

It is estimated that only between 4 and 5 percent of smallholder farmers use any inorganic fertilizer. Organic fertilizers are used in even smaller proportions by farmers:

- The input is costly, since it is a bulky commodity produced overseas and shipped inland from Mozambique's ports or, more commonly, imported into South Africa from overseas sources and then re-exported to the Mozambique market.
- Information on efficient and profitable use of fertilizer is limited and dissemination difficult due to the lack of extension and outreach services available. It is also important to mention that in Mozambique there has been little effort made (to date) to undertake studies to determine specific fertilizer recommendations by soil nature and crop.
- On the crop output side, fertilizer use has risks. Variability in seasonal rainfall is an added source of risk in fertilizer use. Output markets are volatile, reflecting changing production conditions. Uncertain crop prices make it difficult for farmers using fertilizer to be confident that they will obtain a sufficient return from the sale of the additional harvest that they obtain from the use of fertilizer to pay for the input.

- Finally, opening new land to cultivation to produce more crops is generally less costly for Mozambican farmers than investing in yield-enhancing technologies, like fertilizer, on existing cultivated land.

6.3.2. Fertilizer Market Size

In 2010, the total amount of fertilizer used in the country was estimated at 51,400 metric tons. However, 90 percent of this fertilizer was applied to tobacco and sugarcane. The reported 51,400 metric tons of fertilizer used in 2010 in Mozambique correspond to national application levels of about 11.4 kg/ha on cropped land. The annual average of smallholder inorganic fertilizer use reported in the 2005 to 2008 TIA agricultural surveys for Mozambique was only 4.2 kg/ha.

Because fertilizer is an imported commodity from international suppliers, global commodity and transport prices are the primary determinants of the price that fertilizer users in Mozambique pay for the input.

The fertilizer marketing system in Mozambique is liberalized but not very well-developed. Fertilizers and fertilizer raw materials are imported from various major supplying countries, with low import duties or duty-free, under regional trade rules. No value-added tax or other special fees are charged on fertilizer imports. In general, government intervention in fertilizer importation and marketing does not seem to unduly constrain the operations of the firms involved.

Four fertilizer blending plants have been established in central Mozambique. Firms obtain high-analysis fertilizers from South Africa or other international producers and blend the fertilizer into products demanded by producers in Mozambique or neighboring countries.

The two blending factories – the Mozambique Fertilizer Company located in Manica Province and the Greenbelt Company in Sofala Province – blend fertilizers using imported raw materials.

To date, none of these fertilizer firms has established extensive networks of retail dealers across the country. The present demand for fertilizers at smallholder level is too small to merit the creation of such networks.

At retail level in the districts, access to fertilizers is still thin. Fertilizer dealers are present, even if not in great numbers. Surveys conducted by IFDC and IFPRI since 2011 suggest that most dealers have the following characteristics:

- The median annual quantity of sales of fertilizer was 18 metric tons.
- Just over half of the traders were the sole owners of their businesses.
- Most own a pickup truck, with some owning larger trucks, for transporting goods.
- Only three of the 20 percent of traders in the sample reported obtaining more than 30 percent of the value of their total sales from fertilizer alone.
- Seventy percent of traders surveyed use only one supplier.
- Fertilizer quality is not a major concern for most traders.
- Farmers, primarily small-scale farmers, constitute the majority of the traders' customers. The median amount of fertilizer purchased by farmers is a single 50-kg bag, although many transactions were much smaller. Sales of less than 50 kg were estimated to account for about 45 percent of their fertilizer sales. However, no trader obtained smaller prepackaged fertilizer packets from the wholesaler. Instead, they break 50-kg bags of fertilizer and either repack it themselves into 1-kg bags or simply sell it loose by volume.
- Most of the surveyed traders offer advice to farmers on proper use of fertilizer.
- Most farmers purchase fertilizer only once a year, usually just before applying it to their maize or vegetables.
- The average distance to fertilizer supplier from the farms of those surveyed was 22 km.
- The median cost of transporting the fertilizer per kilogram per kilometer of those who paid for transport was 1.00 MT.

6.4. Seed Sector

In Mozambique, the single most important seed source for all major crops is the farmer's own seed stocks retained from the previous season's harvest. When household seed supplies are inadequate, farmers commonly seek assistance from neighbors. Only 10 percent use improved

seed varieties, suggesting that the overwhelming majority of Mozambican farmers use uncertified and, most likely, poor-quality seeds.

Virtually all farmers aim to retain seed from their own harvest. Commercial seed is normally purchased in local retail shops or grain markets. NGOs represent an important source of seed in areas with emergency requirements.

The use of improved seed varieties is still low in Mozambique, because the seed value chain still faces major constraints, such as (Rohrbach et al., 1997): (1) lack of excellent quality seed; (2) government intervention in the seed sector, especially substituting the private sector; (3) lack of information by producers about the benefits of quality seed; and (4) cash and liquidity problems.

In 2013, Mozambique approved a new seed law, highlighting two key points for the development of the seed sector: the accreditation of private agents and the protection of new varieties of plants (allowing the entry of private companies in seed breeding). Also, in April 2014 the Ministry of Agriculture and its partners launched the National Platform of Dialogue of Seed Sector in order to establish a good business environment in the seed sector. The primary objective of such reforms is to increase the use of improved seed varieties by smallholder farmers.

6.4.1. Market Size

The market for certified seed in Mozambique is very small. Of 90,000 tons of seed planted of food crops in Mozambique, it is estimated that 90 percent is grain retained by the producers from the previous year, which means that only 10 percent, or about 9,000 tons, is certified seed (INOVAGRO, 2012). Of this, 80 percent, or about 7,200 tons, is circulated through non-commercial channels such as government and NGOs, leaving only 1,800 tons for the commercial sector. This highlights the existence of a large potential (81,000 tons) for growth of the seed market to be exploited, under the assumptions on the demand side increasing the incentive for small farmers to use certified seed and supply-side improvements in the capacity of seed supply at competitive prices by firms.

The small formal seed market is dominated by public sector purchases, mainly for emergency action. At the time of the 2013/14 agricultural season, the public sector had bought 3,615 tons of various seeds, with emphasis on maize, potatoes and rice.

6.4.2. Adoption of Improved Seeds

A combination of factors prevents the effective use of improved seeds by smallholder farmers. These factors can be divided into two categories. The first factors are related to the demand for seed by smallholder farmers. The latter factors are associated with the timely supply of improved seed quality and relative to a real acceptable price for smallholder farmers.

- Without demand, there is no functional seed system. Demand for seed is closely linked to the incentive that the producer has to change its seed variety selected over the years, according to preferences and resistance to shocks such as drought and pests. Also, the high cost of certified seed, which can reach 30 times the price of grain retained by smallholder farmers, constitutes a real obstacle to the producer to decide to buy certified seed. This also allies with the capacity that producers acquire over time to produce and keep their own seed. On the other hand, the lack of complementary inputs such as fertilizers, pesticides and irrigation does not allow smallholder farmers to receive the potential income of certified seeds, which can be exacerbated if the prices of agricultural products are not high enough to compensate the value for the production.
- In relation to the seed supply, the lack of timely availability of accessible seed near the producer has been the primary constraint. Most seed stores are located in cities and towns, away from the production areas, although the current trend is to be closer to producers. However, the experiences with cash crops and contract farming show that, even in a high cost environment, the possibility of producers using certified seed may increase if there is available credit. However, few producers have access to credit in Mozambique.

7. The Value Chain Concept Applied to Agro-Inputs

The general concept of the value chain is easily adapted to the agro-input industry in Mozambique, although seeds and fertilizer chains work flow differently.

7.1. Core Activities: Seeds

- Seed producers produce seed locally and make it available for processing.
- Processors and packaging companies service seed producers with packs under their own brands.
- Some companies act as importers of packed seed and wholesale to the market.
- All the above sell to local retailers or directly to larger farmers.
- Retailers are the core of the distribution system and sometimes resort to farm-level distributors to get the seed to the final user: the farmer.



7.1.1. Importers and Seed Producers

- Visited seed companies mostly import seed, but some already produce seed locally.
- Overall sales are increasing, but all seed companies report the small size of the market.
- All seed companies are trying to set up their own distribution channel through agro-dealers. All face the same challenges.
- All seed companies complain about the subsidized seed program, which delivers a bad product to already impoverished farmers and competes unevenly with other agents in the market.
- Margins are set around 30 percent or less, which is low for production/distribution and volumes do not yet compensate.

7.1.2. Processors and Packagers

- Imported seed arrives packed and ready to distribute.
- Seed producers either have their own processing equipment or rely on services provided by processing and packaging companies. These are already available in the Beira Corridor,

mostly provided by former competitors that left the market and are now only providing services to third parties (e.g., SEMOC).

7.1.3. Agro-Dealers (Wholesalers and Retailers)

- Agro-dealers are mostly non-specialized wholesalers, trading agro-inputs but also food products, household items, tools and other goods. Some also provide services such as training, milling or even seed production.
- In the agro-input area, they mostly trade in seeds, although fertilizers are increasing in terms of volume traded.
- Maize seed sales are profitable but seasonal. But since there is subsidized seed in the market, they are interested in distributing it under FAO/government flag. Vegetable seed provides a much more steady income throughout the year.
- Also provide training and services to farmers and use farm-level or community-level structures to pass on information about availability of agro-inputs.
- Most face problems related to storage and conservation of seed (most) and fertilizers.
- Fertilizers and herbicides have increasing demand from vegetable producers.
- Very few have reported sales of animal feed.
- Seed margins average 25 percent, but fertilizer margins are only 15 percent or less.
- Equipment margins are much higher, but agro-dealers lack reliable suppliers and investment capacity to build relevant stocks.
- There is some concentration of sales in more sizable clients, but it does not exceed 25 percent of sales.
- All agro-dealers have demonstration plots, and some of them sell their own multiplied seed, a much better business than distributing a third-party product.

7.2. Core Activities: Fertilizer

The fertilizer value chain has fewer actors and is defined by being solely based on imports.



7.2.1. Traders/Brokers

- Trading/brokering companies act as importers and transport raw materials to processors in Mozambique up to the port (CIF).

7.2.2. Fertilizer Companies (Processors)

- Processors produce their blends locally and distribute mostly as factory shops to wholesalers and retailers or to export markets. Packaging is mostly insourced and managed directly.
- Export markets have a large weight in volumes traded as the internal market is yet underdeveloped. Companies interviewed are thriving and business is growing rapidly, but faster in the export market – exports to Malawi and Zimbabwe account for more than 50 percent of sales – than the internal market.
- Processors complain about high cost related to port operations, custom services and delivery from port to factory door, which increase significantly the total cost of goods sold.
- Fertilizer companies operate on a margin that is rather low for industrial processors.
- Margins are low for the activity due to pressures from demand (low purchasing power) and supply of raw materials (costly import operations, port charges, taxes and logistics to factory door).
- Credit sales are practiced, but results are not satisfactory (administrative costs high, level of default high).

7.2.3. Agro-Dealers (Wholesalers and Retailers)

- See above.
- Agro-dealers at retail level are the same as in the seeds value chain.

Non-core activities are of special importance to both value chains due to context and business environment constraints.

7.3. Upstream Activities

Upstream activities:
Raw material suppliers
Equipment suppliers
Bank/insurance
Transporters

7.3.1. Raw Material Suppliers

Seeds Small-scale seed producers also use agro-inputs, so they are actually caught by the same shortfalls that farmers face in the value chain – lack of quality foundation seed and lack of resources to scale up operations.

Existing commercial seed producers face market constraints mostly related to the size of the market (short demand) and lack of a distribution network. Most larger seed-producing companies in Mozambique have gone bankrupt due, along with other reasons, to inadequate scale of operation versus potential capacity.

Fertilizer Raw materials N, P and K are international commodities whose price and availability are determined in international markets. Brokers and traders source from global origins and sell CIF to Mozambique.

7.3.2. Equipment Suppliers

Both Equipment in Mozambique is mostly imported, since there is no equipment industry in the country.

Most manufacturers of equipment for agriculture have representatives or partners in Mozambique, but technical support and post-sale services are almost absent, which is a major risk for all agents in any equipment intensive activity.

7.3.3. Banks/Insurance

Both Banking services are available in the Beira Corridor, but access to credit is limited to larger companies. Small scale activities, especially in agriculture, have a hard time getting access to loans, guarantees or crop insurance.

This limitation is felt very strongly by wholesalers/retailers who rely on credit to build their stocks. Seed producers and fertilizer processors have their own credit schemes, but their ability to sustain the system is limited.

The lack of banking/financial/insurance services is also a major constraint to the development of commercial agriculture which means it actually reduces the demand for agro-inputs indirectly.

7.3.4. Transporters

Both None of the agents in both value chains manage their own fleet, which means transportation is always outsourced and is not considered a core activity by any of the agents involved. This actually constitutes a major problem.

As it is not internalized by any of the agents, everyone contracts their own transportation services. Volumes are necessarily low in most cases, and cost per bag/kg is much higher than if transportation was managed directly.

Seed and fertilizer companies sometimes deliver DDP (Delivery Duty Paid, bearing transportation costs and including them in the price) to wholesalers and retailers, but not as a system and not in an organized way as there are no regular routes for delivery.

Wholesalers often subcontract small trucks to deliver products to small retailers and agro-dealers. Rates and charges are fully supported by the purchaser.

7.4. Downstream Activities

Downstream activities:

Market
Consumers

- Both** Most farmers are small-scale, focus on maize and plant less than 1 ha (usually less than 0.5 ha). Vegetables and sesame are also relevant.
- Agro-input uptake is low, but awareness of its benefits exist. The main constraint is financial. Overall output per farmer is very low, resulting in very little cash compensation at the end of each season with limited investment or re-investment capacity and competition with general household needs such as housing, clothing, health and education.
- Increase in yields requires investment, and investment requires funding. Access to funding or credit is very difficult. Most farmers are not business-oriented and lack entrepreneurial spirit and skills. As in all other areas of society, business people emerge in minority; therefore, no one should expect them to be in greater frequency in agriculture.

7.5. Authorities/Government

Authorities/government

Infrastructure
Legal and regulatory
Education
Research

7.5.1. Infrastructure

- Both** The infrastructure is a major constraint for all economic agents in Mozambique, mostly because roads (paved and unpaved) are very poor and a large portion of the region is not adequately covered. Distribution in rural areas is a very significant challenge since distances are long and volumes transported are normally small. The overall increase in cost per bag/kg of fertilizer/seed is significant, amounting to up to 10 percent of the wholesale price.
- Ports, mainly Beira, are among the most costly in the world when all taxes and fees are considered, raising the total cost per ton of fertilizer for up to 25 percent the CIF price. Importers shift most of that cost to price, but this means the raw materials reach the market at a higher cost than in other countries, reducing the competitiveness of agents in the value chain.

7.5.2. *Legal and Regulatory*

Seeds	<p>The seed market has a strong intervention from government and authorities regarding the availability of seed to farmers.</p> <p>Subsidized seed reaches the market at low prices, but the system is actually making seed production in the country less competitive and quality problems have been reported frequently (abnormally low germination rates).</p> <p>Articulation/integration with the FAO/government programs would benefit all the agents in the value chain.</p>
Fertilizer	<p>Intervention in this value chain is lower and limited to the normal relationship between industry and the state.</p>

7.5.3. *Education and Research*

Seeds	<p>IIAM is the entity in Mozambique mostly engaged in research, development and testing of new varieties of seed and their multiplication and delivery to farmers in the country.</p> <p>The importance of breeder seed and basic seed in the seed value chain is widely recognized. Without this seed, the subsequent stages of multiplication and distribution of certified seeds would be compromised. This recognition caused the Ministry of Agriculture, and IIAM (the National Agricultural Research Institute) in particular, to underscore the importance of the production of breeder and basic seeds in its key strategic development documents. The Strategic Plan for the Development of Agrarian Sector (PEDSA) in its Pillar 1 stressed the need to produce and supply seeds for increased productivity. In turn, the Strategic Plan of IIAM proposes to release an unspecified number of new varieties or plant material in five years (PEDSA, 2010; IIAM, 2010). However, the environment for continued and consistent production of breeder and basic seeds and its link with the market are still unfavorable (INOVAGRO, 2012).</p> <p>IIAM has primary responsibility for the production of breeder and pre-basic seed. Due to improper operation of the seed chain, IIAM has also produced basic seed through USEBA (Unidade de Semente Básica). The basic seed unit (USEBA) within IIAM is dedicated to the production of basic seed to supply private companies and other stakeholders involved in seed production mainly for certified seed. The production of basic seed should be the sole responsibility of the private sector. USEBA also multiplies certified seed through outgrower schemes by using producers hired from nearby production/pre-basic seed stations to generate some revenue for the institution.</p>
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7.6. Business Support Services

Both Business support services are available in the region. Accountants, legal offices and several types of consultancy services are available.

Technology intensive services are less common, such as software implementation and development, geographical information systems, marketing and promotion, human and animal health, laboratory and testing facilities or general technical support (except vehicles).

7.7. Driving Forces

In the Beira Corridor, **the agro-input industry has been producer/processor-oriented** in its perspective. The focus has been primarily on the availability of product rather than on consumer preferences and segments.

In some cases, this perspective has had detrimental consequences for the industry and for individual companies, as multiple supply side-driven projects have failed to meet an ever-unsatisfied demand.

7.8. Revenue Distribution along the Value Chain

	Farmers	Retailers	Wholesalers	Importers/Producers
Products	Farmers buy maize seed from 30 MT up and fertilizer from 1,250 MT up to 1,750 MT per 50-kg bag.	Normally take up to 5 MT per kg of seed and 50 MT per fertilizer bag.	Gross margins of 25% in seed and 15% on fertilizers.	Gross margins of about 30% in fertilizers and seed.
Price per 50-kg bag of fertilizer	1,250-1,750	1,200-1,250	1,050-1,100	750-800
Differences go to:	N.A.	Transportation, but quantities rarely justify. For example, if a ton of fertilizer is sold, margin is 1,000 MT. Some agro-dealers charge more just to cover transportation, which amounts to 50 MT per bag, at least.	Transportation and stock. Again, volumes are small. Selling 20 tons produces an overall margin of say 150 MT per bag x 400 bags, meaning 60,000 MT, hardly a great deal on its own.	Gross margins are actually very low. Transformation costs and risks are high in Mozambique. As transportation is outsourced, costs per kg of product distributed are high – fertilizers are a low value per volume product.

7.9. Value Retained along the Value Chain

Along the seed and fertilizer value chain, this is the value retained by each link:

Commercial Seed (per kg) in MT Examples for PANNAR 65		Fertilizer (per bag) in MT Example for 50-kg bag 12-24-12	
Price to farmer	50-60	Price to farmer	1,250-1,750
Price to downstream AD (retailer)	45	Price to downstream AD (retailer)	1,200-1,250
Wholesale price	40	Wholesale price	1,100
Producer price	30	Processor DDP	1,020
		CIF Beira	900

7.10. Notes on Value Creation

Value generated is much higher when agro-dealers produce their own seed.

National Seed (per kg) in MT	
Selling to Farmer	50
Retailer Margin	15
Selling to downstream AD (retailer)	35
AD Margin	25-40
Production cost	10

Agro-dealers pay 10 MT/kg to small farmers and receive 35 MT/kg when selling to retailers and 50 MT/kg when selling to farmers. Margins range from 25 MT to 40 MT, compared to 10 MT on commercial seed. The numbers are clear: agro-dealer-level multiplication has a business case and a potential for leveraging commercial seed business if quality is guaranteed.

That said, there is no seed quality certification system in place, and the multiplication initiatives are not supervised or controlled.

7.11. Notes on Packages Delivered

At current yields, using traditional methods, 1 ha of land can produce 1 ton or less of maize, which can later be sold at 5-6 MT/kg, for a maximum of 5,000-6,000 MT of gross farmer income. Agro-dealers value proposal requires farmers to invest a very large proportion of their

gross income (and cash flow) in inputs for the next season. But investment in inputs competes with the purchase of essential goods, housing goods, clothing and even food.

The *one size fits all solution* of the package is actually a problem for undercapitalized farmers, not because of its price per kg/unit, but because of its overall price. This has consequences over the entire value chain:

- Producers and wholesalers are supplying the market large-sized packages of fertilizer (50 kg) and seed (5 kg), which are adequate to optimize distribution, but are aimed at a client able to buy sizable quantities, Small rural households cannot afford these.
- Transportation costs are not one of the determinants of price creation and are not significant in the final price. Transportation costs, even if distributed per 5, 10 or 15 kg of fertilizer, are very low per bag. However, as margins are low in retail, they are significant in the cost structure of retailers. Smaller sized packages, which distribute transportation costs per pack and allow higher margins, may help to solve this limitation.
- If more value is retained in logistics, then logistical problems can be tackled. Transportation is only a problem because it is seen as expensive and no one is providing the service directly. It would not be perceived that way if the final client, the farmer, bears it sustainably and accepts it as part of the agro-input cost.

Recommendations:

- Smaller sizes for all packages, more diverse, adequate to each crop.
- Cooperation: Some hubs must also take on the role of logistic platforms, managing storage and transportation for smaller agro-dealers and distant importers/wholesalers.

7.12. Notes on Farmer Business Models

The agro-dealers are not specialized in the activity. In our sample, all of them had another source of income. Agro-input trade was actually a second activity for all of the people interviewed, except for one larger sized shop in Chimoio. Random visits and interviews found most of them were small wholesale retailers. The agro-inputs, such as fertilizers and seeds, were merely part of the product mix among other groceries.

This does not constitute a problem but rather a characteristic that must be taken into account because:

- Margins are much lower in agro-inputs than in household products, consumer goods or food and beverages.
- Agro-inputs must compete with other categories, which in some cases will also compete for storage, shelf space and transportation.
- Business is interesting, but marketing, branding and formats must be adequate to the farmer, who is the consumer, just like all other goods that are sold in the country (i.e., most household products sold in Mozambique are successful in small sizes, because of price). Big is most times also expensive, as seen before.

7.13. Notes on Cash Constrains

All the interviewed agro-dealers put across the limitation on obtaining an optimal quantity of outputs from farmers and inputs from wholesalers due to cash constrains.

- Again, adequate sizing may help overcome this issue, also on the agro-dealer side.
- If agro-dealers do not have cash available to buy outputs during the right season, they lose business. Banco Oportunidade (BOM) has helped some agro-dealers under a credit guarantee with IFDC (previously) and now with AGRIMERC, but operations take too long to analyze.
- The same happens when building a stock of fertilizer and seeds. Adequate quantities require investment in working capital and BOM is offering inadequate credit solutions to agro-dealers. They lose business by lack of stock when the whole systems complains of low sales. It does not make sense. Credit solutions must be adequate and provided in due time. If BOM negotiates four-month loans to a business cycle that requires six to seven, dealers will often default, which occurred frequently. Credit operations to buy outputs have been easier to approve and complete without default, but that is mainly commercial credit and not agriculture credit.

7.14. Notes on Reluctance to Sell on Credit

Wholesalers/importers are reluctant to sell on a credit basis due to previous impairment of receivables originated by permanent failures on payments of the bills from the agro-dealers.

- **Problem 1:** Farmers need credit and agro-dealers lack the will and the skills to effectively manage credit schemes. They may provide credit to farmers they trust but not all of them. If agro-dealers provide credit to farmers, they will need it from wholesalers/importers.
- **Problem 2:** When farmers don't pay, agro-dealers also default. Therefore, the risk is on the side of importers/wholesalers, who are now reluctant to support the system.

Banks should, therefore, be involved at this stage, but with adequate credit systems, advised by agro-experts who define the cycle and with adequate size of operations and pre-approved lines per agro-dealer, making it unnecessary to evaluate operations on a case-by-case basis.

Agriculture guarantee systems must mature and be integrated in the banking system in order for credit systems to evolve. Rural credit was always a very profitable operation for banks, but it requires a lot more expertise than purely commercial/trade credit operations. Banks must also have their capacity built and their skills improved.

7.15. Farmers Stuck on Few Crops

From agro-dealer and producer interviews, it was found that the most produced crop was maize, although it was not the most profitable in the product mix. This was either due to lack of knowledge about other crops or land as limiting factor.

- Maize is the most important crop in the region.
- But agro-dealers do better business selling to vegetable producers because they consume more inputs throughout the year.
- Maize is interesting, but margins are low and volumes are concentrated in a short time of the year.
- Maize is a more appealing output, and agro-dealers find it profitable. Leveraging intervention on maize must take this into account. An agro-dealer that takes the maize production of farmers will be better prepared to provide inputs and foster the uptake of improved packages by its clients/suppliers.

Analysis

8. Analysis

8.1. Agro-Dealer Analysis and Value Chain Development Implications

Agro-dealers are not a homogenous group. In the Beira Corridor, companies of all sizes trade in seeds and fertilizers, either as a single activity or as a complement to other trading activities. The challenge of developing the value chain requires the identification of the value chain drivers and, based on that, the identification of the value chain links where intervention may be required.

Agro-input demand is growing, both because government support programs generate demand – public demand – and because commercial farmers (especially the ones producing vegetables) increase the intensity of agro-inputs in their farms. Seeds and fertilizer are mostly demanded by these two types of consumer. Small-scale farmers still do not represent a stable source of demand, mostly because of cash constraints and their inability to invest in quality seed and other inputs and also because they rely on government programs to provide very low-cost inputs (mostly seed), so commercial agro-inputs do not seem attractive.

What government programs and commercial farmers require from agro-dealers is quality seed and inputs as well as delivery of adequate (sometimes large) quantities within relevant delivery-time constraints. They do not have major access problems nor investment limitations. This demand does not require atomized local-level networks to be established in order to satisfy demand. Local-level distribution or training may be needed, but it does not imply building local-level stocks or shop networks.

There is also a clear necessity for output taking. Small-scale farmers do not invest intensively in inputs, but they do require buyers to guarantee their expected income. Agro-dealers must therefore be able to source larger quantities of farm outputs, stock them and then take the opportunity to plan the next campaign with farmers.

To increase volumes of agro-inputs traded, taking advantage of the already clear and existing demand, the market requires agro-dealers to be able to:

- Have financial capacity to buy (on cash), transport and stock farm output.
- Have easy and fast access to larger quantities of agro-inputs on credit (more than 50 ton each).
- Have stocking capacity to satisfy demand for at least 30 days (based on normal delivery time in-country for seeds, fertilizer and equipment when purchased from importers or processors).
- Have their own transportation and delivery equipment in order to guarantee access and reduce transportation costs.

There is a clear implication of the current agro-dealer development model: Focus must shift to larger sized dealers, the so called hub dealers. They are key actors in the purchase and distribution of inputs and farm outputs. To invest downstream will fragment resources and make changes in stocking capacity irrelevant. To invest upstream will not resolve logistics since most processors and importers do not know or want to manage large province- or country-sized operations directly.

Hub dealers suitable for support should be selected on a simple criteria basis: past volumes traded, capacity to deliver inputs directly and capacity to buy and stock farm output. As these are already business people who are commercially experienced, they have overcome the initial stages of business development and so success rates will be higher than startup level agro-dealers.

But we should remember that, at present, the larger market segments are supply side-driven (namely seed and fertilizer for maize).

The objective to increase yields and output level requires farm-level intervention, social investment and subsidized inputs. This may not be compatible, in the short- and medium-term, with commercial and market-based mechanisms of operation alone. Farm-level small-size agro-dealers and extensionists are needed, but they will always have trouble relying on agro-input trade alone as volumes are naturally limited. They will seldom be able to invest in transportation or quality storage (or stock). They have a role as middleman in buying and organizing farm output, but this activity is not permanent throughout the year. Support to hub dealers so that they

can organize their own network of farm-level operations will be a less riskier investment, will require less direct management and will probably be more effective in selecting the most efficient operators.

Focus on outbound logistics is a priority, which is natural since most of the issues identified previously are actually distribution problems from dealer to farmer.



8.2. Constraints in the Value Chain and Value Chain Development Implications

We must separate constraints in the value chain, once again, into two perspectives: from the supply side and from the demand side.

Summarizing:

Demand Side Constraints		Supply Side Constraints (Themes)	
D1	Seasonality – Maize only generates demand for inputs in 2 months out of 12.	S1	Costs – As most inputs or necessary raw materials are imported, importers and processors must pass on the costs related from port to stock, which are considerably high.
D2	Concentration – Only commercial farmers produce year-round crops such as vegetables and allow for regular revenue.	S2	Storage – Importers/processors have stocking capacity. Hubs and local-level dealers do not. And regional- or local-level stocks will always be key for volumes traded to increase (overcoming the transportation, stockout and farm output collection issues systematically reported).
D3	Unfair Competition – Government-subsidized seed competes unfairly with commercial seed.	S3	Logistics – No single actor in the value chain has its own distribution capacity. It may be cost-effective to manage external transportation in container, but it never is at the small truck level.
D4	Small Market 1 – Small-scale farmers’ purchasing power (or investment capacity) is low	S4	Credit – Credit experience is generally bad and most actors in the value chain find it difficult to give credit to the majority of their clients (and never to farmers). Banks on the other hand have no products for the agribusiness.

Demand Side Constraints		Supply Side Constraints (Themes)	
D5	Small Market 2 – Average small-scale farmer farm size very small, scale benefits not very relevant in overall output sales.	S5	Training and Extension – Farm-level extension services are required in order for improved packages and better farming practices to be disseminated, a cost that few are keen on supporting.
D6	Driver Inadequate – Maize is a low-value creation crop. Can it sustain investment in market-based emerging agribusinesses? No.	S6	Product – Format and sizes of distribution are inadequate to the target public willingness to buy. Large-size formats imply large cashouts for farmers.

Via negative selection, we may conclude that little can be done about D1, D4 and D5 as well as S1, S4 and S5. These constraints require much more than a single program or policy to be solved.

But for the ones that remain:

- D2 and D3 actually show where supply must be directed in order to increase volumes. Concentration is a problem, but at this point the demand drivers cannot be ignored. Commercial farmers must be targeted by hub dealers and government procurement offices must know that if they procure locally they will be developing local businesses and making a larger impact. D6 is actually a choice. Maize was selected because it is a fundamental food crop, the basis for the food security of most households. But for maize to be profitable, yields must increase significantly. Improved seed and fertilizers alone are not yet having the necessary impact. Complementary strategies should be drawn in order to make a better case for improved technologies by non-commercial farmers.
- S2 and S3 are constraints unrelated to infrastructure and communications. These also exist, but all actors in the country or even in other African countries face them, sometimes with even more impact. S2 and S3 may be resolved with investment in warehouses and vehicles. The question is just: Who is better placed to manage it? And only hub dealers can integrate transportation and logistics in their business model since they are the distributors. Processors must focus on production and costs. Retailers lack the skills and scale of operation. Normally, directly managed transportation is effective up to a 200-km radius (or more if roads are good), so few agro-dealers can cover most of the province and interact with processors/importers.



Again the outbound logistics link is crucial. Investment in adequate marketing and sales may scale up results as direct demand to the right value chain actors and to the right type of products, i.e.:

- Introducing a common image or certification scheme easily recognizable for products or services in a model that shares more value with lower levels of the distribution chain as volumes rise.
- Farm-level or rural shop upgrade schemes where hub dealers invest in their own network as a reward for volumes or sales objectives.
- Farm identification schemes where early adopters are presented as examples and get access to farmer-dealer incentives.

8.3. Constraints in the Technology Adoption and Value Chain Development Implications

Visits to agro-dealers and interviews with importers, processors and the AGRIMERC team gave us some insight on the relations with farmers. Interviews with farmers confirmed most of the data collected.

Under the classification used before, technology adoption is not a constraint, but it is limited by both supply-side and demand-side constraints, most notably:

Demand-Side Constraints		Supply-Side Constraints (Themes)	
D2	Concentration	S5	Training and extension (costs)
D4	Small market		
D5			

New technologies in this case mean the use of improved packages (seed, fertilizer, chemicals) and better farming practices, which require training.

Agro-dealers and farmers report that they have the necessary training and skills, since most of them have already participated in more than one training program. Agro-dealers also report that they provide training to farmers who may lack the skills using other channels such as community radios, community meetings, etc., to disseminate information on farming practices and use of improved seeds and fertilizer. But in the meetings held and interviews conducted, lack of training and skills was not presented as a limitation to adoption. Agro-dealers report that farmers are aware of the benefits of new technologies, and farmers actually confirm this. This is also compatible with other reports and experiences in other value chain in the country. There is a systematic report of successful training and capacity building interventions in various regions and in various settings in value chains like vegetables, soy, cereals, fruits, animal breeding, dairy farming, etc.

The major constraint is farmer purchasing power, which is seasonal and small. Even if the farmer is trained and understands the benefits of the improved packages, he/she must invest a considerable part of his/her income to purchase it. Smaller packages (or cheaper) may be introduced to reduce farmer investment risks and make the decision easier. The current packages may also be associated with output taking schemes such as in commercial crops like tobacco and cotton. Either way, farmers are aware – the problem is that they are still poor and most of them will not invest part of their already low income because they are not risk takers nor entrepreneurs and they should not be treated as such by market-oriented programs and organizations.



If hub dealers – or their farm-level partners – provide efficient and timely output taking services to farmers, they can integrate the value chain from stock to farm and back to stock.

Values paid to farmers would be partially directed to agro-inputs that would be then used to increase productivity and overall production, resulting in increasing volumes to sell back to agro-dealers.

The flow of goods will create a new line of business for agro-dealers – who can increase the weight of output taking in their business model (and here there is a business case for maize), and cash flows will capitalize farmers’ investment in inputs.

8.4. Farmers Outreach and Value Chain Development Implications

Government extension services lack the resources and numbers to provide adequate services to all small-scale farmers in the regions.

Outreach to farmers and extension services are currently provided by the agro-dealer network at a local level, especially by smaller scale agro-dealers who work within the same community and as a one-on-one model.

Hub agro-dealers provide training and information to farmers either directly or in sessions organized with larger groups of farmers – and normally with donor support.

The provision of training, information-sharing, guidance and “coaching” farmers requires its integration with the agro-input distribution activity in order to be cost-effective. Visits to demonstration plots, technical support during sales and technical support during purchase of farm outputs constitute priority settings for outreach.

It will hardly be cost-effective to invest in local trainers who do not sell (or sell enough), and processors/importers lack the outreach and managerial capacity to run large-scale training programs (or the desire to do so).

Developing the hubs’ capacity to manage large networks of local dealers may constitute the best option, but it must integrate training, technical support and active sales.

A pyramid model may be adequate, where volumes sold increase the local dealer margin per sale, and local dealers can also share margin with downstream redistributors. If managed adequately, offering a common brand, procedures and model of information provision should

constitute a sustainable business model (like Avon salespeople). Pyramidal models are actually very effective as outreach business models and respond adequately to the different sizes and investment capacity of salespeople (in this case local agro-dealers). They have the advantage of increasing the overall system capacity to negotiate quantities and prices. Finally, sales volume and increasing margin incentives can be very effective in motivating a larger number of people to integrate the network.



Once again, service integration is only possible if margins are higher, and that requires integration of service with marketing and sales and with outbound logistics. Local or small agro-dealers must be linked to hubs and have incentives based on volume and margin. Service will be provided as a consequence because it will be good business.

8.5. Value Creation and Value Destruction

Agro-dealers have naturally specialized in the products that have the higher commercial margins. But there is a great variation of specialization from region to region. Variation is mostly caused by the following factors:

- Farmers grow different crops from region to region, even if maize is dominant in most areas. Of course, agroclimatic changes impact agro-dealer activity.
- Different models of farmer organization have a large impact on input acquisition, i.e., cooperatives or farmer associations have the necessary resources to invest in tools and chemicals. Most individual farmers do not. Agro-dealers that have cooperatives and associations as clients have a more diversified portfolio and sell larger volumes.

Specialization in each region was therefore different, but some regularities emerged. The interviews conducted, agro-dealer data analyzed and information gathered in project documents provided insights on some of the key drivers for value creation:

Value Creation	Value Destruction
Vegetable seeds have higher margins than maize seeds – value on margin.	Everyone loses value in transportation.
Vegetable seeds and agro-inputs provide a steadier income than maize-related inputs – value of regular cash ins.	Maize fertilizers are the products with the lower margins. Volume is required to be appealing, but volume requires investment in promotion, extension and transport. And everyone loses money in those.
Chemicals and tools are the highest margin products sold – value on margin.	Stocks are expensive and require credit. Credit is too expensive and destroys value because it is not adequate for the business cycle of agro-dealers.
Demonstration plots are very effective in creating demand.	Subsidized seed competes unfairly and pushes margins down, destroying value.
Diversification of crops is very effective in creating demand for high-margined inputs, and crop cycles are shorter, which is more effective in proving added value from agro-inputs.	Low-quality seed in the market reduces trust and overall demand for commercial seed.
National seed has a much higher margin than imported seed and generated positive externalities.	Lack of stock and credit capacity of small local agro-dealers frustrates demand and bottlenecks distribution, destroying value.
Farm output taking generates cash flows to farmers and creates opportunity for agro-inputs sales, generating demand.	

Therefore, there are opportunities for value creation or mitigation of value destruction in:

1. Promoting intercropping and diversification at farm level and shifting proof of concept from maize to vegetables or another cash crop. It is not just about yields, it is also about the overall cash in at the end of a cycle (which is very low for maize).
2. Integration of smaller dealers in pyramidal networks under common and recognizable brands. Larger hubs manage stocks; smaller dealers promote sales.
3. National seed production and distribution (with adequate quality control and certification).
4. Systematic integration of output taking and agro-input sales.
5. Centralized (regional level) management of transportation services, managed directly in order to satisfy output taking and input distribution – supported by central helpline and farm-level focal points.
6. Central purchase of common goods where everyone makes money, reducing acquisition costs and enabling enough stocks to guarantee the satisfaction of demand: This applies to tools

(shovels, katanas) and small farm equipment that may have to be acquired in Maputo or imported.



8.6. Agro-Dealer Development Implications

At this point agro-dealers have diversified sources of income, with most also being traders of food products, tools, equipment, beverages or common household items such as cleaning products. Margins in these goods are commonly higher than in agro-inputs, and this means that agro-dealers will only specialize in agro-inputs if volumes become attractive.

As volumes grow, it will be better to encourage diversification in order to sustain distribution. Specialization is normally not a good strategy in low income, logistically challenging markets.

- **Hubs have the opportunity to generate value by becoming larger scale distributors and internalizing logistics. Revenue will increase as volumes grow.**
- Smaller scale agro-dealers already have other income sources, such as veterinary services, small milling services and local commercial shops. As the agro-input margin is low, investment will only be possible as volumes increase and a double incentive may arise from a pyramid system where margins and volumes grow together.

9. Concluding Remarks

Value chain development is always an ambitious task, especially if it is mostly driven not by a clear market opportunity or gap (quantity or price related), but by non-market-related objectives such as import substitution, food security or poverty reduction.

The business case for fertilizers and seeds is strong. Prices and quantities imported/produced are already adapting to clear and existing demand (international, public and from commercial farms).

But in both cases, smallholder farmers' demands are weaker and evolving slower than commercial farmers' demand or exports (re-exports). Product, price and placement issues are relevant, most importantly from the outbound logistics point of the value chain forward.

At this point, increasing volumes is more a matter of packing the right volume per price and delivering it with full service to the farmer. This means internalizing transportation and training, as well as taking the output in a later stage.

Industrialization of the seed and fertilizer value chain may increase the added value in the country. But we must understand that Mozambique is an open economy – a price taker – and normally, even if fertilizer production costs decrease with increasing national production, Mozambique does not have competitive advantages in seed or fertilizer production that would justify a sharp decrease in the price paid by farmers in the end. Volumes will always reduce the gap between imports and national production.

Volumes are a distribution problem, not a production problem.

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