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SMALL FARMERS' ACCESS TO HIGH-VALUE MARKETS: WHAT CAN WE LEARN FROM THE MALAWI PIGEONPEA VALUE CHAIN?

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Abstract

Access to high-value markets remains one of the major challenges facing smallholder farmers in Africa. The paper applies a value chain analysis to the pigeonpea sub-sector in Malawi to determine ways of improving the access of small farmers to the global pigeonpea markets. The value chain analysis, complemented by primary data from a sample of 200 farmers, investigates the nature of the pigeonpea value chain by highlighting the main actors and the sources of inefficiency along the chain. The study shows that pigeonpea production is dominated by smallholder farmers with limited access to market information and who are also faced with lack of access to improved varieties. For the Malawian exporters, their competitiveness is being undermined by high freight costs and low pigeonpea grain quality. Policies to improve market institutional innovations through the use of the leading farmer organization, NASFAM, have the potential of improving the competitiveness of the producers.

Keywords: Pigeonpea, value chain, smallholder farmers, Malawi

JEL: Q11, Q13

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1. Introduction

Smallholder farmers dominate the agricultural sector in most of the developing world. Due to forces of globalization, the majority of the small farmers lack the capacity to compete on the global markets that are characterized by strict grades and standards. As a result, they are often left behind in reaping the benefits that accrue from globalization. The challenge that policy makers in most of the developing countries now face is to ensure that smallholder agricultural producers participate in the global economy in such a way that increases their competitiveness while providing sustainable income growth which is necessary to reduce levels of poverty.

This paper investigates the nature of pigeonpea production and marketing in Malawi using data from a sample of 200 smallholder pigeonpea farmers from 4 leading pigeonpea-growing districts of Malawi that were collected in 2003. The study uses a value chain analysis to demonstrate how small pigeonpea farmers in Malawi can participate in the global pigeonpea market more effectively through interventions that do not only improve market access but also reduce transactions costs. The study identifies key actors, their relationships and their interactions in the pigeonpea value chain in order to identify constraints that can be tackled by actors within and outside the chain, so that chain actors are put in an improved position. Our major interest is on improving the performance of the small farmers by increasing their production and incomes from pigeonpeas.

The choice of pigeonpea (*Cajanus cajan*) is motivated by the fact that the pigeonpea sub-sector in most of the leading producing countries in Sub-Saharan Africa is dominated by small farmers. It, therefore, gives an ideal case to identify sources of inefficiency within the value chain that limit the competitiveness of the small farmers in global markets. Second, unlike other agricultural commodities such as cotton and coffee, the pigeonpea value chain shows that the crop passes through several intermediaries with little value being added before reaching the end-users (Jones *et al.* 2002). As a product with little differentiation along the chain, the paper highlights important technological and institutional innovations that are needed in order to increase the share of the final consumer prices that smallholder farmers receive. Using Malawi pigeonpea as a case study, the paper identifies interventions to improve the inclusion of poor small farmers in the global value chains for the respective crops they produce.

Pigeonpea is a major legume crop in the semi-arid tropics. It is grown mainly by smallholder farmers as a food security crop and it accounts for 5 per cent of world legume production

(Hillocks *et al.* 2000). India is the world largest producer followed by Africa and Southeast Asia, particularly Myanmar. Pigeonpea harvest in India amounts to more than 2.4 million tonnes per year, while Africa produces an average of 200,000 tonnes (Lo Monaco, 2003). Pigeonpea production has stagnated in India over the last decade. In contrast, there has been a slow increase in the production in Africa. However, in the Southeast Asian country of Myanmar, there has been a substantial increase in pigeonpea where production increased from 49,000 tonnes in 1990 to 179,000 tonnes in 2000. Although there is both domestic and regional trade in pigeonpeas in eastern and southern Africa, what makes pigeonpea different from other food crops is the export trade to India. Being the world's largest producer, as well as the major consumer of pigeonpeas, India is by far the focal point for international pigeonpea trade. In India, nearly all the pigeonpeas are processed into dhal, which is prepared into a thick soup for mixing with rice (Jones *et al.* 2002).

Pigeonpea is grown mainly in the southern region of Malawi. These areas are characterized by short rainfall duration and terminal drought with high temperatures. As a result, crop failures of the staple food crop, maize, are common. Pigeonpea's ability to tolerate dry spells and such harsh conditions make it a suitable crop for the area. Furthermore, its nitrogen-fixing capability, and the ability of its deep taproot to recycle nutrients in the soil, as well as its use as a protein-rich food and livestock feed, make pigeonpea a very important crop to smallholder farmers. The crop is rain-fed and usually intercropped with maize, cassava, beans and cowpeas, making it difficult to accurately estimate its production figures. Pigeonpea is largely produced by smallholder farmers who are usually unable to significantly increase the area of cultivation because their landholdings are limited.

Malawi is the second largest pigeonpea producer in the eastern and southern African region, with an estimated 110,000 ha grown every year. However, yields are still very low, averaging about 450 kg/ha, which is less than 25 percent of the potential yield (Soko, 2001). Nevertheless, research efforts in the past decade have led to the development of a range of improved production technologies which include improved, high yield potential cultivars. In terms of processing, there are several companies that are involved in processing pigeonpea into tur dhal for export. Companies like Transglobe Produce Exports, Rab Processors, Bharat Trading Company, and others have an established reputation and good market contacts in India.

The paper proceeds as follows: section 2 outlines the value chain methodology. Section 4 describes the sources of data used while section 5 presents the characteristics of the main actors in the value chain. Inefficiencies in the value chain are explained in section 6, which also presents the possible ways of dealing with them. Section 7 concludes the discussion and offers some policy options.

2. Methodology

The paper adopts a value chain approach. A value chain analysis is an important analytical tool that is increasingly being used to evaluate the market potential of agricultural commodities. For a long time, sub-sector analyses have been used to describe the structure and dynamics of an agricultural sub-sector. However, its use has not been without weaknesses. In particular, sub-sector analysis tends to be static and suffers from the weakness of its own bounded parameters. Such an analysis struggles to deal with dynamic linkages between productive activities that go beyond that particular sub-sector (Kaplinsky and Morris, 2000). Consequently, agricultural economists are now increasingly undertaking value chain analysis as it overcomes the important weaknesses of the traditional sub-sector analysis.

A value chain describes the full range of value-adding activities required to bring a product from its conception to the final consumer (Kaplinsky, 2000). A typical chain includes all of a product's stages of development, from its design, to its sourced raw materials and intermediate inputs, its distribution, and its support to the final consumer (McCormick and Schmitz, 2001). Conceptually, the value chain approach presents a good picture of the process of creating value. A product is brought to the market through a combination of activities, all of which contribute to its final value.

Although the value chain analyses were initially applied to the manufacturing and service sectors, they have recently been applied to agricultural commodities as well (Ponte, 2002). Increasingly, development practitioners are applying the value chain approach to smallholder cash crops to ensure that production, income and employment directly benefit the poor. Since the focus of the approach is on identifying opportunities that actors along the value chain possess and critical constraints that limit their competitiveness, it has the potential of identifying market-based solutions to promote market competitiveness. In particular, improved inclusion of poor small

farmers in the global value chains is an important strategy to increase the production, income and employment of the poor.

There are a number of studies that have employed the value chain approach to agricultural commodities. Fitter and Kaplinsky (2001) used a value chain analysis to examine inter-country distributional outcomes of the global coffee sector by mapping input-output relations and identifying power asymmetries along the coffee value chain. Their study showed that returns to product differentiation taking place in the face of globalization do not accrue to the coffee producers. They also found that power in the coffee value chain was asymmetrical. At the importing end of the chain, importers, roasters and retailers compete with each other for a share of value chain rents but combine to ensure that few of the rents return to the farmer or the producer country.

Ponte (2002) also used a value chain analysis to examine the impact of deregulation, new consumption patterns and evolving corporate strategies in the global coffee chain on the coffee exporting countries in the developing world. The study concluded that the coffee chain was increasingly becoming buyer-driven and the coffee farmers and the producing countries were facing a crisis relating to changes in the governance structure and the institutional framework of the coffee value chain. Further, a value chain approach was used in Kenya to identify strengths and weaknesses of the cotton-textile supply chain and formulate a strategy to improve the cotton-apparel sub-sector (RATES, 2003). The study identified lack of coordination among the actors in the cotton industry in Kenya as one of the major factors limiting the competitiveness of the cotton industry. Institutional innovations and harmonization of trade policies were proposed to solve the problems of institutional and policy failures.

Recent studies have attempted to link the concept of value chain to social protection for informal workers in developing countries. For instance, Barrientos and Barrientos (2002) combined the value chain approach with a social responsibility matrix to map the channels of social protection that could be developed for informal workers. The authors then apply the methodology to the horticulture sector of Chile and South Africa to explore the interconnections between employment, social risks and social protection for the informal workers. This was achieved by tracing out the supply relations of companies integrated into sectoral value chains and different forms of employment at different points along the value chain. They then examined the different

social risks that the workers faced arising from the nature of their employment as well as the functioning of the value chain.

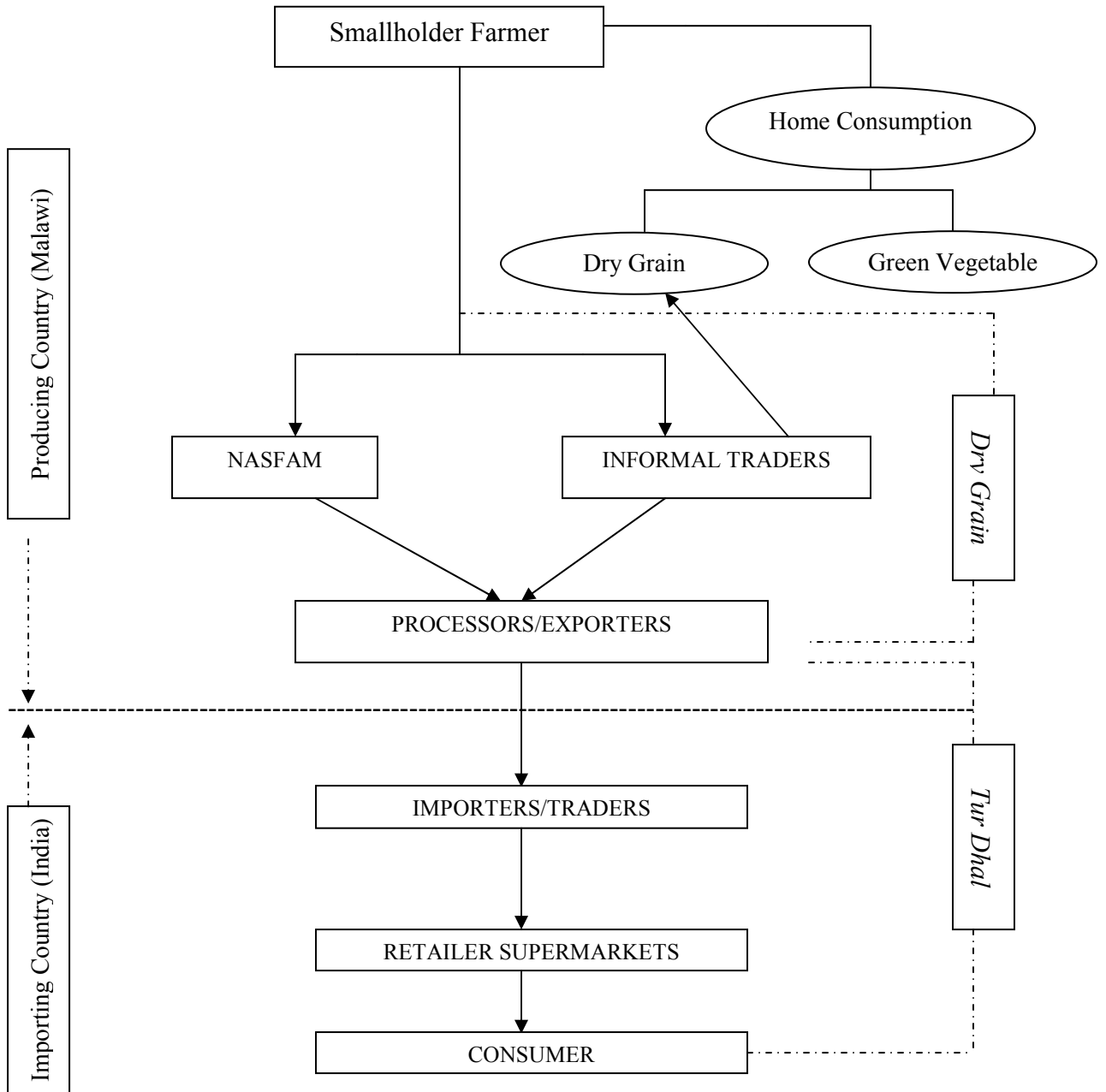
3. Data Sources

Although value chain analyses are highly qualitative, the study uses primary data collected in 2003 from a random sample of 200 smallholder pigeonpea producers from four leading pigeonpea producing districts of Malawi (Balaka, Mangochi, Chiradzulu and Zomba) to complement the qualitative data. The districts were purposively sampled because they were not only leading producers of pigeonpea, but also because besides traditional intermediate buyers, the National Smallholder Farmers' Association of Malawi (NASFAM) was buying pigeonpea from the farmers in most areas of these districts. They, therefore, formed the basis for analyzing alternative marketing channels available to the producers. Further, expert interviews were also conducted with the leading processor and exporter, Bharat Trading Company.

4. Main Actors in the Malawi Pigeonpea Value Chain

The pigeonpea value chain in Malawi begins with a smallholder farmer (figure 1). Production is concentrated in southern Malawi where it is usually intercropped with maize and it accounts for around 20 % of household income (Snapp *et al.* 2003). Around 89 percent of our studied farmers intercropped their pigeonpeas with maize. For the smallholder farmer, pigeonpea is an important traditional source of protein.

Figure 1: Main Actors in the Malawi Pigeonpea Value Chain



Source: Own compilation

Table 1: Characteristics of Pigeonpea Farmers, 2003.

Variable	Statistic
Gender of Farmer: Male	34 %
Female	66 %
Average years of schooling of the farmers	5.26
Average years growing pigeonpeas	6.53
Pigeonpea variety grown: Local	62 %
ICP9145	38 %
Seed source: Recycled seed	60 %
Open market	35 %
Other	5 %
Pigeonpea intercropping: Maize	89 %
Cassava	5 %
Other	6 %

Source: Own compilation.

The pods and immature seeds are consumed as a green vegetable, but the dry peas are also cooked. Most of pigeonpea production is intended for household consumption, while selling small surpluses. Available literature indicates that approximately 65 percent of total production of pigeonpea in Malawi is consumed on-farm. Around 10 percent is traded on the domestic market, and the remaining 25 percent is destined for the export market (Lo Monaco, 2003).

Our sample shows unique characteristics of pigeonpea farmers that have implications for policies to improve their competitiveness on the global pigeonpea economy. Small-scale pigeonpea production in Malawi is dominated by females. In our study, 66 percent of the farmers were female, with an average history of seven years in pigeonpea production. The farmers tend to have very low levels of education (see table 1). While over 13 percent had received no education at all, only 6 percent had gone beyond primary education. Further, around 62 percent of the farmers were planting local pigeonpea varieties and only 38 percent reported using an improved pigeonpea variety, known as ICP9145. The majority of the farmers use their own recycled seed for planting, with only 35 percent reported buying seed from fellow farmers in open markets.

From the smallholder producer, the pigeonpea grain goes to an intermediate buyer. Although intermediate buyers are common in all the pigeonpea growing districts of Malawi, their presence is more prevalent in areas where the National Smallholder Farmers Association of Malawi (NASFAM) does not operate. Intermediate traders act as a linkage between small-scale farmers and the processors of pigeonpeas. They usually set up a central marketing place within the community during the harvesting season where they buy pigeonpeas from the small farmers. They then transport the pigeonpea to processors who are all based in the commercial city, Blantyre.

The intermediate buyers obtain the pigeonpeas from the small farmers at a lower price and they sell to the processors at a higher price to cover their transportation costs and earn some profit. For example, the largest and the oldest pigeonpea processing and exporting company, which has been operational since 1944, bought pigeonpeas from middlemen at a price equivalent to US\$ 0.14 per kilogram during the 2003 season (at August 2003 exchange rate). The pigeonpea was sourced from small-scale farmers by these intermediate traders at a price of US\$ 0.11 per kilogram in Zomba and Chiradzulu. Some producers sell their pigeonpeas to the National Smallholder Farmers' Association of Malawi (NASFAM)¹. At the time of the study in 2003, NASFAM was buying pigeonpeas from both members and non-members of the association and selling the grain to the processors and exporters. However, in areas where NASFAM was not in operation, smallholder producers only relied on the village-based intermediate buyers.

Both NASFAM and the intermediate buyers sell their pigeonpea to processors, who are also exporters. The processors and exporters of pigeonpea in Malawi are all located in the commercial city of Blantyre. There are over ten millers in Malawi with a capacity to process approximately 20,000 metric tones of tur dhal per annum (Soko, 2001). Some of the processors have vast experience in exporting pigeonpeas having been in the business for more than fifty years. The processors usually acquire pigeonpeas from intermediate traders. Although it is realized that the existence of middlemen means that small-scale farmers get less from their pigeon pea sales, their existence is crucial in facilitating trade between the farmers and the exporters. Middlemen buy small quantities of pigeon peas from different farmers, some selling as less as a kilogram. After

¹ The National Smallholder Farmers' Association of Malawi (NASFAM) is an association of around 100,000 small-scale farmers whose mission is to improve the lives of its members by promoting farming as a business. It has been in operation since 1997. Through its subsidiary NASFAM Commodity Marketing Exchange (NASCOMEX), the Association buys agricultural produce from both its members and the non-members....

collecting pigeonpeas from the smallholder farmers, the traders supply to the processors. In effect, the traders act as buying agents for the processors, and they get a commission for it, which is their profit.

In the process of adding value to the pigeonpea, the processing of pigeonpea grain into tur dhal involves three operations: soaking and drying, dehulling, and splitting of the whole grain (Lo Monaco, 2003). Although it is estimated that 10 percent of the processed pigeonpea in Malawi is absorbed by the domestic market, the export market still remain the most significant commercial outlet. Malawi annual pigeonpea exports vary between 7500 and 21,500 tonnes of grain equivalent. For most of the exporters, India is their only market.

It is important to note that a value chain, being a set of value-adding activities through which a product passes from the design to the consumption stages, is influenced by the control that different actors can exert over the activities making up the chain. The pattern of direct and indirect control in a value chain is called its governance (Gereffi, 1994). In Malawi, the governance structure of the pigeonpea value chain is 'buyer-driven'. In the chain, the critical governing role is played by a buyer at the apex of the chain. In this buyer-driven chain, importers' prices being offered to Malawian exporters influence the prices that all the actors will get along the chain. Prices being offered to small-scale farmers are dictated by the prices that processors offer to intermediate traders.

5. Overcoming Inefficiencies within the Pigeonpea Value Chain

A value chain analysis of the pigeonpea sub-sector is concerned with assessing and determining ways of enhancing the economic performance of the sub-sector. The paper analyzes inefficiencies at the three levels of the chain. At the production level, smallholder farmers continue to grow low-yielding unimproved local varieties. In our sample, 62 percent of the farmers grew the local varieties during the 2002-2003 growing season. These cultivars are mainly long-duration types, although some are medium duration types such as *Mthawajuni*. Although ICRISAT has developed improved seed varieties including ICP 9145, ICEAP 00040, ICEAP 00020, and ICEAP 00053, our study showed that farmers were not familiar with these varieties. Around 38 percent of the studied farmers grew the fisarium wilt-resistant variety ICP 9145 and no farmer grew any of the other improved varieties. One explanation to the low rates of adoption of ICP 9145, which was released in 1987, is that it is not favoured by processors and exporters in Malawi because the seeds are relatively small and it has tight seed coat, making processors to recover

only 70 percent of dhal from the whole grain (Jones *et al.* 2002). Further, farmers tend to dislike ICP 9145 because it takes a longer time to cook than the traditional varieties. Improved varieties, such as ICEAP 00040, have been developed since then to overcome the shortcomings of ICP 9145. The challenge is to promote wider adoption of these improved varieties, while making them accessible to the farmers. Since most of the farmers have low rates of education, institutional arrangements need to be put in place to stimulate adoption of these new technologies.

Pigeonpea production in Malawi is also hampered by lack of market information. Small-scale pigeonpea farmers lack information on the prices that will prevail in the markets at harvest time. Around 46 percent of our studied farmers indicated that the lack of information on prices is a major barrier to their competitiveness. Asymmetric flow of information puts pigeonpea farmers at a disadvantage. Farmers are mostly unaware of grain quality required by the market, where it is sold, and price levels that prevail at different levels of the marketing chain. It was observed that farmers were being offered uniform prices by the middlemen regardless of the grain quality. Access to this type of information would empower farmers to have a good perception of market demand and avoid being subjected to the opportunistic behaviour of middlemen and traders. It is in this respect that promotion and expansion of the activities of NASFAM would greatly improve farmers' access to important market information.

Another source of inefficiency in the pigeonpea is the role of intermediate traders who are aimed at maximizing profit at the expense of poor farmers. The introduction of NASFAM collection centers within the associations has eased the problem of lack of access to reliable markets for the smallholder farmers. However, in areas where NASFAM does not operate, farmers still rely on the village-based middlemen who are often blamed of using dubious weighing scales. Our study reveals that around 41 percent of the farmers did not sell their 2003 pigeonpea harvest to NASFAM. Most of these farmers were drawn from Mangochi and Balaka where farmers had no access to NASFAM markets, as the organization was not buying from farmers at the time of the study. Although prices were higher at the local market than at NASFAM in the other study areas, the farmers' experience was that the middlemen's weighing scales were not trustworthy, such that a one-kilogram of pigeonpea at the intermediate trader would weigh more than a kilogram at NASFAM. Thus, operations of NASFAM need to expand to cover all pigeonpea-growing areas, so that the middlemen are by-passed in order to reduce marketing and distribution costs.

At the processors' and exporters' level of the chain, Malawi is not producing enough white-seeded pigeon pea (such as ICEAP 00040), which is on high demand on the international market. For instance, India buys the entire crop of Myanmar which is producing about ten times the crop produced in Malawi. There is thus a ready market for these highly demanded varieties. The major quality aspects that international buyers look for in pigeon peas include large seed and white colour, and Malawian exporters continue to have difficulties to meeting the quality standards both for the dried pigeonpeas and the processed dhal because of limited supply of quality grain from the producers (Jones *et al.* 2002). To overcome this inefficiency, pigeonpea producers need adequate training in grades and standards required by the different markets. In our study, 62 % of the farmers had never received any training in pigeonpea quality requirements by the market. As a result, such farmers are not aware of the quality and standards being required by the market and they continue to produce low-quality grain. In order to maintain its status as the principal supplier of dried pigeonpeas and processed dhal to the United Kingdom while expanding its market share in the Indian market and the emerging markets in the USA and Europe, the quality of the pigeonpea grain produced by the Malawian farmer needs to improve.

Further, being landlocked, Malawi does not only have higher freight charges for exporting pigeonpeas than the neighbouring countries, but also longer shipment times. As a result, Malawi's competitiveness on the international market continues to be undermined. For instance, the cost of exporting a 20-foot container of pigeonpeas to Mumbai in India is US\$ 1800 for Malawi compared to US\$ 800 – 1200 for Tanzania, and US\$ 500 – 800 for Kenya (Jones *et al.* 2002). In order to maintain its competitiveness, the quality of exported pigeonpea needs to be high enough to offset the higher freight costs.

6. Conclusions and Policy Options

The value chain approach provides useful tools for the analysis of commodity markets (Ponte, 2002). The paper has discussed the nature of Malawi pigeonpea value chain, including the main actors in the chain. Sources of inefficiencies within the chain have also been explored and ways to improve the competitiveness of the pigeonpea sector have been presented. For the majority of the pigeonpea farmers, the crop is one of the few that grow in their drought-prone areas, and therefore one of the few opportunities for income generation.

As one of the largest pigeonpea producers in Africa, there is great potential to make smallholder farmers competitive in the face of globalization. Pigeonpea production is highly compatible with

maize production, thereby maximizing returns to land. Furthermore, most Malawian exporters have established contacts with traders from India. It is worth pointing out that Malawi is already one of the largest exporters of tur dhal in Africa. Its dhal industry has efficient decorticators and cleaning and drying machines, capable of meeting the quality standards required by the international markets (Lo Monaco, 2003). However, in order to promote the competitiveness of the malawi pigeonpea sub-sector in the high-value niche markets and improve farmers' incomes, institutional and organizations innovations are required. These innovations would improve grain quality and reduce transactions costs.

Market institutional innovations are required to enhance chain coordination. In the context of poor information and small-scale dispersed production, various institutional arrangements, may not only increase efficiency, but also enable the realization of potential economies of scale and reduce marketing risks and costs (Scarborough and Kydd, 1992). Currently, pigeonpea farmers are price takers who are paid average prices which are not sensitive to quality and food safety considerations. They have no capacity to determine prices in a marketing system that is dominated by middlemen who exploit market imperfections resulting in the opportunistic behaviour that depress pigeonpea farmgate prices. Thus, grain contracting through NASFAM, collective marketing, and improved collection points may need to be introduced to test and evaluate their efficiency and performance. If successfully implemented, these innovations would lower transactions costs and foster transparency in market organization and coordination through providing a facility for bulking, implementation of grades and standards required by the international market, and dissemination of production and market information. The benefits that would accrue from such innovations would transcend the small farmer. Economic welfare would be brought about through greater specialization in pigeonpea production leading to increased output from each unit of resource employed and more efficient allocation of resources. Furthermore, through the adoption of the new technologies farmers would be able to realize economies of scale in production, and possibly reduce price variability. It is important to note that technology innovation systems, seed systems, market institutional innovations, and capacity building are essential in contributing towards the long-term challenge of increasing the competitiveness of poor smallholder pigeonpea farmers in Malawi.

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