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STRUCTURE, CONDUCT, AND PERFORMANCE OF BEANS MARKETING IN MALAWI: A CASE STUDY OF LILONGWE DISTRICT

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Abstract. Poorly performing markets are one of the major limitations to achieving high farm income and ultimately poverty reduction in sub-Saharan Africa. Using the structure, conduct, and performance approach applied to bean markets in Malawi, we bring to light the status and performance of the smallholder marketing system. Multiple methods were employed in this study: the Herfindahl-Hirschman Index to evaluate the market structure; adopted pricing strategies and affiliation with large companies or associations to assess conduct; and marketing margins to measure market performance. Our results show that 39 percent of markets are imperfectly competitive. Also, the lack of reliable markets, purchase prices, access to credit, operating capital, and transaction costs were major factors that undermined the potential for bean traders to operate at a higher scale. The commonly adopted pricing mechanisms include cost-plus pricing, dynamic pricing, and quality-dependent pricing. Very few bean traders (7%) are affiliated with large trading companies and associations. Seven bean marketing channels were observed. We recommend that policies favoring improvements in rural road networks and market infrastructure should be encouraged to reduce transaction costs. In order to eliminate barriers to increasing quantities of beans handled by traders, the government should provide soft loans with low interest rates to traders. Deliberate actions to promote the affiliation of small traders with larger companies and associations involved in bean trading should be promoted.

Keywords: structure, bean market system, bean traders, Lorenz curves, Herfindahl-Hirschman Index (HHI)

INTRODUCTION

Over the past decades, sub-Saharan African bean market access has experienced tremendous growth. For example, between 2019 and 2020, approximately 6.8 and 9.3 million people in Uganda, Burundi, Zimbabwe, and Malawi gained access to and consumed high-iron-rich beans, respectively. This is amidst an environment where demand for plant proteins from a well-structured and performing market is yet unmet (Ahmed et al., 2021; Aschemann-Witzel et al., 2021). Despite improved bean access and consumption, which can now meet not only overall demand but also the population's nutritional needs, it is well known that there has been insufficient research on the structure, conduct, and performance of the bean market and its determinants. It is scientifically proven that extensive management farming practices, principally for profit, correlate to not only increased productivity and better specialization but also result in higher income (Olwande et al., 2015; Bernard and Spielman, 2009). In spite of such development, the majority of smallholder farming households, especially in developing countries like Malawi, are unable to benefit from the comparative advantage of realizing a lot from their agricultural husbandry, partly due to low productivity and low marketing intelligence (Reddy, 2010;

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Sjauw-Koen-Fa, 2016). This is due to the low level of commercialization and the failure to see agriculture as a viable enterprise with reliable market interfaces (Brixiová et al., 2015; Atiase et al., 2018; Bernard and Spielman, 2009). It has been argued that access to viable markets provides an impetus for smallholder farmers to increase agricultural productivity and product diversification (Ge et al., 2020). This is because markets not only serve as selling points for produce, but also as training grounds, which in turn improves their subsequent productivity appetite (Dixon et al., 2001). Such development has the advantage of making farmers increase their produce base and facilitate an extensive value network for their produce to reach areas of high demand.

In order to improve farming enterprises, the Malawian government has implemented policies aimed at improving market reforms through the National Export Policy in general (Government of Malawi, 2016). Despite this, little has been discussed on market structure, conduct, and performance aimed at harnessing small-scale farmers in the country. This is despite the fact that the country, over the past years, has been implementing numerous policies geared at improving agricultural marketing and extension services to enhance the welfare of farming households (Ragasa, 2022; Matita et al., 2022; Lunduka et al., 2013; Government of Malawi, 2016). Among the policies are agricultural market liberalization, market infrastructure development, the development of information systems, and agricultural commodity exchange (World Bank, 2020). It is worth noting that prior to market liberalization, Malawi had one marketing board, namely, the Agricultural Development and Marketing Corporation (ADMARC) (Malawi Government, 2016). The board was instituted to have dominant responsibility for marketing agricultural products. The mandate of the ADMARC centers on buying and selling agricultural products and dictating prices. Mechanisms for agricultural production and regularizing agricultural marketing structure and performance. Therefore, the underperformance of such a state-owned enterprise resulted in the proliferation of other stakeholders that affected the structure, prospective stability, and performance of the agricultural markets in the country (Baulch et al., 2018; Ochieng et al., 2019), thereby informing the quest for further research with beans as a key crop.

Therefore, in light of these reforms that were geared at improving the performance of agricultural markets,

especially in crops such as beans, the agricultural legume market system in Malawi still remains in an evolutionary state (Government of Malawi, 2016). Nevertheless, in some countries of sub-Saharan Africa, agrarian legume economies are among the emerging contributors to the household wealth basket and are fundamental for sustainable food security (Vanlauwe, 2019). It is worth noting that dry bean demand has reportedly been on the increase despite low production levels (World Bank, 2020). A study by IFPRI (2011) attributed these low bean yield levels to an inadequate agricultural and bean market system that is failing to appropriately incentivize smallholder farmers to understand the structure, practices, and performance of the market. As a result, beans continue to be an inexpensive and affordable source of proteins and vital micronutrients such as zinc, iron, calcium, and vitamin B, they reduce the risks of getting cancer and cardiovascular diseases over time, and the crop has been scientifically proven not only to boost the human immune system but also to reduce the risk of getting diabetes (Singh and Singh 1992; Heller, 2011; Garden-Robinson, 2013; Laroche et al., 2016). Nonetheless, it has been noted that Malawi's bean value chain lacks a well-functioning, structured, and coordinated market (USAID, 2011). Poor road networks, restricted credit availability to key stakeholders, high transaction costs, and unstable market structures all provide obstacles to key stakeholders in the value chain being able to reach markets (Munthali, 2013).

Common beans are produced in Malawi at elevations between 1000 and 1700 meters, and the crop needs an average annual rainfall of between 800 and 1500 millimeters. The crop is typically farmed by smallholder farmers, particularly women. Many different farming strategies are used to grow the crop, including pure crop, mixed crop, relay cropping after maize, „dimba” gardens to take advantage of lingering moisture, irrigation (often after a rice crop), and tree crop alleyways (Chirwa et al., 2007).

Common beans are grown in a variety of places in Malawi. However, the primary bean-producing region is in central Malawi mostly because of the availability of land, rich soils, favorable rainfall patterns, and proximity to important bean markets (Birachi, 2012). Major bean-growing regions in the country include Dedza, Thyolo, Mulanje, Ntchisi, Chitipa, Dowa, Mzimba, Mangochi, Ntcheu, and Phalombe (Magreta and Jambo, 2012). A wide range of bean research projects have

been carried out in Malawi with the assistance of the government (National Agricultural Research Services) and non-governmental organizations (NGOs), such as the International Centre for Tropical Agriculture (CIAT) (Tumeo et al., 2017). Kholepethe, Kabalabala, Nupilira, Phalombe, Sugar 131, CAL 143, Nupilira, Kabalabala, NUA59, NUA45, VTT294/4-4, Nagaga, Nkhalira, Kambidzi, Sapatsika, and Maluwa are just a few of the improved bean varieties that have been released as a consequence of the research on beans (Birachi, 2012).

About 60% of the bean crop in Malawi is sold (Birachi, 2012). Although Malawi trades more than 80% of its beans as dried grain, the product is also sold as fresh pods. The majority of beans sold in local markets are intended for consumption, although big „demanders” of beans include institutions like hospitals, prisons, and schools. The amount of bean grading and sorting before marketing is small due to the absence of produce standards. Beans of diverse varieties, hues, and sizes are easily sold on the market. When beans are graded, which happens infrequently, they are mostly divided into their separate categories, independent of size.

Only approximately 20% of farmers cultivate some surplus common beans for sale; the majority plant them for domestic consumption (Birachi, 2012). Nevertheless, there are only a tiny number of medium- to large-scale farmers who grow beans for profit (Birachi, 2012). Although common beans are mostly grown for domestic consumption, there is potential for the crop to be commercialized given the continual rise in both domestic and foreign demand (Magreta and Jambo, 2012; Nkhata et al., 2021).

It is noteworthy that the nation's bean market sector is still in its infancy despite the availability of various bean varieties, the majority of which are renowned for their marketability. Another point to consider is that only 10–20% of Malawi's land is planted with improved bean types (Birachi, 2012). The lack of affordable access to better seed is the largest obstacle to the use of improved cultivars. Many smallholder farmers turn to recycling because they cannot purchase better seed (Birachi, 2012). Although the bean market sector is still rudimentary, the demand for beans, both domestically and internationally, does not match the existing levels of output (Mtumbuka et al., 2014; Katungi et al., 2009; USAID, 2009). In addition to being consumed at home, a sizable quantity of beans is also in great demand in places like schools, hospitals, and prisons (Mtumbuka et al., 2014). It is evident

from the fact that current bean production is insufficient to meet demand that the bean marketing system has been ineffective in encouraging adequate bean production. In addition, rising costs for animal products and poor household incomes in rural areas have also contributed to the rise in demand for beans (Mtumbuka et al., 2014).

Given the status of agricultural markets and the importance of beans to human nutrition, the available studies on bean marketing in Malawi focused their research on addressing the performance aspect of bean markets (Nyondo et al., 2013; Mtumbuka et al., 2014, and Kasonga, 2018). Despite this, an important aspect of the bean that is imperative to market systems has been sparsely researched and has left a research gap that requires an extensive review in order to find a solution that will redirect bean marketing and functioning in Malawi. On the same note, much as scholars assert that the structure, conduct, and performance approaches of most crops are holistic in determining the markets of the product (Williams et al., 2006), the need for a fresh review of the subject focusing on the bean market system cannot be overstated if the country is to have effective pathways and gains in such a high-demand legume.

As a result of the aforementioned arguments, the current study contributes to the literature in three ways. Firstly, the study contributes to the growing academic and professional discourse on the bean market system and associated value chain through systematically evaluating the performance of the bean market system in Malawi. Secondly, it provides relevant information on the subject matter to understand effective bean marketing performance for an efficient bean market system. Thirdly, the study analyses market structure, conduct, and performance by using robust analytical methods to provide solutions to make the bean market system more effective. Therefore, the need for a study to examine the structure, conduct, and performance of the bean market system in the country cannot be overemphasized.

MATERIALS AND METHODS

Data sources

The study was conducted in 18 markets in Lilongwe district. These markets included Mitundu Kamphata Nanjili Nathenje and Malingunde in rural areas, and Nsungwi, Area 18, Mgona, Wakawaka, Chinsapo, Area 23, Lizulu, Area 25, Area 24, Area 36, Chigwirizano, Kaphiri, and Mchesi. The study used primary data,

which were collected from a sample of 314 bean traders. Purposive sampling technique was used to select bean markets in Lilongwe district. In each market, a census method was employed to select traders for interview. Focus Group Discussion interviews with farmers were also conducted to provide insights on the quantitative data collected from traders. Focus Group Discussions aided the formulation of marketing channels where farmers could easily point out the different off-takers of their commodities. Key informant interviews with larger traders and associations were conducted to help explain results from quantitative data and create some marketing channels used in this paper.

Evaluating market structure

Market structure is defined as a set of characteristics that are responsible for determining the economic environment of firms. These characteristics include the number of sellers and their respective market shares, buyers, sellers, and potential barriers to entry; the degree of product differentiation; and the conditions of entry and exit (Bain, 1968). Market structure is measured by determining the level of market concentration. Market concentration is an important proxy for measuring the competition among firms in the industry. It gives an insight into how competitive the markets are, given the prevailing market environment. There are a number of methods for measuring concentration ratios. Some of these methods include the nth-firm Concentration Ratio (CR_n), the Herfindahl-Hirschman Index (HHI), the Lorenz curves, and Gini coefficients. The nth-firm Concentration Ratio (CR_n) is used when describing the market share of the few biggest firms in the market. It determines the level of competition (normally expressed as percentages) amongst the selected large firms in the industry. The major drawback of this approach is that it lacks proper justification for the choice of four top industries. The choice of four top industries is to some extent arbitrary (Pulaj and Kume, 2013). Lorenz's curve is mostly used to measure income inequality, while Gini coefficients deal with inequality of income distribution (Pulaj and Kume, 2013). The HHI was postulated and applied in the field of industrial economics by Herfindahl (1950), and Hirschman (1964). The method is the most widely applied measure of concentration, and it acts as the benchmark to evaluate other methods for measuring concentration. Unlike other measures like CR_n , which considers only

the largest firms, HHI is calculated by summing up all squared market shares of firms in the market (Pulaj and Kume, 2013). The literature suggests that HHI is a good measure of competition intensity because it is more complete and elaborate than other methods such as CR4 and the Gini coefficient (Pulaj and Kume, 2013; Anbarci and Katzman, 2005). This is because it uses a weighted average of the market shares of all firms and traders. Therefore, it is with this understanding that this study employs HHI as a measure of market concentration. According to Shapiro (2010), HHI is categorized as follows: unconcentrated if the value of HHI is less than 1500; moderately concentrated if the value of HHI is in the range of 1500–2500; highly concentrated if the value of HHI is greater than 2500.

Herfindahl-Hirschman Index (HHI)

In order to determine the market concentration in the bean market, the Herfindahl-Hirschman Index (HHI) was used. The index further stipulates the competitiveness of the market (Pulaj and Kume, 2013). The HHI can be presented as follows:

$$HHI = \sum_{i=1}^n MS_i^2 \quad (1)$$

In this case, MS_i is the market share of the seller (i), whereas n is the number of sellers in the market. Market shares are calculated in terms of the quantities of beans handled by each seller in the market. Market share in this case is given by the following formula:

$$MS_i = \frac{V_i}{\sum_{i=1}^n V_i} \quad (2)$$

represents the quantities of dry beans handled by seller i in Kg and $\sum_{i=1}^n V_i$ represents total quantity of beans in the market. Structured questionnaires were administered to traders to capture characteristics that affect market structure. Furthermore, focused group discussion was also conducted among bean producers to ascertain the structure of beans markets.

Furthermore, the Lorenz curves have been constructed to show the degree of inequalities on sales among traders. The Lorenz curve shows how revenue is distributed within in a certain market. It was designed in 1905 to represent the distribution of wealth by Max O. Lorenz. The total percentage of income earned by various demographic groups is shown on the Lorenz curve (Delbos and Currie, 2011).

Evaluating Bean Market Conduct

Market conduct describes the behavioral patterns that market participants use to adapt to shifts in the external environment brought on by market structure. It involves techniques used to determine prices and outputs, initiatives to promote sales, and the presence or absence of intentional measures to block new entrants (Bain, 1968). Conditions that were thought to represent exploitative, predatory, or tactful relationships involving wholesalers and retailers were examined in order to analyze the behavior of bean markets. The study examined variables including membership in professional associations or larger dealers. Moreover, market behavior was assessed by looking at the methods used by bean merchants to set prices.

Evaluating Bean Market Performance

Market performance is an economic result of changes in the market environment and the patterns of behavior that marketing agents follow in pursuit of an economic goal (Bain, 1968). Since “market performance” is a multidimensional term, it can be measured in a number of ways depending on the economic result that one is interested in measuring. In this study, marketing margin is used as an indicator to measure market performance. According to Olukosi and Erhabor (1988), marketing margin is one of the major measures of market performance. It is along this line that total gross marketing margin (TGMM) was used to evaluate the performance of bean marketing. Marketing margins were calculated at each bean marketing channel. Total gross marketing margins (TGMM) are expressed as follows:

$$TGMM = \frac{P_s - P_b}{P_s} \times 100 \quad (3)$$

where P_s is selling price, P_b is buying price, and TGMM is total gross marketing margin. Producer's share was also used to determine performance of bean marketing channels. It was calculated by subtracting the percentage TGMM from 100.

KEY FINDINGS

Evaluation of market share

To illustrate the degree of disparities in the cumulative market shares of bean dealers, the Lorenz curve was created. The distribution of bean traders' cumulative share of sales is shown in Figure 1. The magnitude of the deviation from a diagonal line reveals the degree of

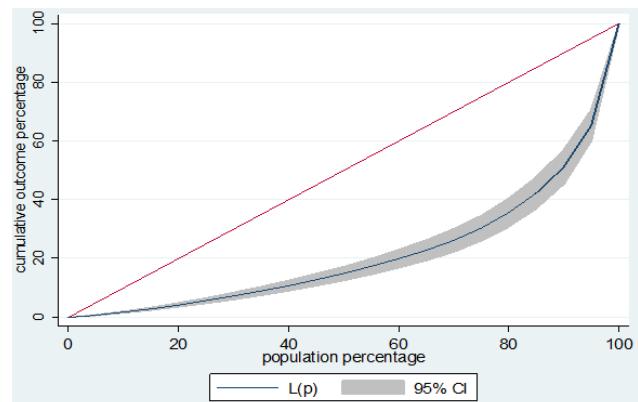


Fig. 1. Lorenz concentration curve for bean traders' shares in Lilongwe

Source: computed from the survey data by the author.

disparity in the total amount of sales revenues. There is a significant disparity in the shares of bean traders, as depicted in Figure 1. With a rise in the share of cumulative sales, the degree of inequality gets worse. Figure 1 shows that the lowest 20% of traders account for about 5% of the market's total sales. Furthermore, the top 20% of dealers account for close to 70% of sales income. The results indicate that the largest share of sales revenue is controlled by the top 20% of traders.

To measure the degree of inequality between rural and urban markets, the Lorenz curves were created. Markets in urban areas and rural areas were contrasted (see Fig. 2). In urban markets, it can be seen that the top 50% of merchants control 80% of sales revenue, compared to the bottom 50% of dealers who control about 20% of overall sales revenues. The findings indicate that in rural markets, the top 50% of dealers control 90% of sales revenues, compared to the bottom 50% of traders controlling about 10% of sales income. This demonstrates the stark disparity in market share between rural and urban sectors.

A comparison of the sales revenue splits between retailers and wholesaler traders was carried out. According to Figure 3, the top 50% of wholesaler traders control nearly 88% of sales revenues, compared to the lowest 50%, who control about 12% of sales revenues. Also, the top 50% of retailer traders are able to control 75% of sales revenues, compared to the lowest 50%, who only control about 25% of sales revenues. Wholesalers in this instance show greater disparities than retailers. Small quantities are typically sold by retailers.

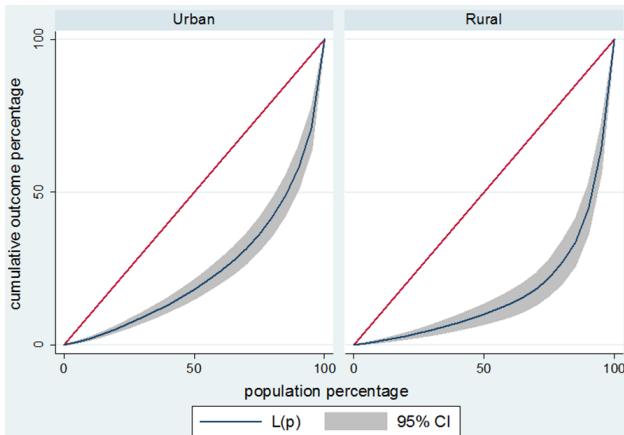


Fig. 2. Lorenz concentration curve for bean marketing in rural and urban markets in Lilongwe district
Source: computed from the survey data by the author.

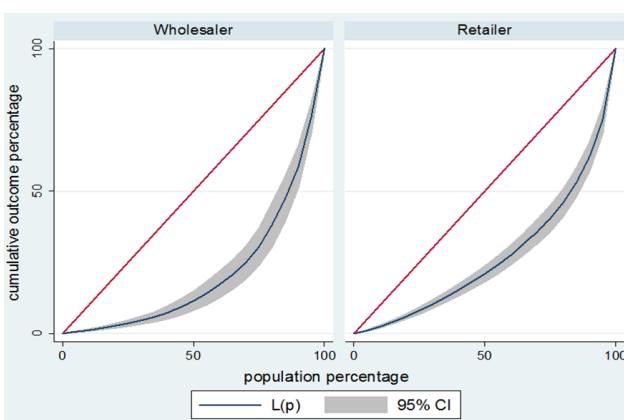


Fig. 3. Lorenz concentration curve for bean retailers and wholesalers in Lilongwe district
Source: computed from the survey data by the author.

This explains why there are less discrepancies in the share distribution among retailer traders than there are among wholesalers.

The Structure of the Bean Market system in Lilongwe

Market Concentration. The study adopts the benchmark of Horizontal Merger Guidelines. According to Shapiro (2010) the Horizontal Merger Guidelines categorizes HHI as follows: “unconcentrated” if the value of HHI is less than 1500; “moderately concentrated” if the value of

HHI is in the range of 1500–2500; “highly concentrated” if the value of HHI is greater than 2500. In this study, the HHI for selected markets in Lilongwe shows that Area 18, Chinsapo, Mgona, Mitundu, Nsungwi, Wakawaka, Area 23, Area 24, Area 25, Area 36, and Lizulu are unconcentrated. This means that there are a number of bean traders in such markets. Only the Kamphata and Kaphiri markets are moderately concentrated, implying that they have some level of competition and oligopolistic tendencies. Furthermore, it can be observed in Table 1 that Chigwirizano, Malingunde, Mchesi, Nathenje, and Nanjili are highly concentrated markets. This means that a few sellers are dominating the sale of beans in those markets. The highly concentrated markets show that there exist oligopolistic tendencies among such markets, which govern the pattern of behavior of bean traders. Generally, it can be concluded that 61 percent of sampled bean markets in the Lilongwe district are not concentrated. Furthermore, 11 percent of the sampled

Table 1. Market concentration

Name of Market	Herfindahl-Hirschman Index
Mitundu	536
Nsungwi	592
Area 18	643
Mgona	653
Wakawaka	753
Chinsapo	937
Area 23	1 014
Lizulu	1 051
Area 25	1 057
Area 24	1 394
Area 36	1 456
Kamphata	1 589
Kaphiri	1 869
Mchesi	2 609
Nanjili	3 514
Chigwilizano	4 502
Nathenje	7 527
Malingunde	8 380

Source: own elaboration.

markets are moderately concentrated. The remaining 28 percent of the markets are highly concentrated.

Barriers to market entry and increase in the scale of operation. Through focus group discussions (FGDs) with the traders, the study found that there are barriers to entry and an increase in the scale of operation in the bean market. Some of the barriers include lack of capital, lack of reliable markets, high purchase prices, lack of access to credit and finance, and inadequate operating capital and transaction costs. Such impediments have a significant impact on the structure, performance, and conduct of the bean market.

Market Conduct of Bean Traders in Lilongwe

Affiliation with Traders' Association

As shown in Figure 4, the study finds that 93% of traders are not affiliated with any trade associations. Nonetheless, key informant interviews with Grain Traders Association in Malawi revealed that there are some traders that the association works with. These traders have better access to market information on prices and availability of bean markets.

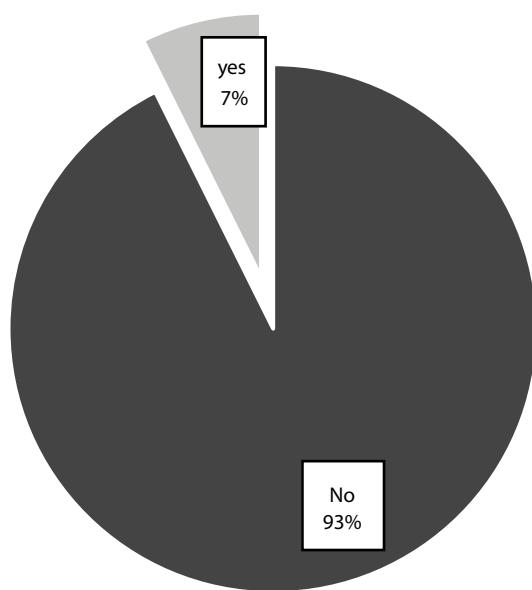


Fig. 4. Percentage of traders who are affiliated to trade associations

Source: own elaboration.

Price Setting Mechanisms

When setting selling prices for beans, traders use combinations of price-setting mechanisms. As reported in Table 2, the most adopted mechanisms include cost-plus pricing (61%), dynamic pricing of beans (54%), and taking quality into consideration (38%). Although 38 percent of bean markets are imperfectly competitive, traders did not collude in determining the prices of beans.

Table 2. Price differences across price mechanisms

Pricing method	Frequency (%), N=314	Mean (USD)	Min (USD)	Max (USD)
Cost plus pricing	61	0.86	0.43	1.67
Quality	38	0.85	0.56	1.45
Dynamic pricing	54	0.84	0.47	1.45
Collusion	10	0.85	0.61	1.45

Source: own elaboration.

Evaluating the performance of bean marketing channels

Bean Marketing Channels

Figure 5 summarizes possible marketing channels along which dry beans flow to reach the consumer. Marketing channels were created by tracing the sources of beans that traders, companies, and farmers buy and sell. Focus group discussion interviews were conducted with farmers to help identify marketing channels at the farm gate level. Vendors, wholesalers, and retailers were also asked where they bought and sold beans to establish the marketing channel that they use.

Marketing channel 1 consisted of bean producers selling directly to local consumers, as well as urban consumers. Channel 2 comprises producers, wholesalers, and consumers. This is one of the channels through which producers sell directly to companies with whom they are affiliated. It is this channel that larger traders use for exports and selling directly to institutions such as hospitals, secondary schools, prisons, and colleges. In channel 3, bean producers sell to vendors who travel with their scales to rural areas to buy beans. These vendors assemble beans from tiny, scattered farmers in the villages. They usually set up buying points in rural

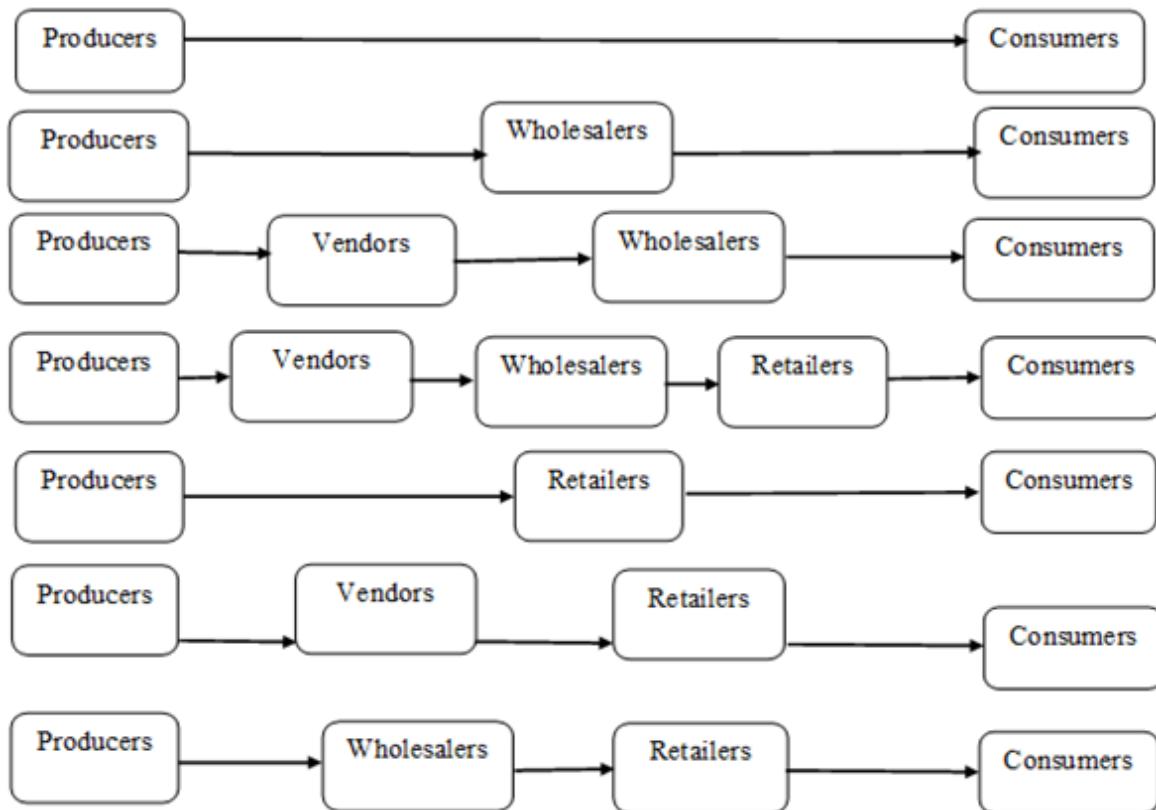


Fig. 5. Beans marketing channels in Lilongwe

Source: own elaboration.

trading centers where farmers come to sell their beans. Vendors eventually sell to wholesalers that include larger individual traders and companies. In channel 4, beans move from producers to vendors, then to wholesalers, who then sell to retailers. These retailers are shop owners and individual bean traders who sell different legumes. Marketing channel 5 comprises retailers buying beans directly from producers. In channel 6, vendors bought beans from farmers and sold them to retailers. Finally, channel 7 is composed of wholesalers who buy from bean producers and sell to retailers. In this channel, wholesalers such as those found at Mchesi Market send their agents to buy directly from the farmers. This was one of the markets that supplied beans to nearby markets in the Lilongwe district.

Performance of Marketing Channels

The performance of marketing channels is evaluated by calculating the marketing margins in each channel.

A well-performing marketing channel is one with low marketing margins (Cramer and Jensen, 1982). In this study, the most efficient marketing channel is channel 1, which comprises farmers selling directly to consumers. In this channel, farmers obtained the highest producers' share (100%), as compared to the rest of the marketing channels. However, the study notes that marketing channels 2 and 7 are better than others because they have relatively lower marketing margins (24.76% and 28.46%, respectively) than other channels. These are marketing channels that do not involve vendors, but rather wholesalers buying from producers and selling to consumers in channel 2 and retailers in channel 7. Some of the wholesalers involved in those marketing channels are larger traders, such as companies, or individual traders operating at a higher scale. The results are summarized in Table 3.

Table 3. Performance of Bean Marketing Channels in Lilongwe

Marketing channels	Marketing margins (%)	Producer's shares (%)
1	0	100
2	24.76	75.24
3	28.72	71.28
4	29.88	70.12
5	29.84	70.16
6	29.82	70.18
7	28.46	71.54

Source: own elaboration.

DISCUSSION

Firstly, the study finds that there exists a wide inequality in the market shares of the traders in the bean market, with higher inequality in rural bean markets than in urban markets. This is mostly due to poor road networks, underdeveloped market infrastructure, and poor telecommunications in rural markets. The market environment existing in rural markets leads to high transaction costs that eventually affect common bean trading. Furthermore, wholesalers were found to have higher inequalities than retailers. This is because wholesalers operate at different scales, which enables them to stock larger volumes of beans than retailers. Besides that, for a small bean trader to graduate to a larger trader, large operating capital is needed, which is a barrier to most retailers.

With regards to market concentration, the study finds that a substantial proportion of the bean markets are unconcentrated. A high percentage of markets falling under the category of “unconcentrated” show that there are a substantial number of traders involved in the bean trade. One possible explanation for this is that common bean is one of the most economically viable crops with the greatest potential to increase income levels and thus reduce poverty (CIAT, 2013; USAID, 2011). According to Katungi et al. (2009), there is an increasing demand for beans in Malawi. It simply connotes the profitability of beans in its quest to sustainably improve the income levels of various households in Malawi.

The study further found some notable barriers to entry in the bean market. First, lack of capital was the most common barrier to entry. Most traders pointed out that

they would like to expand the scale of business but capital acts as the major constraint. This is because the most prominent source of capital observed amongst many traders was personal savings. Secondly, most traders do not have consistent markets where they can sell their beans. It was noted that most bean traders travel long distances in search for beans, and this increases transaction costs. This again affects the quantity that they offer at the market.

Thirdly, high purchase prices prevented traders from increasing the scale of operation more, especially for the retailer. This was common, especially on the most profitable bean variety (red kidney beans). *The phalombe* variety was reported to be the most profitable bean variety, and most traders would like to increase sales of that variety. Nevertheless, because there is high demand for that bean variety, the variety is not readily available, and as such, the purchase prices are driven up. This prevents bean traders with low operating capital from increasing the quantity of such varieties. Fourthly, lack of access to credit was another important barrier to bean marketing. Access to credit is very important considering the fact that lack of capital for bean marketing was reported to be a bigger challenge for a number of traders. Fifthly, some traders reported that inadequate operating capital was among the challenges that deterred traders from increasing the scale of their operations in bean marketing. According to traders, the average working capital was US\$ 967.34, which is on the low side.

Sixthly, focus group discussion interviews revealed that high transaction costs, such as high transportation costs, affected the quantity of beans each trader handled in the market. Market information on bean prices from other markets was one of the barriers that increased transaction costs. The study further agrees with the findings of Chitete et al. (2021), who established that lack of market information on prices and quantities of groundnuts led to weak integration of the groundnuts markets in Malawi. In this study, it was observed that most traders had access to market information on prices and where to purchase beans for sale, though the source was an unreliable one. The major source of information was reported from friends, relatives, and personal observations. These modes of accessing market information is not reliable and it cannot be trusted, as alluded to by a number of bean traders in the focus group discussion interviews.

Results concerning market conduct were grouped into (1) traders' affiliation with trade associations and (2) price setting mechanisms. With regards to traders' affiliation with associations, the study found that a majority of the traders are not affiliated with any association. In Malawi, studies that have also applied a structure, conduct, and performance framework, such as Nzima and Dzanja (2015) and Nzima et al. (2014), found that traders were not affiliated with any trade organization in marketing groundnuts and soy beans, respectively. The literature suggests that affiliation with a trade association improves the relationship between traders and such associations, which eventually enables traders to sell at better prices (Abah et al., 2015). It also enables traders to more easily identify marketing channels that would otherwise increase marketing efficiency. With regards to price-setting mechanisms, the study finds no evidence of collusive behavior among the traders. The results agree with those of other legume market studies in Malawi. For instance, Nzima and Dzanja (2015) and Nzima et al. (2014) also found that traders did not collude in determining the prices of groundnuts and soy beans in Malawi.

Lastly, the study evaluated the performance of the different market channels that exist in the bean market. The study found that there are seven key channels for the commodity to move among producers, vendors, wholesalers, retailers, and consumers. Most of the wholesalers in the bean marketing channels included individual large traders selling in different markets in Lilongwe and companies such as NASFAM, Export Trading Group, Farmers World, Wills General Dealers, Auction Holding Limited, Rab Processors, Muli Brothers, Commercial Farmers Limited, and Jeds Trading. The companies do some value-adding activities such as sorting, grading, and packaging before exporting or selling to domestic supermarkets. Consumers consist of processors such as Central Poultry and Sun Gold Food Processing, institutions such as hospitals, schools, prisons, and colleges, and households both in rural and urban areas. With regards to performance, the first channel, which involved producers selling directly to consumers, was the efficient channel. Although this channel is the most efficient as compared to others, key informants contacted had different opinions. They argued that farmers cannot appropriately perform all marketing functions, citing that most farmers in Malawi are smallholders, and as such, they operate at a subsistence level with a low level

of commercialization. Farmers cannot carry out all the necessary marketing functions, such as assembly, transportation, storage, labelling and packaging, distribution, financing, and risk bearing. These marketing functions add value to the bean value chain, thereby improving the performance of bean marketing. NASFAM, for instance, provides extension services to its farmers and provides markets for harvested beans. It has a commercial entity that is responsible for the value addition of agricultural commodities that also include beans. These value-adding activities include grading, packaging, branding, and then distributing to various marketing outlets such as retailers, supermarkets, and exporters in various regional markets.

CONCLUSIONS AND POLICY IMPLICATIONS

The purpose of the study was to evaluate the common bean market system in Malawi using a structure, conduct, and performance approach. The study first evaluated the distribution of market shares among bean traders using Lorenz curves. Overall, there are inequalities in market shares among bean traders. Shares of urban and rural traders were compared, and it has been observed that there are more inequalities in market shares in markets located in rural areas compared to markets located in urban areas. The study further finds that 38 percent of markets are imperfectly competitive. Most traders reported that lack of reliable markets, lack of capital, high purchase prices, access to credit, insufficient operating capital, and high transaction costs were the major barriers to entry into the bean marketing industry. The conduct of traders was observed through their methods of pricing and affiliation with large traders or organizations. The commonly adopted pricing mechanisms include cost-plus pricing, demand and supply of beans, and quality-dependent pricing. It was further observed that 93 percent of bean traders were operating independently without being affiliated with any large trader or organization. Seven marketing channels were identified. In each channel, marketing margin and producer's shares were computed. Channel 1, which involved selling directly to consumers, had a 100% producer share. However, key informant interviews showed that farmers cannot appropriately perform all marketing functions, citing the fact that most farmers in Malawi are smallholders operating at a subsistence level with a low

level of value addition. Farmers cannot carry out all the necessary marketing functions, such as assembly, transportation, storage, labelling and packaging, distribution, financing, and risk bearing. These can be best performed by other marketing agents in the marketing chain.

Since it was found that some bean markets are imperfectly competitive, the government and private sector should institute deliberate actions to reduce market concentration in such markets. In this regard, government and private stakeholders should create a conducive market environment for businesses to flourish through improvements in market infrastructure and rural road networks. Improvements in rural road networks would reduce transfer costs, which would undermine the potential of bean marketing. To eliminate the barrier to entry in bean marketing, the government should provide traders with soft loans with low interest rates. By providing and intensifying access to credit, the operating capital of traders will increase, which will eventually result in an increased scale of operation. Affiliation with associations such as the Grain Legume Association or large traders (companies) would help to further improve the functioning of the bean market system.

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