MARKET ANALYSIS OF FIELD PEAS IN UGANDA

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DECLARATION

I, Twinamasiko Julius, hereby declare that, to the best of my knowledge and understanding, the originality of the findings of this thesis is my work, and has never been presented in Makerere University or any other university for the award of a degree. I have duly acknowledged any sources of information. This thesis has been submitted with permission from university supervisors.

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ACKNOWLEGMENT

DEDICATION

I dedicate this thesis to my wife, Frankline, my sons Sean and Seth, my daughter Shannitah and to my parents Ernest and Angellina.

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ABSTRACT

The study analyses the field pea market chain in Uganda using data collected from 72 producers in Kabale district, South-western Uganda, 72 traders from Kabale, Mbarara and Kampala markets who were randomly selected. The study also involved 36 randomly selected consumers from the three districts. The data were partly analysed using descriptive statistics. Marketing margins were used to determine market performance of field peas at each level of the market chain. The multiple regression models were used to analyse factors determining market performance of field peas at each level of the market chain with marketing margins as the dependent variable. Results revealed that traders received higher percentage of marketing margins (54%) compared to producers who received 46%. The regression model results indicated that factors that significantly increased producers' marketing margins were education of the farmer ($p<0.1$), experience in field pea production ($p<0.05$), and membership to any farmers' group ($p<0.01$). Factors that reduced producers' marketing margins were location of farmer ($p<0.01$), consumption rate ($p<0.01$) and distance to the market ($p<0.05$). Results for traders indicated that education ($p<0.05$), value addition before sale ($p<0.05$), membership to traders' group ($p<01$) and access to credit ($p<0.05$) positively affected traders' marketing margins. Location of traders ($p<0.1$) and distance to the source of field peas ($p<0.05$) negatively affected traders' marketing. Field peas were ranked first and third as a source of income and food respectively. It was found that 53 percent of the total harvest was sold and field peas were reported to be the major source of income by the traders under the study. There was no effort made to add value to the field pea in form of flour, frozen and canned products; and samosas.

CHAPTER ONE

INTRODUCTION

1.1   World Field Pea Situation

Globally, the main pulses produced are beans and peas (including field peas). Field peas (*Pisum sativum* L.), a native of South west Asia was among the first crops cultivated by man. Wild field peas are still found in Afghanistan, Ethiopia and Iran (Oelke *et al*., 1991). The major producing countries of field peas are Russia, China, Canada, Europe, Australia and the United States. Europe, Canada, Australia and the United States raise over 4.5 million acres out of the global 25 million acres and are the major exporters (Blaine and Gregory, 2009). In 2002, there were approximately 300,000 acres of field peas grown in the United States (Kent *et al*., 2003).

Columbia, Venezuela, Brazil, United Kingdom, Taiwan and Japan are the leading importers of field peas (Randy, 1993). World wide demand for field peas is strong. However, the European Community may regulate field pea imports more severely in the near future and this is expected to weaken demand (Oelke *et al*., 1991).Whereas the global area harvested to field peas has been increasing in the last decade, the production quantities have been steadily declining (FAO STAT, 2013) as indicated in Table 1.1. This is attributed to poor crop management practices (broadcasting, failure to weed) and declining soil fertility.

Table 1.1: Global field pea production (2000-2011)

Year	Area Harvested (Ha)	Production quantity (tones)
2000	6,001,353	10,715,902
2001	6,161,477	10,364,450
2002	6,015,256	9,634,121
2003	6,149,156	9,889,922
2004	6,342,191	11,736,197
2005	6,565,277	11,286,189
2006	6,389,944	9,815,403
2007	6,316,114	9,370,637
2008	6,113,886	10,068,685
2009	6,377,733	10,471,127
2010	6,621,925	9,778,141
2011	6,214,270	9,558,180

Source: FAOSTAT, 2013

Before the arrival of Europeans, field pea was already well known in the mountain regions of Central and East Africa and was a well-established and important food crop in Rwanda and south-western Uganda by 1860 (Protabase Record display). At present, *Pisum sativum* is found in all temperate countries and in most tropical highlands. It is extensively grown in the highlands of eastern Central Africa and East Africa, notably Ethiopia (Fikere et al., 2010) and in southern Africa. In parts of Rwanda and Uganda it is the main pulse crop though it is hardly grown in West Africa.

1.2   Field Pea Production in Uganda

In Uganda, field pea is a staple as well as a major income earner for most small-scale farmers in the highlands of southwestern region (Musinguzi *et al*., 2010), where the agro-ecology is most suited for its production (Kraybill and Kidoido, 2009).Production trends have been slowly increasing since 2004 (Figure 1.1).
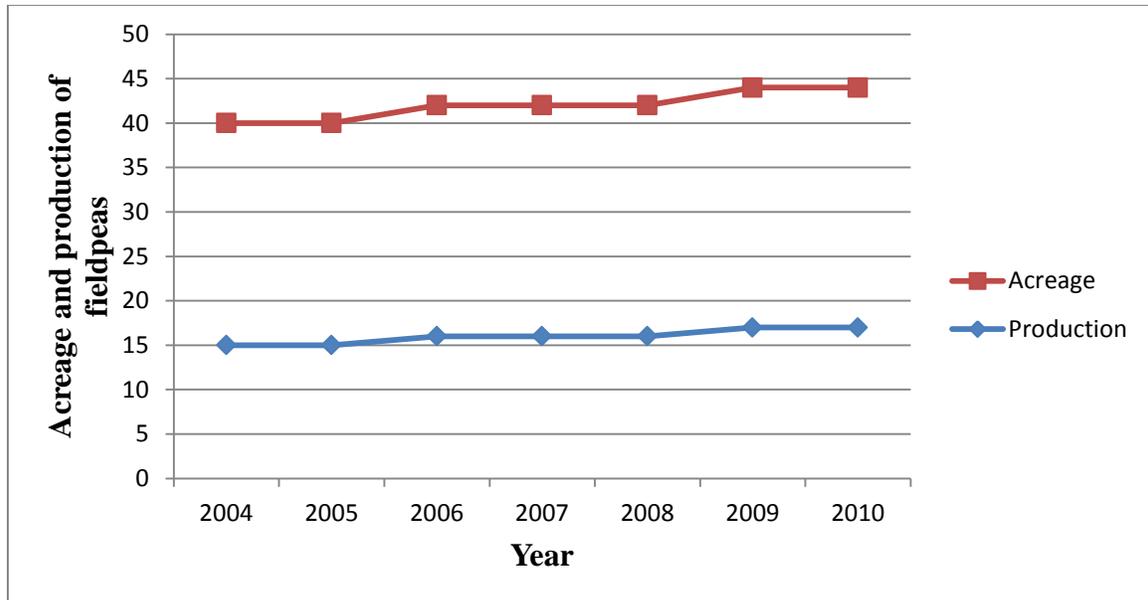
Figure 1.1: Acreage planted ('000ha) and production ('000 tones) of field peas in Uganda (2004 – 2010)

Source: MAAIF& UBOS, 2010

In Kabale district located in south western Uganda,agricultural production is subsistence in nature for home consumption with little surplus for sale. The bulk of crops grown in the district are the traditional food crops. They include field peas, sorghum, Irish potatoes, sweet potatoes, wheat, beans, vegetables, maize, finger millet and bananas. The other crop grown is coffee but is still on small scale. Overall, the three most important crops for assuring household food security are field peas, beans and sweet potatoes (Low, 1997).

Like most of the crops produced in Kabale district, the production of field peas is primarily for home consumption, leaving a small surplus to be taken to the market (Mbabazi et al., 2003). The major field pea producing subcounties are Bubare, Hamurwa, Muko, Ikumba, Bufundi, Rwamucucu, Kashambya, Rubaya and Butanda(Low, 1997).

Field peas are grown in two seasons; March to July and then September to January. The September to January is the main season. Traditionally, field peas in Kabale have always been grown in upland areas on hilltops mostly on land considered unsuitable for other crops. However, farmers have started growing the crop on the lowland areas especially during the March season and its production has tremendously reduced. This is attributed to low and unreliable rainfall and reduction in soil fertility especially on hilltops.

Field pea production is entirely done without external inputs like pesticides, herbicides and inorganic fertilizers. Farmers rely on locally available inputs like animal manure and crop residues, and fallow the land for soil productivity improvement. There is usually no weeding done unless the crop is mixed with other crops like beans (Osiru, 2006; Musinguzi, 2007).

Participatory Rural Appraisals and surveys (AHI, 1997) and a study done by Miiro *et al.*, (1995) in the highlands of south western Uganda indicate that field peas are third ranked in importance as a food crop and in some areas, fourth as a cash crop. In urban markets like Kampala, fresh peas are sold at about US$ 3/kg, the same price for a kg of beef, thus a source of income.

Field peas are an important source of protein especially in Kabale district where they are widely grown. The consumption contribution of pulses including field peas to calories and protein are 10% and 15% for Eastern Uganda, 14% and 17% for Northern Uganda, 13% and 19% for Western Uganda, 10% and 16% for Central Uganda respectively (EPAU, 1996).

1.3   Global Marketing of Field Peas

Markets are developing with increasing knowledge and realization of the nutritional value of peas (Harrold *et al.*, 2002).Canadian exports of dry peas have increased dramatically since the early 1990s, and Canada has emerged as the largest exporter of dry peas in the world. Canada accounted for more than 50 percent of dry pea exports in 2000, 2001 and 2005, but achieved only 25 percent in 2002 because of a significant weather-related decrease in production. France exported similar quantities as Canada in the 1990s, but has since dropped to a distant second. Australia, the United States and Ukraine are the next ranking exporters, with U.S. exports accounting for 6 percent of total world exports in 2005. U.S. exports during July June 2000-01 through 2004-05 varied from 47 percent to 59 percent of production. They have accelerated since 2003. North America, in effect, Canada and Mexico, has been a steadily rising market for dry peas. Many of the dry peas grown along the Canadian border apparently are delivered to Canadian dealers and re-exported. Based on 2001-05totals, Mexico ranked 10th.

In Africa, Sub-Saharan Africa was the fastest growing and the largest destination of field peas during 2003-05. During 2001-05, Kenya ranked first in the region and sixth in the world. Sudan ranked second in the region and seventh in the world, Ethiopia ranked third in the region and eighth in the world, Angola ranked fourth in the region and ninth in the world, and Uganda ranked fifth in the region 12th in the world.

In Uganda, field pea is a staple as well as a major income earner for most small-scale farmers in the highlands of southwestern region, where the agro-ecology is most suited for its production. The crop fetches a stable price, which is as high per kilogram as that of beef (Lindblade *et al*., 1996; Siriri, 1998; Briggs and Twomlow, 2002). Field peas are sold both in dry form and fresh form with the fresh fetching higher prices. Apart from the local demand which is far from satisfaction, the crop presents great potential for export to European countries where it is heavily consumed and forms a significant component of the diets (Musinguze *et al*., 2010). In their study, Kraybill and Kidoido (2009) established that on average, local field pea varieties generate about UShs 250,000 per hectare with or without high-input technology.

In Kabale, 80 percent of the field pea produced is consumed on the farm. Most of the surplus is sold to the consumers through rural markets which account for about 40 percent of the marketable surplus. Traders buy the peas from rural markets and take them to their shops and market stalls where they sell to urban consumers. The balance is sold to the bulk buyers who in turn sell to wholesale markets in Kampala. Prices are determined partly by the forces of demand and supply of the crop and other transaction costs like transport costs to urban markets.

**1.4	Statement of the Problem**

Agricultural marketing is a major driving force for economic development and has a guiding and stimulating impact on production and distribution of agricultural produce. The increasing proportion of the population living in urban centres require more organized channels for processing and distributing agricultural products.

Improving marketing facilities for agricultural crops in general and field pea sector in particular enables farmers to plan their production more in line with market demand, to schedule their harvest at the most profitable times, to decide which markets to sell their produce to and negotiate for better prices from traders. A proper marketing system enables increased production and market efficiency (Takele, 2010).

Field peas are very important as a food crop and a source of income for the people of Kabale district and Uganda in general. A lot of effort has been invested by the government of Uganda to produce enough food for Uganda's population and a surplus for export. However, despite the significance of field pea in the livelihoods of farmers and traders as an income generating crop, it has not been given due attention most especially in the area of marketing. The crop fetches a stable price, which is as high per kilogram as that of beef, yet it has remained outside the mainstream of the research priorities (Lindblade *et al*., 1996; Siriri, 1998; Briggs and Twomlow, 2002). Researchers have given priority to other legumes like beans, ground nuts, cow peas and other crops. Research done on field peas include, history and distribution, importance, varieties, processing and husbandry, pests and diseases (Omadi *et al*., 2001), area planted and

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production trends (UBOS, 2004), integrated pest management (Kyamanywa, 1996), and improving field pea productivity through soil and weed management (Musinguzi, 2007). With all these studies, it is clearthat information is lacking as far as field pea marketing is concerned. For example, where as 80 percent of the field peas produced in Kabale district is consumed on the farm leaving a small surplus for the market (Bibangambah, 1996), no information is available about the marketing margins that accrue to different value chain participants. In addition, there is no information about the current contribution of field peas to household food and income, and the performance of the field pea markets along the market chain. The study was therefore intended to fill the information gap in field pea marketing.

1.5   Objectives of the Study

The general objective of this study was to examine the general performance of field pea marketing by determining the revenues received by the market participants, the costs incurred and identifying the factors that affect market performance. The specific objectives were to;

1. Determine the proportion of field peas in household food and income.

2. Determine the market performance of the field pea business along the market chain.

3. Determine the factors affecting market performance at each level of the market chain.

1.6   Hypotheses of the Study

1. The contribution of field peas to household food availability and income is, in relation to beans in Kabale significantly high.

2. Marketing margins are highest at production level than at the retail and wholesale levels.

3. The market performance of field peas is significantly affected by the distance between the source and the market.

1.7   Justification of the Study

This study documents and provides technical information that enables both researchers and policy makers to put in place conducive policies that would ease participation in field pea marketing, to reduce poverty thus fulfilling the poverty alleviation programme. The study highlights the importance of value addition for effective marketing. Thus the findings of the study should be able to help the farmers and traders in understanding the need for value addition to the field peas before sale especially if they are to receive higher prices.

The study also contributes to the much needed literature that the extension service providers, namely local government staff, private and non governmental service providers can rely on to advise the farmers and traders on overcoming the constraints affecting value addition and marketing of field peas basing on the magnitude of the effects of these constraints. The study as well recommends areas for further research which researchers can rely on to add to the limited literature on field pea marketing.

1.8   Scope of the Study

This study was carried out in Kabale district, being one of the major field pea producing districts in the south western highlands of Uganda. The study was done in major field pea producing sub counties in Kabale district. The study included traders in Kabale central market, Mbarara Central market and purposively selected markets in Kampala. Consumers were also interviewed from Kabale, Mbarara and Kampala districts.

2.1   Marketing of Agricultural Products

Markets are important because they act as a mechanism for exchange. They are particularly important to the poor because their involvement in the markets results in co-ordination and allocation of resources including goods and services (Jari and Fraser, (2009). Thus markets are very important in reducing poverty and improving livelihoods of households. Lyster (1990) identified that market participation is important both for sustainable agriculture and economic growth and for the alleviation of poverty and inequality.

African markets are typically undercapitalized and inefficient (Gabre-Madhin, 2003; Fafchamps *et al.*2004). Product price variations, transaction costs, and risks are high. Less-developed agricultural markets hinder the linkages between agricultural and non-agricultural sectors, cause disincentives for production and reduce export earnings. The contribution of well functioning agricultural markets to the modernization of agriculture is sufficiently documented in both theoretical and empirical literature. In their study, Thomas *et al*. (1997) argued that well functioning input and output markets may help farmers acquire and use productivity enhancing inputs, assure vertical integration and coordination functions (input supply, credit, output marketing) and provide alternative employment opportunities.

In Uganda, few farmers have well-constructed storage facilities in rural areas and off-farm storage facilities owned by traders, millers, processors, and exporters are generally lacking. This situation is not unique to Ugandan markets. Onu and Iliyasu(2008), in their study of an economic analysis of the food grain market in Adamawa state, Nigeria, established that the traders lacked adequate equipment for the task of food grain marketing. They did not own weighing equipment, transportation or storage facilities. Apart from the trader him/herself and the few hands that are hired to either load into vehicles or off-load the goods there after, the respondents did not employ an abundant man power.

In their study done in Kwara State, Nigeria, Babatunde and Oyatoye (2005) established that the problem of inadequate market infrastructures is also very evident in food marketing. Good storage and warehousing facilities such as lock-up stores, silos and barns are lacking in most food markets. Most food marketers do not have any form of storage facilities in the market. Very few food marketers that have storage facilities use Jute bags, baskets and drums to store farm produce. Insufficient storage facilities often lead to produce loss due to premature germination, fungal and bacteria attack, insects and rodents attack. All these often account for increased marketing cost leading to higher retail prices and reduced marketing efficiency.

Agricultural marketing assumes greater importance in the Ugandan economy because the excess production from the farm must be disposed of in order to earn some income from which farmers can purchase other goods and services which they do not produce.

2.2   Market Performance and its Analytical Tools

Market performance is defined as how well the marketing system performs what society and the market participants expect of it (Abbot and Makeham, 1997). It is an assessment of how well the process of marketing is carried out and how successful its aims are accomplished (Giroh *et al*., 2010). It is concerned with technological progressiveness, growth orientation of agricultural firms, efficiency of resource use and product improvement and maximum market services at the least possible cost (Giroh, *et al*., 2010). It is a measure of pricing and operational efficiency (Mogaji *et al*., 2012).

Many researchers emphasize that performance measurement should be conducted at various points along the chain according to multiple player levels available in the chain (Stephens, 2001; Lockamy and McCormack, 2004; Li *et al*., 2005). Among the most commonly used financial indicators for measuring performance are marketing margins (Mogaji et al., 2012), gross revenues, costs, profit, return on investment and inventory (Shepherd and Gunter, 2005). Non-financial indicators include quantities of the market commodity handled, product characteristics or wholesomeness and variety, producer share and access to market information (Aramyan et al., 2006; Nayeenya et al., 2008; Shaik et al., 2009; Abebe, 2009).

Kizito (2008) defined market performance as the extent to which markets result in outcomes that are deemed good or preferred by society. The two major indicators of market performance are net returns and net marketing margins. Estimating net returns and net marketing margins provide indication of an exploitative nature when net returns of buyers are much higher than their fair amount.

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Marketing margins are among the most scrutinized measures of market performance by both producers and consumers (Schroeder and Mintern, 1996) and that the form of market power is likely to manifest in larger marketing margins (Gordon and Hazledine, 1996).Market performance can be evaluated by analysis of costs and margins of marketing agents in different channels, and market integration. A commonly used measure of market performance is the marketing margin or price spread (Musema, 2006; Enibe *et al*., 2008; Sarode, 2009; Takele, 2010). Margin or spreads can be useful indicators if used to show how the consumer's food price is divided among participants at different levels of the marketing system (Getachew, 2002).

The study of marketing margin is important in determining the mark up earning at different levels of marketing (Oladapo *et al*. (2007). Retail-farm margins are of interest to agricultural economists because wider margins mean that growers obtain smaller share of the retail price and the extent to which margin growth is not due to higher marketing costs can suggest inefficiencies in the marketing channel (Timoth *et al*. 1998). Gyimah (2001) observed that high market price of fresh coconuts could not be wholly attributed to excessive profiteering activity of middlemen, but scarce, expensive production and distributing factors are also responsible for high consumer price of fresh coconuts. He estimated that, over 50% of the marketing margin in fresh coconut is attributed to actual marketing costs.

Yeboah (2009) established that, fresh coconut farmers in the western region received about 46% of consumer price, 26% accounted for transportation and handling charges and the remaining 28% was the traders' profit margin. As a result, low prices at the farm gate and high prices in the consumer market are generally blamed on inefficiency in the marketing system and exploitation by traders (Abankwah *et al*. 2010).

In their study of economic analysis of fresh fish marketing in Maiduguri Gamboru market and Kachallari Alau Dam landing Site of Northeastern Nigeria, Ali *et al*. (2008) concluded that at all stages in the marketing chain, fish has to be packed and un-packed, loaded and un-loaded to meet consumers demand. Each handling cost will not amount to much but the sum total of all loading can be significant, depending on the length of the chain. This makes a greater difference in price paid between urban consumers and at the end of the chain and farm gate price at the beginning of the chain. This can lead to a greater or wider market margin between the producer and the final consumers. If the market margin is high, it may be used to argue that producers or consumers are being exploited thus leading to an inefficient market.

2.3   Marketing Margin as a Measure of Market Performance

In a commodity subsystem approach, the institutional analysis is based on the identification of the marketing channels. This approach includes the analysis of marketing costs and margins (Mendoza and Rosegrant, 1995). A marketing margin is the percentage of the final weighted average selling price taken by each stage of the marketing chain. It describes price differences between other points in the marketing

chain, for example between producer and wholesale, wholesale and retail (Mogaji *et al.*, 2012). The total marketing margin is the difference between what the consumer pays and what the producer/farmer receives for the product. In other words, it is the difference between retail price and farmgate price (Mendoza and Rosegrant, 1995). A wide margin means high prices to consumers and low prices to producers. The marketing margin in an imperfect market is likely to be higher than that in a competitive market because of the expected abnormal profit. But marketing margins can also be high in a competitive market due to high real market costs (Wolday, 1994).

There are three methodsused in estimating marketing margins. (i) following specific lots of consignments through the marketing system and assessing the cost involved at each of the different stages (time lag); (ii) submission of average gross purchase by the number of units transacted for each type of marketing agency; and (iii) comparison of prices at different levels of marketing over the same period of time (concurrent method). This particular study will use the third method in line with an earlier study of Mussema, 2006.

2.4   Empirical Studies on Market Performance using Marketing Margins

A number of studieshave used marketing margin as a measure of market performance (Syed *et al.*, 2002; Musema, 2006; Enibe *et al.* 2008; Sarode, 2009, Motasem *et al.* 2010 and Takele, 2010).

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In his study, Sarode, (2009) established four channels in the marketing of banana in Jalgaon district, India. The channels included;

Channel I: Producers – Cooperative marketing society -Commission agent-Wholesaler –
    Retailer – Consumer.

Channel II: Producer - Group sale agency -Private trader- Commission agent –
    Wholesaler - Retailer – Consumer.

Channel III: Local traders (Group sale agency) – Wholesaler - Retailer-consumer.

Channel IV: Producer – Retailer – Consumer.

The study results indicated that the highest produce was sold through channel III (41.98 percent) followed by channel II (33.00 percent) and channel I (24.70 percent). It was revealed that the producer's share in consumer's rupee was 48.15 percent in channel I and 46.78, 45.20 and 70.80 percent in channel II, III and IV respectively. On the whole, it was concluded that producer's share in consumer's rupee was more in channel IV because there were no intermediaries except retailers between consumers and producers.

Syed *et al*. (2008) defined marketing margin as the difference between the price paid by the ultimate consumer and the price received the apple producers in Pakistan. The study findings indicated that the producers of Shin kulu and Kaja apples got less marketing margins of 24 and 31 percent respectively compared to the other marketing intermediaries that got 76 and 69 percent of the consumer price of Shin Kulu and Kaja apples respectively. The study concluded that the marketing system of the two apple varieties reflected an inefficient, exploitative and middlemen friendly marketing setup.

Enibe *et al.* (2008) in their study on Policy Issues in the Structure, Conduct and Performance of Banana Market in Anambra State, Nigeria estimated marketing margin as the difference between the consumer price and the price received by producers. The results indicated that farmer's share of the consumer spending was 56 percent. They further indicated that the remaining 44 percent was the marketing margin that covers the marketing cost (16 percent) and the profit of the middlemen (28 percent).

Other marketing studies have identified a number of channels in the marketing chain. Musema, (2006) established eight (8) major marketing channels obtained from nine (9) pepper markets in Ethiopia. The channels included;

Channel I: Farmer-Regional wholesaler-Retailer-Consumer

Channel II: Farmer-Regional wholesaler-Urban wholesaler-Retailer-Consumer

Channel III: Farmer-Urban assembler-Regional wholesaler-Retailer-Consumer

Channel IV: Farmer-Urban assembler-Regional wholesaler-*Balitina* shops-Consumer

Channel V: Farmer-Urban assembler-Retailer-Consumer

Channel VI: Farmer-Urban wholesaler-Consumer

Channel VII: Farmer-Urban wholesaler-Millers –consumer

Channel VIII: Farmer-ESEF-consumer

From informal survey, the study further established that there were possibilities of farmers selling their produce directly to retailers and consumers, thus two more channels. The study found out that the total gross marketing margin (TGMM) was highest in channel IV, followed by channel VIII which accounted for 72.36 and 56.05 percent of the

consumer's price respectively. The study further established that of all pepper traders, Balitina shops, ESEF and millers get the highest gross marketing margins which account for 56.6, 56.0 and 48.71 percent of consumer's price respectively.

In their study of marketing margins in broiler production in Jordan, Motasem *et al*.,(2010) defined marketing margin as a percentage share received by each marketing intermediary. They established that the share of intermediaries (middlemen and retailers) was about 51 percent which was almost equal to that for producers. They concluded that marketing margins of middlemen and retailers together were almost equal to producers marketing margin, which means that the producer share alone was higher than each of the two individual intermediaries. The profit for both the middlemen and the retailer is higher than that of the producer due totheir higher share in marketing margins.

Kabiego *et al*., (2003) used marketing margins to evaluate market performance. In their study "Analysis of bean marketing system in urban areas of Kenya", they established that marketing costs contributed 8.91 percent of the beans selling price while the traders share was 4.55 percent. The market margin analysis indicated that a small proportion of the consumer money was accounted for by profits that traders got. They concluded that low marketing margin for traders was an indicator of an efficient bean marketing system.

Takele, (2010) estimated marketing margins as average selling price minus average buying price. The study results indicated that assemblers received the highest marketing margins (30.55 percent) followed by farmers (10.22 percent) and then retailers.

2.5   Market Performance and its Determinants

Gunasekaran *et al*., 2004 defined market chain performance as an overall measure that depends on performance of the individual chain stages and the respective processes that are executed by players at various stages.

Researchers (Abebe, 2009; McDonald and Schroeder, 2000; Nwaru *et al*., 2011;Shively *et al*., 2011) regress selected independent variables thought to influence performance of the market and measure the impact of the different variables on performance. A set of independent variables were carefully selected and used in this study.

Farm size owned by the producer is regarded as an important determinant of their performance in the market chain (Yusuf and Malomo, 2007; Olaoye and Rotimi, 2010). Research indicates that most often, adoption of new technologies which lead to productivity in crop production increases with farm size (Okpukpara, 2010; Rusike *et al*., 2010). With the new technologies adopted, producers therefore realize higher crop output hence higher disposable surplus (Simtowe *et al*., 2010).

Distance to the market is an important determinant of market performance. In their study, Holloway *et al* (1999) indicated that distance to the market caused milk market surplus in Ethiopia to decline. Wolday, (1994) established that there was a negative relationship between distance from the household residence to grain market and volume of marketed food grain in Ethiopia. Similar results were established by Abonesh, (2005) and Rehima (2006) for hot pepper in Ethiopia.

Experience affects market performance by increasing the probability of production and trade. As market participants get more business experience the probability of increasing production and hence supply to the market would be high. Moreover, players with longer business experience will have a cumulative knowledge of the entire farming and trading environment (Madu *et al*., 2008).

Previous studies indicate that market players with more number of years of formal schooling have better access to information which improves their performance. Zhou *et al*., (2008) noted that education helps players acquire and process information enabling them to evaluate their decisions, plan and conduct their businesses with confidence which improves their business performance.

Credit has been found to help players to expand their participation in the market (Fafchamps and Minten, 1998 a). It helps them to purchase high quantities of the product and they are able to sell more. With credit, players are able to pay for all services required of them for their market participation.

Membership to groups focusing on a product of the market chain is an important determinant of performance (Emokaro *et al*., 2010). Presence of groups where market players can join and access the services offered increases their bargaining power for prices and better services which consequently improves their performance in the market chain (Nowakunda *et al*., 2010).

Value addition before sale affects sales implying that value addition before sale is an important determinant of market performance. This could be due to the fact that value addition increases quality of the products, making them more attractive to the customers. The value addition activities practiced included grading, sorting, rebagging, cleaning up, packing, thorough drying, spraying and winnowing. These activities could have increased the value of field peas traded leading to positive effect on the sales.

CHAPTER THREE

METHODOLOGY

3.1   Description of the Study Area

The study was carried out in Kabale district in Southwestern Uganda. The district is bordered by Kisoro, Rukungiri, Kanungu and Ntungamo districts. It is also bordered by Rwanda. Kabale was selected as the study area because it is one of the leading producers of field pea in south western Uganda (Musinguzi *et al*., 2010). It is composed of six counties (Rukiga, Rubanda West, Rubanda East, Ndorwa West, Ndorwa East and Kabale Municipality), 19 sub counties and 116 parishes. Its total area is 1,827 sq km with land area of 1,695sq km and water area of 132sq km (NEMA, 1997). Most of the people in Kabale are engaged in agriculture with 84 percent of the population engaged in subsistence farming. Commercial farming accounts for 0.5percent of the total population.

Four markets were selected for the study including Kabale central market, Mbarara central market in Mbarara district, St Balikudembe market and Nakawa market in Kampala district. All the four markets are urban markets located in the centre of the towns that receive produce from rural areas. The infrastructure in the markets was not yet well developed. For example, some traders sold field peas on undeveloped stalls, yet others sold field peas from the ground. Though traders reported availability of storage facilities, they were found to store their field peas in small lockups below their stalls. Very few farmers had well planned store houses outside the market. Delivery of field peas from the vehicles to the market stalls was done by head since the vehicles could not enter in the markets due to lack of a well developed road infrastructure in the markets.

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These results concur with the results of an earlier study of Aliguma, (2003), that established that marketing of agricultural produce is constrained by inadequacy of physical infrastructure such as feeder roads, communication facilities, power supply, education and health facilities, water supply and market infrastructure which are responsible for the high market transaction costs.

3.2 Sample Selection and Sample Size

A multi stage sampling procedure involving a combination of purposive and simple random sampling methods was used to select the study locations as well as the sample farmers and traders. Simple random sampling was employed for its power to reduce the potential for human bias in the selection of cases to be included in the sample. As a result, the simple random sample provides us with a sample that is highly representative of the population being studied thus allowing for generalisations. The first stage involved purposive selection of Kabale district based on its history of field pea production in Uganda. The markets under this study were as well purposively selected because they are the major agricultural markets in the three districts of Kabale, Mbarara and Kampala. These districts were chosen basing on their strategic location as key destinations for field peas from Kabale district.

The second stage involved a random selection of three sub-counties among the eight major field pea growing sub-counties in the district. The study selected only three sub-counties due to logistical constraints. The researchers got the list of field pea producing sub-counties from the district authorities from which three sub-counties were randomly selected.

The third stage involved a purposive sampling of the villages from a list of villages obtained from the sub-counties. This was done in consultation with the extension workers basing on the intensity of field pea production in these villages. From each sub-county, three villages were purposively sampled making a total of nine villages. The fourth stage involved a random sample selection of farmers from the list obtained from the Local Council I (L.C.I) chairpersons. Eight producers from each of the nine villages were randomly selected making a total sample of seventy two producers. The fifth stage involved random selection of traders from a list of traders got from market authorities. Eighteen traders were randomly selected from each market, Kabale central market, Mbarara central market, St Balikudembe and Nakawa market, making a total of 72 traders.

The sixth stage involved sampling of field pea consumers. Twelve urban households which consume field peas were randomly selected from each of the three districts of Kabale, Mbarara and Kampala from a list of residents got from the L.C.I making a total of thirty six consumers. This lists consisted of all the households (both consumers and non-consumers of field peas) in the LC1. If the randomly selected household did not consume field peas in the last six months, it was dropped and replaced by the other randomly selected household. This made representative samples of 72 producers, 72 traders and36 consumers.

3.3   Data Type and Data Collection Methods

The data for this study were collected from both primary and secondary sources. Primary data were collected by use of structured and pre-tested questionnaires (Appendices1, 2 and 3) that were administered through direct interviews to the selected farmers, traders and consumers. The primary data from farmers captured information such as the socio-demographic characteristics, cost of production, quantities produced and sold, price of field peas sold, availability of storage facilities, distance to the market, transportation means and costs to the market, access to credit, membership to farmers associations, experience in field pea farming and field pea consumption rate per week.

The data collected from traders included the socio-demographic characteristics, type of trade, experience in field pea business, source of field peas, means and cost of transport used, price of field peas, number of market participants, accessibility of storage facilities, quantities purchased and sold, distance form the producing areas, access to credit, membership to traders associations, sources and destinations of field pea and number of collection points.

Data collected from consumers included, distance to the market, quantities bought every month, the number of times they consumed field peas per month, the month they consumed field peas the most, if they were willing to pay the market prices and if not the price they were willing to pay for field peas, if they stored field peas purchased, problems faced while purchasing field peas and the factors considered before purchasing field peas.

Additional data supplemented primary data and this was obtained from institutions such as Kabale district Agricultural offices, Ministry of Agriculture, Animal Industry and Fisheries, Uganda Bureau of Statistics, Makerere University Libraries and Ministry of Finance, Planning and Economic Development. Internet was vital in accessing journal papers. Secondary data included production trends of field peas and market information.

3.4 Analytical Methods Used in the Study

The data were entered into Statistical Package for the Social Scientists (SPSS) and analyzed using STATA 13.The analytical methods used to achieve the objectives of the study included; marketing margin analysis and the linear regression models for field pea production and marketing. The study adopted linear regression models because the relationship between marketing margins and the independent variables was assumed to be a straight-line relationship since marketing margin is a continuous variable. Initially descriptive statistics were analysed to summarise information on the socio-demographic characteristics of the respondents. This was used to obtain quantities produced, average sales, value addition activities and costs, distances to the market, consumption rates, field pea attributes, prices, revenues and costs at different levels of the market chain. Descriptive statistics were as well used to achieve objective one (to determine the proportion of field peas to household food and income).

Objective two (to determine the market performance of the field pea business along the market chain) was achieved using marketing margin analysis at the different levels of the chain. Marketing margin is the most commonly used measure of market performance

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(Mogaj et al., 2012). It describes price differences between points in the marketing chain, for example between producer and wholesale, wholesale and retail. It measures the share of the final selling price that is captured by a particular agent in the marketing chain (Mendoza and Rosegrant, 1995).

The study adopted the methodology used by Ali*et al*. (2008) that estimated marketing margins as $\dfrac{Selling\ price\ \text{-}\ purchase\ price}{Selling\ price} \times 100$

This study further determined the net marketing margins per kilogram transacted for different market participants. This followed the approach of Motasem, *et al*., (2010) that determined net marketing margins by deducting the cost of services that each market participant was providing from the total marketing margins.

Objective three(to determine the factors affecting market performance at each level of the market chain) was achieved using Multiple Linear regression models with the natural logarithm of marketing margins as the dependent variable used as a measure of market performance for each of the two player categories, that is producers and traders. The Ordinary Least Squares (OLS) method was used because the least-squares estimates possess some ideal or optimal statistical properties of being the best linear, unbiased and with the minimum variance (Gujarat, 2004).The models helped in measuring strength of the relationships between marketing margins and factors which affect them. The regression models were used to study overall performance along the market chain.

In all the models, the dependent variables were transformed into natural logarithm in order to avoid nonlinearity of regressions, non-normality of marginal distributions and heteroscedasticity (Downs and Rocke, 1979). Heteroscedasticity usually arises in cross sectional data where the scale of the dependent variable and the explanatory power of the model tend to vary across observations (Green, 2002). Transformation of the variables also eliminate skewness and kurtosis of individual distributions (Shaik *et al*., 2009).Potential heteroscedasticity was further fixed by using robust standard errors.

Adjusted coefficient of determination (R-square) was used in all models to show the proportion of variation in the amount of marketing margins that was explained by the independent variables as explained by Middleton, (2006).

A variance inflation factor (VIF) was used to detect the presence of multicollinearity in the models. VIF shows how the variance of an estimator is inflated by the presence of multicollinearity (Gujarat, 2004). As a rule of thumb, if the VIF of a variable exceeds 10, which will happen if the R^2_j exceeds 0.09, that variable is said to be highly collinear (Green, 2002). All the variables used in this study had VIF of less than 10 and hence there was no need to investigate further (Appendix 4).

The data were entered in Statistical Package for Social Scientists (SPSS), but analyzed using different packages depending on a section being analyzed. The packages used were; SPSS, STATA and Excel.

3.5 The Model Specification

The multiple linear regression models were used to achieve the third objective of the study. The model was applied at two stages; marketing by producers and marketing by traders. The model for producers was specified as;

$$S_i = \beta_0 + \beta_1 X_{1i} + ... + \beta_n X_{ni} + \varepsilon \ .... (1)$$

Where S_i=Producers' marketing margins

X_1= Education level of the household head (years)

X_2=Experience in field pea farming (years)

X_3= Storage period before sale (months)

X_4= Consumption rate (times in a week)

X_5=Value addition before sale (1=yes, 0 otherwise)

X_6=Distance to the market (km)

X_7=Total cultivatable land (ha)

X_8=Membership to any farmers' group (1=yes, 0 otherwise)

X_9=Amount received as credit (ush)

i is the ith observation.

β_0= Intercept

β_1-β_n=parameter coefficients to be estimated

ε= random error term.

The model for traders was specified as;

$$S_i = \beta_0 + \beta_1 X_{1i} + ... + \beta_n X_{ni} + \varepsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

Where S_i=Traders' marketing margins

X_1=Education level of the household head (years)

X_2=Experience in field pea trading (years)

X_3=Access to storage facilities (1=yes, 0 otherwise

X_4=Number of traders in the market (number)

X_5=Value addition before sale (1=yes, 0 otherwise

X_6=Distance to the source of field peas (km)

X_7=Number of collection points (number)

X_8=Membership to any farmers' group (1=yes, 0 otherwise

X_9=Amount received as credit (ush)

i is the ith observation.

β_0= Intercept

β_1-β_n=parameter coefficients to be estimated

ε = random error term.

3.6   *A priori* **expectations of variables on performance of market actors**

Education of market actors was captured by the number of years spent in school. This variable was used to measure producers' and traders' market performance. Market actors with better education were expected to have better market performance in respect to their marketing margins than their counterparts.

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This was mainly because educated market actors plan their business better than the uneducated (Onu and Edon, 2009).Such actors were also expected to have better access to market information and utilize their social capital to further their involvement in the field pea markets leading to increased sales.

Experience in field pea marketing chain was used in the two models of producers, and traders. The study expected market participants with more experience to have more marketing margins leading to better market performance for such participants. In their study of marketing chain analysis in Vietnam, Nam *et al*., (2006) observed that traders with long experience in orange trading had strong relationships with other traders and good knowledge on orange quality and market prices which enabled such traders to realize higher margins.

A direct positive relationship was expected between access to storage facilities and the amount of sales among the market participants. Those participants that accessed storage facilities could afford to store their produce when prices were low and could sell when prices increased. Likewise, they could afford to purchase during the peak season and sell at off peak. This gave such market players an opportunity to sell field peas throughout the year thus increasing their sales.

The study used consumption rate to determine the number of times a week producers consumed field peas. The study expected consumption rate to have a negative impact on marketing margins by producers. Experience has shown that most of the field peas

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produced is consumed at the farm (Bibangambah, 1996). This implies that the more times the households consumed field peas at home, the less surplus for the market leading to low sales by producers. The farmers are also willing to receive any price since they are not commercially oriented, leading to low marketing margins and poor market performance.

Market players that added value before sale were expected to sell more due to the quality improvements made to the product. However it could also be true that value addition increases the costs of producing the product leading to increased prices for such products. In such instances, such market actors are able to receive a higher share of the consumer price leading to better market performance.

Distance travelled by the market actors to the market by producers and to access the field peas by the traders was expected to reduce the market performance. This was mainly because geographical distance imposes higher transport costs on market participants (Oluwasola *et al*., 2008; Komarek, 2010). This leads to farmers selling at farmgate and accepting low prices leading to poor market performance.

It was expected that producers with more cultivatable land (hectares) had a higher chance of allocating more land to field pea production. Those who planted on a bigger land were expected to produce more field peas and have more surplus for the market. Such farmers tend to be commercially oriented and usually transport their produce to the market for higher prices leading to better market performance.

Membership to an association was used as a dummy variable in the two models of producers and traders. Belonging to such groups was expected to have a positive correlation on marketing margins because such groups gave them better access to market information for their production decisions (Oluoch-Kosura, 2010) and extension (Doss, 2003). Organisations are very important as they help pool strengths of individuals and exchange technological know how for collective action and to achieve economies of scale (Benin, 2004). The groups have been found to be practically helpful to the farmers by ensuring bulking and group marketing leading to increased bargaining power by market participants.

Amount of credit was used in the producers' and traders' models. The study expected the credit variable to have a positive correlation on marketing margins of the market actors. It was expected that credit gave market actors an opportunity to buy more products and afford hiring efficient means of transport to the market. This increased the price received by the market actors (Jabbar *et al*., 2006; Simtowe *et al*., 2010).

A negative relationship was expected between number of traders in the market and the marketing margins by traders. More traders in the market were expected to increase competition among the traders thus reducing the price received by an individual trader. This is in agreement with an earlier study of Shiraz and Moghaddasi, (2011) that established that protected and regulated/controlled markets may perform as competitive markets.

Number of collection points for traders was expected to positively affect their marketing margins. This implies that traders with more field pea sources were more likely to purchase more field peas at low prices which in turn would lead to better market performance by receiving a higher share of the consumer price.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents and discusses the findings of this study. It focuses on addressing the objectives set for the study. The chapter is organized in three sections in line with the objectives. The first section gives characteristics of market actors in the field pea market chain which include their socio-economic characteristics, description of each player category and a comparison of selected variables across the categories. This section also gives the contribution of field peas to household food availability. Market performance is presented in section two by analyzing the players' sales and marketing margins. Finally, regression models are presented in the third section detailing the estimates of the determinants of market performance for the three field pea market actors.

4.1   Background Characteristics of Producers

The socio-economic characteristics considered for producers in the study were age of the farmer, sex of the farmer, education of the farmer, experience of the farmer in fieldpea farming, the period the farmer stored field pea before sale, the number of times in a week the farmer's household consumed fieldpea, membership to a farmers' association and the amount of credit received (Table 4.1).

Table 4.1:   Socioeconomic characteristics of producers

Variable	Mean	Std. Deviation
Age (years) (n=72)	36.3	14.4
Education (years of formal schooling) (n=72)	3.8	3.1
Experience in field pea growing (years) (n=72	22.2	14.5
Consumption rate (number) (n=72)	1.9	0.8
Amount of credit accessed (number) (n=51)	48,039.2	71,274.7
Duration of storage before sale (months) (n=72)	1.3	1.5

The results as shown in Table 4.1 indicate that the majority of the farmers that participated in the study were of productive age, about 36 years on average. This age range was an indication of the availability of a strong and productive labour force (Tauer, 1995).The majority of these farmers (62 percent) were female which is a common practice where females are dominant in agricultural activities in the rural areas.

The mean number of years spent in formal education for the field pea producers was 3.8. This educational level was below the mean level of maize farmers of 6.5 years in Uganda (Okoboi, 2011). Research indicates that producers with higher education have the ability to control their production environment (Onu and Edon, 2009). Higher education helps producers to understand and utilize new agricultural technologies disseminated through extension to increase their output because extension gives them capacity and ability to improve their performance (Mugisha *et al*., 2010)

Surveyed farmers had on average spent 22 years producing field pea. They were growing them on a mean land holding of 0.7 hectares, the same acreage allocated to the same crop by farmers in Wakiso district in 2003 (Aliguma, 2008). This acreage is far below the 3.3 hectares set aside by farmers in Philippine for corn production (Mendoza and Rose grant, (1995), 2.6hectares allocated to grape production by an average farmer in Turkey (Koctürk and Engindeniz, 2009) and 0.8 hectares set aside by farmers in Tanzania for rice production (Mghase *et al*., 2010). Although this is still a small portion of land allocated to a crop considered to be an important source of food and income to many households, its quite higher than land allocated to other crops as highlighted by Mugisha *et al*. (2004), Bagamba *et al*. (1998) and Mugisha and Diiro, (2010). These studies established that farmers in Mayuge district allocated about 0.125 hectares to groundnut production while those of Nakasongola and Soroti districts allocated 0.08 hectares to improved maize production. Farmers in Kisekka, Masaka district were found to allocate 0.2 hectares to coffee, 0.3 hectares to beans and 0.1 hectares to sweet potatoes.

Farmers on average consumed field peas twice a week implying that this is an important source of food in the households. From the study results, field peas were ranked the third as a source of food and this supports an earlier study by AHI, (1997) that established the same results.

The mean amount of credit received by farmers was estimated at Ush 48,039 annually. This credit facility was low compared to the needs of farmers. This finding of low credit use supports the view of Aliguma, (2008) that indicated that loans are available, but

attract very high interest rates of 24 percent or more and yet credit for smallholders has a role to play, because in order to create and sustain a dynamic and productive modern agricultural sector, it requires the uptake of new, more productive and high yielding technology by farmers on a continuous basis. In an earlier study, Omamo, (2002) and Kherallah *et al*., (2002) stressed that, given the high prices of purchased inputs, credit is especially important for smallholder producers with low purchasing power. By limiting purchase or adoption of appropriate post-harvest technologies, including processing and storage facilities and fumigants, lack of credit also reduces marketable surplus (Archambault, 2004). The lack of access to credit may constrain farmers from using technologies that require initial investments whether outlays for seeds and fertilizer at the start of the growing season, large cash expenditures for machinery, investments in infrastructure in fields, or simply added labor (Doss, 2006 and Nyagaka, *et al*., 2010). The importance of credit to the farmers is further emphasized by Odoemenem, (2010) who concluded that credit removes the financial constraint of farmers, thereby increasing the likelihood of their adoption of new technologies which often involves additional expenditure on improved inputs and chemicals. Farmers who adopt new technologies tend to be commercially oriented, are able to produce higher quality output and can transport their produce to the market to fetch higher price. This improves their market performance.

Farmers stored their field peas for only one month before sale. This implies that farmers sold almost immediately after harvest. This could lead to low prices due to the fact that at that time, the market is still saturated with produce and the traders take advantage to offer

low prices. Babatunde and Oyatoye (2005) emphasized the importance of storage facilities. They asserted that insufficient storage facilities often lead to produce loss due to premature germination, fungal and bacterial attack, insects and rodents attack. All these lead to reduced quality of the produce, thus fetching low prices which in turn leads to poor market performance of farmers.

4.2   Proportion of Field Pea to Household Food and Income

The results of this study confirmed the important contribution of field pea to household food. Field peas were ranked third most important source of food to households in Kabale district after sweet potato and beans (Figure 4.1). This finding is in agreement with an earlier study which established that field peas were the third most important source of food in Kabale district (AHI, 1997).The results further indicate that on average, farm households consumed field peas two times in a week and a convincing majority (60%) of the farmers agreed that they consumed field pea from one season to another. This is a further indication that field peas can be relied on as a food security crop in the region. Other crops that were found to contribute to food availability in the district were; sweet potatoes, beans, irish potatoes, maize, vegetables, sorghum, and banana.

Field peas contributed the same proportion to household food as beans which is a perfect substitute. The results indicated that both crops contributed the same percentage (21.3%) to household food availability. However it was established that sweet potato contributed a bigger proportion to household food (21.6 percent). Irish potato contributed the same proportion to household food as field peas and beans.

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Figure 4. 1: Contribution of field peas to household food availability
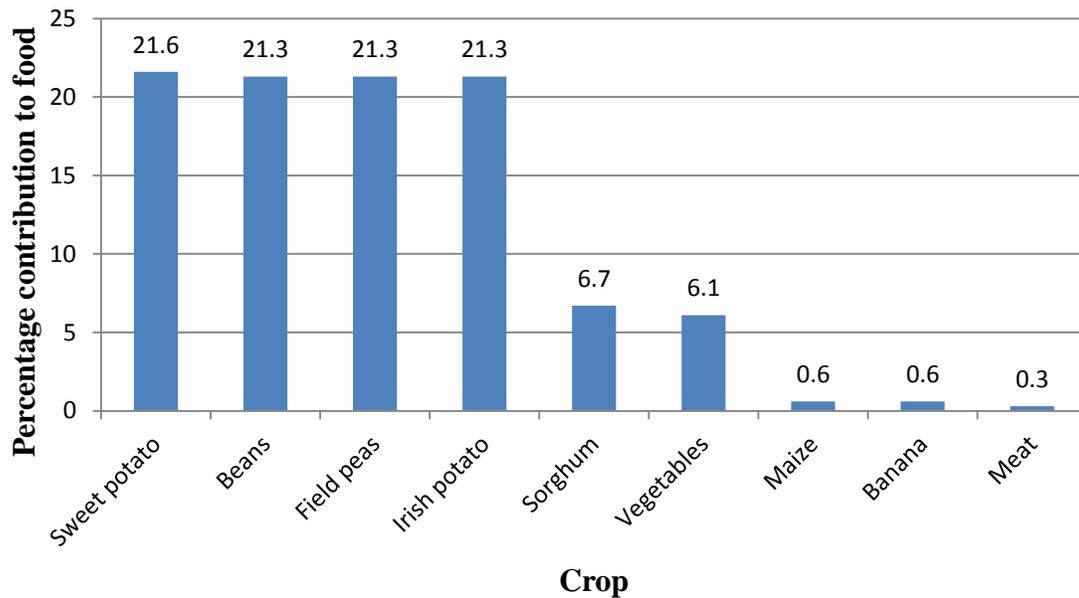
Fieldpeas are an important source of income to both the producers that reported 53 percent of the total harvest being sold and the traders who also reported fieldpea to be the major source of income. Since this study considered traders that majorly dealt in fieldpea trading, it was established that fieldpea contributed the highest monthly income to the traders in the studied markets (Figure 4.2). On average, a trader earned a monthly income of ush. 2,819,329 which amounts to 29 percent of total income from the major crops. Compared to beans that contributed 20 percent, the study established that field peas contributed more incomes to the traders. The other important sources of income to the traders included; rice, groundnuts, maize and millet. At farm level, a farmer on average earned Ush 91,110 annually from field peas.

Figure 4. 2:   Contribution of field peas to household income
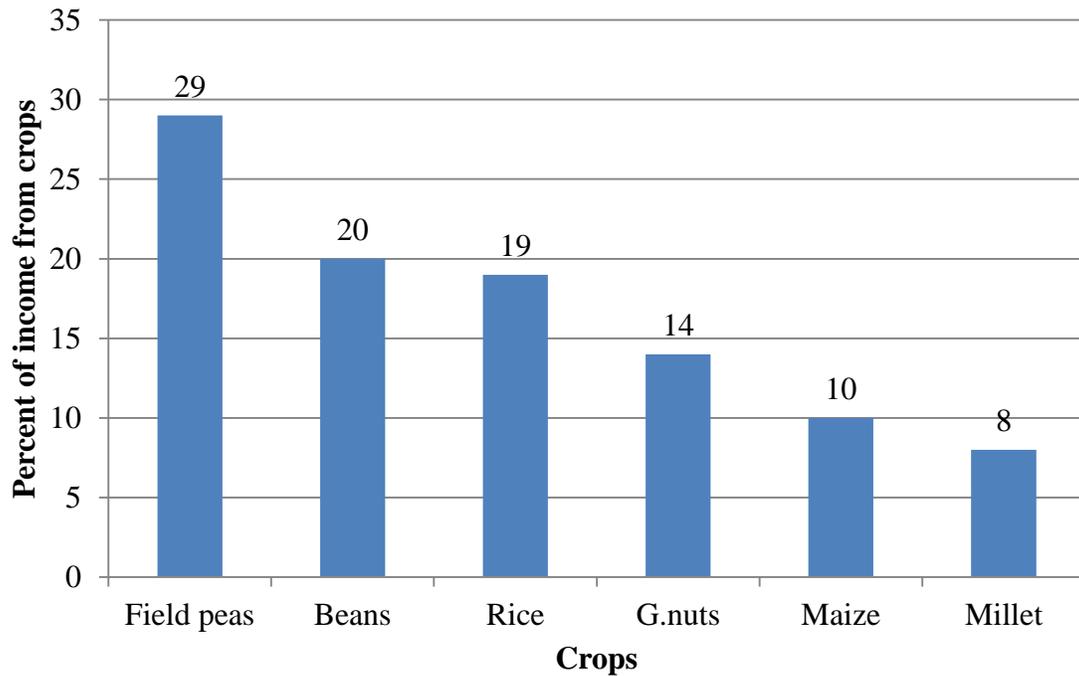
4.3   Background Characteristics of traders

The background characteristics for the traders considered for this study were; age, sex, education level, experience in fieldpea trading, access to storage facility, number of fieldpea collection points and distance traveled by the traders to purchase fieldpea (table 4.2). Traders fell in the productive age between 15-49 years (Abu *et al*., 2010). This implies that the traders were able to make quick and rational decisions as they were striving to improve their market performance. Agricultural supply chain players whose ages fall within the productive age group are associated with a strong desire to experiment with new marketing techniques and modern technology (Fafchamps and Gabre-Madhin, 2006).

Table 4.2: Socioeconomic characteristics of traders (n=72)

Variable	Mean/Percent
Age of trader (years)	37 (23)
Male traders in the sample (%)	41.7
Education of trader (years of schooling)	10 (3.8)
Experience in fieldpea trading (years)	9 (6.7)
Access to storage facility (%)	73.6
Number of fieldpea collection points	2 (1.5)
Distance traveled (kms)	200 (173)
Membership to an association (%)	25
Access to credit (%)	45.8

Figures in parentheses are standard deviations.

Females dominated trading of field peas (58 percent). Most of the females (70 percent) were involved in retail business compared to 52 percent that were in wholesale trade. This finding highlights the importance of female involvement in trade and conforms to the earlier finding by Fafchamps and Gabre-Madhin (2006) that noted that the majority of agricultural traders in Benin (80 percent) were women.

The mean number of years spent in formal education were 10 years. It was also established that traders were more educated than the producers and this is attributed to the fact that traders stay in towns and there are better education facilities in towns than in rural areas. Fafchamps and Minten (1998b) found out that traders with better level of education were willing to delegate authority to subordinates and were able to expand their business.

The study established that there was no significant difference in field pea trading experience between retailers and wholesalers. They had both spent 9 years trading in field peas. Experienced traders were expected to be better managers of their trade. Experienced traders are associated with employing sophisticated and more efficient approaches in conducting business because they have courage to make such decisions (Fafchamps and Gabre-Madhin, 2006).

The majority of traders had access to storage facilities (73.6%). Most of these were wholesalers. This finding is in agreement with the earlier study that established that wholesalers are on average wealthier and they might be better able to bear risk, to keep capital tied up in storage and to reap the benefits of long-term storage (Barret, 1997).

Traders on average collected their fieldpea from atleast two sources and travelled on average 200 kms to the source of field pea. Since the wholesalers bought in bulk, they preferred buying from the producers or traders in Kabale due to the low price and the per unit cost of transportation was not very high. In their study, Fafchamps and Minten, (1999) noted that wholesalers in Madagascar traveled longer distances (above 100 kms) than retailers to buy agricultural commodities.

A smaller percentage of retailers(25%) reported membership to any traders' association which agrees with the earlier findings of Namazzi, (2008) that established that Uganda's institutions, especially farmers' and traders' associations require substantial expansion and development to function effectively. However, such associations are nonexistent or

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inadequate in many areas of rural Uganda. Yet such associations would help stabilize markets and provide a united voice for market demands, but they are virtually nonexistent. Traders associations are important in a sense that they provide market information to traders and they act as a channel through which traders communicate their challenges such as market dues.

In general, fewer traders (45.8 percent) reported access to credit. This implies that there are difficulties accessing credit due to lack of options for agricultural lending and high interest rates. In an earlier study of Aliguma, (2008), it was noted that financial resources are not available for the direct actors in the market chain of most agricultural crops in Uganda. This finding as well supports the earlier findings of Fafchamps and Minten, (1998) that indicated that most of traders in Madagascar relied on own funds to finance their operations.

4.4   Costs Incurred by Traders

Detailed information was collected on the various costs incurred in the process of assembling, transporting and selling the field peas in the market. Value addition costs, market dues, packaging costs, loading fees, offloading fees, measuring costs and transportation costs were considered as the costs incurred by the traders (Table 4.3).

Table 4.3: Costs incurred by the traders (Ush/kg)

Item	Cost	Percentage of total
Market fees	7.4	15.3
Packaging costs	4.5	9.3
Transport costs	18.2	37.8
Measuring cost	2	4.2
Loading cost	3.7	7.7
Off loading		
Value addition	4.1	8.5
	8.2	17.2
TOTAL	**48.1**	**100**

The most important component of costs was transport that represented 38 percent of the total costs. A trader on average paid Ushs 18 to transport a kilogram of field peas to the place of sale about a distance of 200 kms. This cost was mainly incurred by bulk buyers who enjoyed the advantages of bulk transporting. This result is in agreement with the findings of Fafchamps and Gabre-Madhin (2006), Fafchamps *et al.*(2003), Oladapo *et al.* (2007) and Emaju (2000) that established that transport represented the largest component of costs to the traders.

Value addition costs and market fees represented other important components of costs. Value addition activities according to traders included; sorting/cleaning up, grading and re-bagging. This is a clear indication that traders did not add any serious value to the field peas before selling. On average, a trader spent Ushs 8 per kg and Ushs 7 per kg to carry out value addition activities and pay for market dues respectively.

4.5   Costs Incurred by the Producers

The costs incurred by the producers included; value addition costs, transportation costs, market dues, loading fees, offloading fees, cost of seeds and hired labor costs (Fig 4.4). On average, a farmer incurred Ush 17,612 as annual production costs. The costs associated with production are quite high, largely because the primary production input is hired labor. The most important costs for the producers were labor costs that included planting, harvesting and transporting from the garden. Hiring of this labor accounted for 54 percent of the total costs incurred by the producer.

Table 4.4: Producers' costs as a percentage of total cost

Type of cost	Percentage to the total cost
Value addition	1.4
Transportation	3.6
Planting	30.1
Harvesting	20.3
Market dues	1.2
Loading costs	10.4
Cost of seed	33

Value addition cost was one of the lowest costs accounting for only 1 percent of the total costs. As the case was for the traders, producers did not seem to add any much value to the field peas before selling. They carried out usual activities such as packing, drying and sorting/winnowing. There were no value added products reported by the producers. This could explain the low prices received by the producers (Ushs 501 kg^{-1}) for their field peas.

Transportation to the market was not a very pronounced cost as it only accounted for close to 3.7 percent of the total cost. Whereas a higher percentage of farmers (74 percent) reported transporting field peas to the market, only 30 percent of these directly paid transport costs by hiring a bicycle (15 percent) and vehicle (15 percent). The majority of the farmers (70 percent) used their heads to transport field peas to the market.

4.6   Average Field Pea Sales in the Different Markets

Sales are important in determining market performance in the chain. Increasing sales means better performance of the chain participants. In an earlier study, Abebe (2009) used sales as a dependent variable in determining factors affecting market performance. The results of his study indicated that quantity of honey produced, price of honey, education level of the household head positively influenced sales. Age of the household head, sex, extension access, experience in bee keeping, access to credit, distance to the nearest market and access to market information were found to have no significant effect on market performance.

Table 4.5 reports average fieldpea sales in the different markets. Kabale central market and St Balikudembe Kampala market represent the bulk of sales that took place in the market chain by the traders. On average, traders in Kabale and those in St Balikudembe sold an average of 3,933 kg and 3,578 kg in a month respectively. There was a significant difference ($p<0.05$) in the amount of sales made by traders in the different markets.

Table 4.5: Average monthly field pea sales in the different markets

Name of Market	Mean (kg)	Standard Deviation	f-value
Kabale Central Market	3,922	2,713	2.838**
Mbarara Central Market	1613	712	
St Balikudembe Market	3,578	3,088	
Nakawa Market	2740	1,317	
Average	**2,963**		

** Imply significant levels at 5%

The study results suggest that traders in Kabale central market sold more fieldpeas per month on average (3,922 kg) compared to traders in Mbarara central market (1,613 kg) and St Balikudembe market (3,578 kg) and the difference was significant ($p < 0.05$). The reasoning behind this finding was that traders in Kabale central market are closer to the producers, so they purchased more fieldpeas from producers than their counterparts in Mbarara and Kampala markets.

4.7   Average Price Paid in the Different Markets

Fieldpeas were mainly sold to consumers, retailers and wholesalers. It is evident from Table 4.6 shows that the price of fieldpeas varied mainly based on market location. The highest retail price was paid in Nakawa market (at Ush. 1,233) whereas the lowest price was paid when fieldpeas were sold in Kabale market (at Ush 650 kg^{-1}), considered to be the local market.

Table 4.6: Average price paid in the different markets

Market	Retail Price (Ush/kg)	Wholesale price (Ush/kg)
Kabale	650	558
Mbarara	986	875
St Balikudembe	971	935
Nakawa	1,233	-

Price of a commodity in a liberalized economy is essentially a result of the forces of supply and demand. That the highest price was received when fieldpeas were sold in Kampala markets (Nakawa for retail and St Balikudembe for wholesale price) is thus a reflection of increasing urban demand. These findings appear to be consistent with the findings of Salasya and Burger, (2010), who established that the highest price was paid when Kale was sold to Nairobi markets rather than the local market and at farm gate. Most people in Kampala are in off-farm employment and in most cases do not produce their own field peas, hence relatively higher demand and hence higher prices. Having the lowest prices paid at the local market (Kabale) on the other hand reflects the narrowness of local markets. Most households in the neighborhood produce the same crop and supply tothe same market. Farmers are usually unable to sell any surplus they produce if all other farmers near them are similarly engaged and have no access to other centers of demand.

4.8   Price Spread in the Field Pea Market

Price spread being the difference between the retail price and the price received by farmers at the farm gate is the best indicator of market efficiency. Less price spread indicates better marketing efficiency. Price spread for field pea was shs. 635 kg^{-1}. This value is very high and this implies that farmers received low prices for their produce leading to an inefficient field pea marketing system. This price spread is higher than that recorded by Syed *et al*., (2002) that found a price spread of Rs 331 and 235 for Shin Kulu and Kaja respectively. They concluded that farmers of the two types of apples received less income and more benefits went to the middlemen.

4.9   Marketing Margins of Field Pea Marketing

The results for marketing margins presented in Table 4.7 suggest that the marketing margin of traders were higher than those of the producers. Traders received higher share of the consumer price than the producers.

Table 4.7: Marketing margins of field pea marketing

Market participant	Purchase price (Ush/kg)	Sales price (Ush /kg)	Costs (Ush/ kg)	Total marketing margin (Ush/kg)	Net marketing margins (Ush/kg)	Percentage share in consumer price
Producers	-	386	205	182	182	46
Traders	435	944	76	509	433	54

The producers got a lower share of the consumer price than the other market intermediaries. Producers received 46 percent of the consumer price. These results were in agreement with an earlier study of Syed*et al*., (2002) that examined the comparative marketing margins for Kaja and Shin Kulu apples in Pishin. The study established that producers got a less percentage share of the final price for the two types of apples (24 and 31% for Shin Kulu and Kaja respectively) while the other marketing intermediaries got 76 and 69% for Shin Kulu and Kaja respectively. Motasem *et al*., (2010) established the same results where the share of intermediaries (51 percent) was higher than the share of producers of broilers in Jordan. The results of the field pea study reflect an inefficient, exploitative and trader friendly marketing set up.

These results however contradicted the earlier findings of Emaju, (2000) that established that producers of cow peas in Pallisa and Soroti districts got a higher percentage share of the final consumer price than the other market participants and that retailers got a higher share than the wholesalers. Enibe *et al*., 2008 established that producers of banana in Anambra state in Nigeria got a higher marketing margin (56 percent) than other market participants and Abebe (2009) established that honey producers in Atsbi Wemberta district, Ethiopia received got a higher marketing margin than the other market participants.

4.10   The Structure of Field Pea Supply Chain

Marketing channels are avenues through which agricultural products move from producers to consumers. It is the chain of intermediaries through whom the products pass from producers to consumer (Sarode, 2009). The length of the channel varies from commodity to commodity depending on the quantity to be moved, the form of consumer demand and the degree of regional specialization in production.

Figure 4.3 illustrates the flow of field peas up the chain. It also gives the size of the relationships that exist among the players by considering the percent volume of field peas flowing up the market chain through different intermediaries. The biggest volume of field peas moved between producers and consumers through wholesalers who handled 61 percent of the total produce. Producers sold most of their produce to wholesalers probably because they bought in bulk, so they were willing to buy all the farmers' produce at ago.
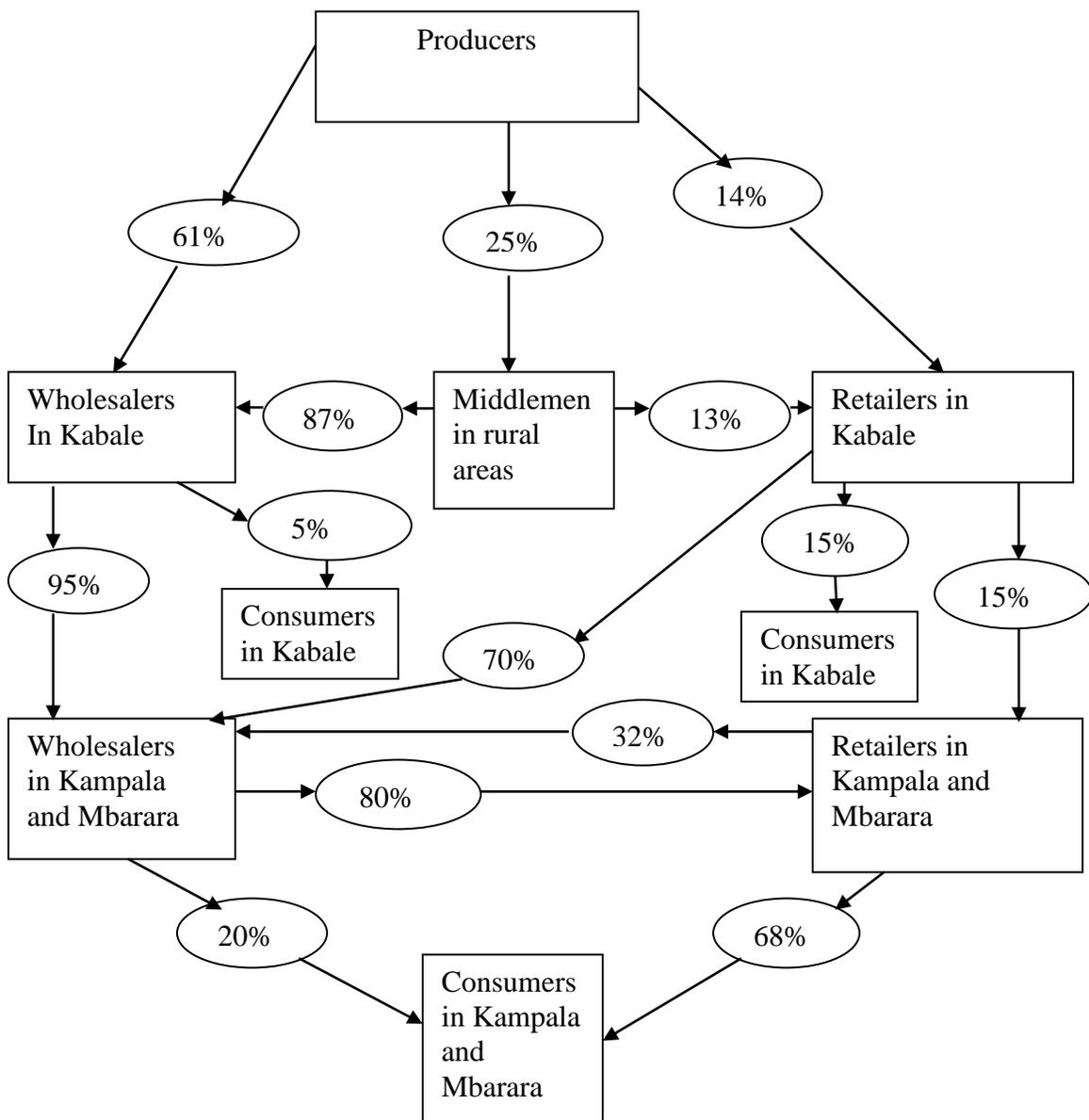
Figure 4.3: Flow of field peas along the market chain

The study results indicate that market participants purchased fieldpeas from more than one source. These findings are consistent with Emaju, (2000) whose study established that market participants in Pallisa and Soroti districts relied on more than one source to purchase cowpea.

The study established that the chain involved inter-player trading where for example wholesalers in Kabale market sold to fellow wholesalers in Mbarara and Kampala markets and retailers sold to fellow retailers. The bulk of field peas from wholesalers (95 percent) was sold to fellow wholesalers. This happened in markets distant away from the source of the field peas. Wholesalers had two other outlets where they sold their field peas; to retailers and to consumers.

There were two outlets through which retailers sold their field peas. They sold 32 percent to wholesalers and 68 percent to consumers. It should be noted that producers and middlemen did not sell field peas directly to consumers. This was probably because most of the middlemen and all the producer were in Kabale district where most of the farmers produced field peas. The study identified eight marketing channels through which field peas move up the market chain (Table 4.8).

Table 4.8: Marketing channels observed in field pea market chain

No.	Marketing channel
Channel I	Producer → Wholesaler → Consumer
Channel II	Producer → Wholesaler → Retailer → Consumer
Channel III	Producer → Middleman → Wholesaler → Consumer
Channel IV	Producer → Middleman → Wholesaler → Retailer → Consumer
Channel V	Producer → Middleman → Retailer → Consumer
Channel VI	Producer → Middleman → Retailer → Wholesaler → Consumer
Channel VII	Producer → Retailer → Consumer
Channel VIII	Producer → Retailer → Wholesaler → Consumer

Most field peas were sold through channel II. Producers preferred to sell 61 percent of their produce through this channel and in total, 32,817 kg of field peas passed through this channel monthly. This was probably due to the fact that it was handling large volumes of field peas thereby reducing operational costs for its users.

On the other hand, channel VII was the least preferred only handling 14 percent of the produce from the farmers. Through this channel, 7,371 kg of field peas were able to reach to the final consumer. Selling through wholesalers was a sure way for farmers to receive a bulk of money at once compared to when they sold to retailers who buy in small quantities.

Generally, there are indications that inter-trade within channels exists. The results as well showed that traders sold to more than one customer. It is also apparent from the results that traders tried as much as possible to buy from farmers and wholesalers probably because the prices charged by these market participants are relatively low and to sell to consumers who offered better prices

4.11   Determinants of Market Performance for Fieldpea players

To further analyse fieldpea market performance, two regression models are used, one for producers and the other for traders. The regressions aim to identify factors correlated with observed marketing margins and measure the strength of these relationships. The same dependent variable, natural log of marketing margins was used in each regression. These regressions cater for the third objective that aims to determine the factors that affect the marketing performance at each level of the chain.

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4.12   Determinants of Performance at farm level

Regression results for producers indicate that education of the farmer and experience of field pea production are significant at $p<0.1$ and $p<0.05$ whilemembership to a farmers' group is significant at $p<0.01$ and are positively correlated with marketing margins(Table 4.9). Location dummy and weekly consumption rate are negatively correlated with marketing margins and significant at $p<0.01$.

Table 4.9: Estimates of determinants of market performance for producers

Independent variables	Coef	Standard error	t-value	p-value
Location dummy	-113.960***	41.294	-2.76	0.008
Age of household head (years)	-0.825	1.470	-0.56	0.577
Gender of household head (1=male, 0 otherwise)	21.259	43.702	0.49	0.628
Education of farmer (years in school)	12.087*	7.142	1.69	0.096
Experience in field pea farming (years)	4.964**	1.921	2.58	0.012
Storage period (months)	9.88	15.295	0.65	0.521
Consumption rate (times in a week)	-141.746***	28.867	-4.91	0.000
Value addition before sale=1, 0 otherwise	81.14518	66.517	1.22	0.227
Distance to the market (kms)	-20.757**	9.605	-2.16	0.035
Total cultivatable land (acres)	0.218477	13.613	0.02	0.987
Membership to any farmers' group=1, 0 otherwise	138.734***	43.621	3.18	0.002
Amount received as credit (Ushs)	0.001	0.001	0.85	0.397
Constant	560.053***	117.904	4.75	0.000
n		72		
R^2		0.6105		

***, ** and * imply significant levels at 1%, 5% and 10% respectively.

Location dummy was included as the geographical location of the study areas. Results indicate that marketing margins reduced by Ush 113 per kg if a farmer came from Rubaya. This is possibly explained by the fact that Rubaya was the farthest of the three sub-counties in the study. This implies that the farther away from the major market (Kabale town), the less the marketing margins earned.

The more the respondent was educated, the higher the marketing margins. The marketing margins increased by Ush12per kg for every additional year of education of the producer. This is in agreement with earlier findings by Mugisha *et al*. (2004), Nyagaka *et al*. (2010) and Nganga*et al*. (2010) that established that education was positively related to adoption, technical efficiency and profit efficiency and that the more educated farmers are in position to search for and process information as well as understand the technical aspects of a technology. They further noted that farmers with more education were more efficient than their counterparts. The more educated farmers are in position to search for market information which leads to higher prices received by such farmers.

Better experienced farmers earned significant ($p < 0.05$) amounts of marketing margins perhaps because they have been in the field pea farming for a long time and they have networks with traders who can offer higher prices. Marketing margins increased by Ush 4 per kg for every additional year spent in practicing field pea farming. They could also be applying better farming methods and have mastered the field pea trading dynamics. This finding is consistent with the findings by Nganga *et al*. (2010) that indicated that farmers who had more experience tended to exhibit higher levels sales, higher prices and consequently profit efficiency.

Consumption rate significantly and negatively affected farmers' marketing margins at $p<0.01$. Marketing margins decreased by Ush 141 kg^{-1} for every time the household consumed own field peas in a week. For the farmers that consumed field peas most often in a week, left little surplus that could be marketed and thus could only afford to receive low margins.

Distance to the market is negative and statistically significant ($p<0.05$), suggesting that any additional kilometer traveled to the market reduced producers' net marketing margin by Ush 20 kg^{-1}. This finding appears to be in agreement with earlier work of Rapsomanikis and Karfakis (2007) that found that distance to the market was statistically significant in maize marketing. They reasoned that increased distance away from the market reduced farm gate prices, as farmers bear the cost of transport. The farther the market from the farm field, the more it becomes difficult for the products to reach the market (Adeogun *et al*., 2008).

In their studies, Oluwasola *et al*. (2008) and Komarek (2010) observed that indeed, geographical distance reduces the likelihood of market participation and imposes higher transport costs on rural farmers, thereby reducing their ability to sell in better but far away markets such as large supermarkets in big cities. With greater isolation, traders may be more rigid in price negotiations and as a result, offer farmers lower prices. Consequently, weak rural urban linkages often contribute to lower farm incomes, especially among households in remote rural localities.

The significant (p<0.01) and positive effect of group membership to producers' marketing margins indicates the relative importance of farmer groups in agricultural marketing. Results showed that by joining groups, producers had higher chance of increasing their marketing margins than those who were not in groups. These groups helped farmers with market information that led to better prices. Numerous studies confirm that groups are important in connecting producers to consumers thereby increasing the producers' benefits arising at various levels of the supply chain (Oluoch-Kosura, 2010). Groups also help in increasing bargaining power of producers hence their increased prices (Bosena *et al*., 2011). Oluoch-Kosura (2010) further gives evidence from sub-Saharan African countries that producer groups enabled them to get opportunities to improve their performance. Age of household head, gender of the household head, amount of credit accessed, storage period, value addition and total cultivatable land were not statistically significant.

4.13 Determinants of Performance for Traders

The model for traders explained 81percent effect of marketing margins. Results indicate that education of trader, amount of credit, membership to traders' association and value addition before sale had positive coefficients and were statistically significant, meaning that any increase in level, quantity or quality of these variables increased traders' marketing margins. Location of trader and distance to the source of field peas from the market was negative and statistically significant (Table 4.10).

Table 4.10: Estimates of determinants of market performance for Traders

Independent variables	Coef	Standard error	t-value	p-value
Location dummy	-105.409*	49.409	-2.13	0.065
Gender of trader 1=male, 0 otherwise)	59.158	42.732	1.38	0.204
Age of trader (years	-1.080	1.867	-0.58	0.579
Type of trader (1=wholesaler, 0 otherwise)	21.831	19.817	1.26	0.211
Education of trader (years)	23.524**	7.264	3.24	0.012
Number of collection points	8.106	9.978	0.81	0.440
Value addition before sale=1, 0 otherwise	35.340**	28.163	2.23	0.038
Access to storage facilities=1, 0 otherwise	145.585	91.408	1.59	0.150
Experience in field pea trading (years)	2.817	3.466	0.81	0.440
Number of traders in the market	-0.006	0.021	-0.06	0.873
Membership to any traders' group=1, 0 otherwise	118.295***	31.832	3.29	0.001
Distance to the source of field peas (kms)	-0.234**	0.068	-2.17	0.025
Amount of credit received	21.483**	12.633	2.26	0.031
Constant	8.710***	0.468	13.991	0.000
n	72			
R^2	0.640			

***, ** and * imply significant levels at 1%, 5% and 10% respectively.

There was a negative and significant effect of location of trader and marketing margins (p<0.1). Results indicated that transacting business in Kabale reduced marketing margins by Ush 105 per kg. This implies that traders received higher marketing margins in other markets other than Kabale. This was due to the fact that much as traders in Mbarara and Kampala incurred more costs of marketing, they received a much higher price that their counterparts in Kabale market.

The positive and significant effect (p<0.05) of education on traders marketing margins was consistent with expectation that more education gives market chain participants an advantage in their business dealings. These findings are consistent with the study results of Shively *et al*. (2010) that found out that education stood out as an important correlate with high profits and margins of charcoal traders.

Results of the study established that value addition before sale positively and significantly (p<0.05) affected traders' marketing margins implying that value addition before sale increased marketing margins. Value addition increased marketing margins by Ush 35 per kg sold. This could be due to the fact that value addition increases quality of the products, making them more attractive to the customers thus fetching higher prices. The value addition activities practiced included grading, sorting, rebagging, cleaning up, packing, thorough drying, spraying and winnowing. These activities could have increased the value of field peas traded leading to positive effect on the sales.

The study result indicate that membership to traders' group significantly (p<0.01) affected traders' marketing margins. Organizations are very important as they help pool strengths of individuals and exchange technological know how for collective action and to achieve economies of scale (Benin, 2004). There are several benefits that accrue to individual members of such organizations, including assured supplies of timely and desired inputs cheaply (Narrod *et al*., 2009), assured output market with often higher negotiated prices, and collective collateral for credit. This study as well confirmed the observation of Otieno *et al*. (2009) that group organization is a strategic institutional arrangement that serves to strengthen participation in commodity value chains.

Distance to the source of field peas negatively affected marketing margins (p<0.05) suggesting that any additional kilometer traveled to the source of field peas reduced wholesalers' marketing margins. In their studies, Oluwasola *et al*. (2008) and Komarek (2010) observed that indeed, geographical distance reduces the likelihood of market participation and imposes higher transport costs on market participants. This significantly affects marketing margins.

There was a positive and significant correlation between credit and marketing margins of traders at 5 percent. These results imply that an increase in amount credit accessed led to increase in marketing margins. Wholesalers used their credit to increase the level of market participation by buying bigger quantities of field peas and transporting them to the market, realizing higher marketing margins. This finding on credit support earlier work of Jabbar *et al.* (2006) that found that access to credit was positively correlated with

marketing margins of cattle, though it did not have a significant effect. In the study of dynamics of trade in fruits and vegetables, Ngiba *et al*. (2009) reported that credit enabled wholesalers to access volume discounts for buying in bulk because they bought bigger quantities with credit money and realized better marketing margins in return. With credit, the traders have the capacity to add value to their product which in turn fetches higher price.

Where as gender of trader, type of trader, number of collection points, experience in field pea trading and access to storage facilities had a positive impact on traders marketing margins, they were not significant. Age of trader and number of traders in the market had negative coefficients but did not significantly affect marketing margins.

4.14   Field pea consumption

The variables considered for the consumers included; monthly incomes, distance to the market, number of times field peas were consumed per month, amount of field peas purchased per month, price per kg of field peas, willingness by the consumers to pay the market price and if not, the amount they were willing to pay, amount and price of beans purchased per month, quality attributes considered before purchasing field peas.

Results indicate that the consumers under the study were middle income earners, and traveled an average distance of 3 kilometers to the market. Kampala consumers traveled longer distances to the market (5 km) compared to their counterparts. Results also revealed that where as consumers in Kampala purchased smaller quantities of field peas per month (11 kg), they reportedly consumed field peas more times in a month (7 times)

compared to consumers in Kabale who purchased more field peas per month (12 kg) but consumed them less times (5 times). This difference could be partly explained by the fact that kabala households are usually big compared to Kampala households.

There was a significant difference (p<0.01) in the price of field peas reported by consumers in the three districts. Consumers in Kampala paid higher prices than their counterparts in Kabale and Mbarara. Traders in Kampala could have incurred higher marketing costs, leading to higher prices charged.

The majority of consumers in Kabale (75%) and Mbarara (75%) districts were willing to pay the going market price compared to only 42 percent of traders in Kampala. This could have been due to the higher prices charged in Kampala markets. Consumers in all the districts were willing to pay less price than the prevailing market prices.

This study sought to compare field pea consumption and beans which are a perfect substitute. Results indicated that consumers under the study consumed more quantities of beans per month in all the three districts. It was also found out that the consumers purchased beans at a cheaper price than field peas. This price of beans was significantly different (p<0.01) in the three districts.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1   Summary

The study examined market chain analysis of field peas in Uganda focusing on producers, traders and consumers. The major objective of this study was to examine the general performance of the field pea marketing by determining the revenues received, the costs incurred and identifying the factors that affect field pea market performance. Specifically, the study aimed at determining the contribution of field peas to household food availability and income, determining the market performance of the field pea business along the market chain and determining the factors affecting market performance at each level of the market chain.

The study on producers was conducted in Kabale district in South-western Uganda, in Rubaya, Bubare and Hamurwa sub-counties which were randomly selected. Traders were randomly selected from Kabale central market, Mbarara central market in Mbarara, St Balikudembe market in Kampala and Nakawa market in Kampala which were purposively selected. Consumers were randomly selected from Kabale, Mbarara and Kampala districts to establish the contribution of field peas to household food availability. In total, 72 producers, 72 traders and 36 consumers were randomly selected. The analytical methods used included descriptive statistics, marketing margins, return per shilling invested and multiple regression models.

Results from the descriptive statistics showed that the mean age for producers was 36 years having spent on average four years in school. The producers had spent an average of 22 years growing field peas. Producers were found to sell most of their field peas (61%) to wholesalers and smaller percentages to middlemen (25%) and retailers (14%). The typical producers in this study were the farmers who produced field peas and were sampled in the three sub-counties under the study.

Traders on average collected their field pea from atleast two sources with wholesalers traveling on average longer distance (256 km) to the source of field pea. Cost of purchase represented by far the largest component of variable cost (93.5 percent) of the total variable costs incurred by the traders. Traders paid on average Ushs 691 for a kilogram of field peas. The second most important component of variable cost was transport that represented 3 percent of the total variable costs. A trader on average paid Ushs 18 to transport a kilogram of field peas to the place of sale. A typical trader in this study was the one who participated in purchasing and selling of field peas in the four markets sampled for the study.

Results of this study indicated that there was no effort made to add value to the field pea in form of flour, frozen and canned products; and samosas. Both the producers and traders practiced the usual differentiation activities applied to agricultural products before sale and this is what they understood to be value addition. These activities included drying, sorting/winnowing and packing.

The marketing margin kg^{-1} of field peas by producers, and traders were Ush 182 and 433, accounting for 46 and 54 percent of the consumer price respectively. Overall, traders received higher share of the consumer price compared to producers and therefore performed better in the market.

Regression results for producers indicated that, education level of the farmer, experience in field pea production, consumption rate, and membership to an association significantly increased producers' marketing margins while location of farmer and distance to the market significantly reduced producers' marketing margins.

Education level, value addition before sale, membership to traders' group and amount of credit accessed positively and significantly affected traders' marketing margins. Location of trader and distance to the source of field peas negatively impacted on traders' sales.

5.2   Conclusions

From the study, it can be concluded that where as most of the field peas produced are consumed at home, their proportion to household food availability is the same as that of beans. This means that farmers generally produce low quantities of field peas. The low production levels of field peas are attributed to declining soil fertility, poor management practices for example lack of weeding.

The producers got a lower share of the consumer price than other market intermediaries. This finding is in agreement with earlier studies such as Syed *et al*. (2002) and Motasem *et al*. (2010) who concluded that producers got a less percentage share of the final price of apples and broilers. These results reflect an inefficient, exploitative and trader friendly marketing setup.

5.3   Recommendations

For farmers to have a higher share of the consumer price, they need to add value to the field peas before sale. This calls for government's intervention to increase on the extension education and advisory services to the farmers in value addition. Farmers should be encouraged to form associations so that they can easily be trained in value addition activities like freezing and canning of field peas, production of samosas, and turning of field peas into flour.

Efforts to increase market actors' access to credit should be encouraged and emphasized. The importance of credit in production and marketing cannot be under looked. Access to credit helps farmers to have funds to practice better farming methods including better post harvest handling practices leading to higher prices and better market performance. So access to external finance should be attempted. The government and financial institutions should devise means of extending credit to farmers and traders at low interest rates and flexible collateral. Agricultural lending should be promoted to allow farmers and traders to easily access credit.

Public investment in physical infrastructure such as roads. This would reduce physical marketing costs which hinder farmers' from taking their field peas in the market and instead prefer selling at the farm. This reduces the price received by the farmers and leading to poor market performance. On the traders' side, they need to adopt bulk transportation to reduce on per unit cost of transport due to long distances.

Farmers should join groups to enjoy benefits of collective marketing. Collective marketing enhances the bargaining power of the farmers. This directly leads to increased prices of their products which in turn leads to improved market performance. It is through farmer groups that farmers receive extension services which improve the quality of their products thus attracting higher prices in the market.

5.4   Recommendations for Further Studies

Since this study concentrated on field pea marketing, there is need for a detailed study on field pea production and marketing carried out in other field pea growing regions of Uganda. There is need for a study to be carried out to decide on the optimum supply points of field peas to markets to minimize costs by applying a transportation model.

Any future studies should conduct an indepth consumer analysis to examine their motivations, preferences and behaviors and also dwell on competition of field pea with other food crops at the production and consumption levels.

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Appendix 1:   TRADERS' QUESTIONNAIRE

MAKERERUNIVERSITY
FACULTY OF AGRICULTURE
DEPERTMENT OF AGRICULTURAL ECONOMICS AND AGRIBUSINESS
MANAGEMENT

QUESTIONNAIRE FOR THE STUDY ON MARKET ANALYSIS OF FIELD PEAS
IN KABALE DISTRICT.
This study is aimed at analysing marketing of field peas in Kabale district.
Information given will be treated with utmost confidentiality.

QUESTIONNAIRE TO TRADERS.

Enumerator's Name……………………………………………………………………

Respondent's Name…………………………………………...

 Date of interview……………..

Questionnaire No………………….…

District…………………….

SECTION ONE: SOCIAL DEMOGRAPHIC INFORMATION.

1. Sex of respondent (tick):

1) Male. 2) Female.

2. Age……………… years.

3. Marital status (tick).

1) Single. 2) Married. 3) Widowed. 4) Divorced/separated.

4. How many years did you spend in school?....................years.

SECTION TWO: MARKET

5. Name of the market…………………………………….

6. Location

District…………………………..

Sub county……………………….

Parish…………………………….

Village…………………………..

7. Type of market (tick)

1) Urban market. 2) Roadside market. 3) Village/Rural market. 4) Farm level market.

8. Distance of the market from the source of field peas………………km.

SECTION THREE: GENERAL MARKETING INFORMATION.

9. Type of Trader (tick).

1) Retailer. 2) Wholesaler. 3) Both wholesaler and retailer. 4) Collector. 5) Any other

(specify)……………………………………………………………………………..

10. Type of business (tick).

1) Sole proprietor. 2) Partnership. 3) Co-operative.

11. How many field pea traders are you in this market?.........................

12. How many collection points of field peas do you have?......................

13. How many kilograms of field peas do you buy from the following?

Source	Amount in kgs	
	Fresh peas	Dry peas
Farmers		
Middlemen		
Retailers		
Wholesalers		
Others (specify)		

14. Do you sell other products other than field peas? 1) Yes. 2) No.

15. If yes what are they? How much money do you earn from the sale of these products?

Product	Income

16. For how long have you been trading in field peas?......................................years

17. From whom do you buy field peas? (tick more than one if applicable).

1) Own farm (not bought). 2) Farmers. 3) Wholesalers. 4) Retailers.

5) Others (specify)…………………………………………………..

18. How far is the source of field peas from this market? …………………..kms.

19. To whom do you sell your field peas? (tick more than one if applicable).

1) Consumers. 2) Wholesalers. 3) Retailers. 4) Exporters.

5) Others (specify)…………………………………………………..

20. Do you possess stores where you keep field peas?   1) Yes. 2) No.

21. Do you add any value before selling your field peas? 1) Yes.   2) No.

22. If yes, what are those value addition activities?……………………………………

………………………………………………………………………………………….

23. What costs do you incur along these value addition activities?

Activity	Cost per kg

SECTION FOUR: MARKETING COSTS.

24. What costs do you incur in your business?

Item	Amount
Market fees	
Loading	
Offloading	
Packaging	
Storing	
Others (specify)	

SECTION FIVE: TRANSPORTATION

25. What means do you use to transport your field peas from the sources to the market? (tick

more than one where applicable).

1) Head. 2) Bicycle. 3) Vehicle. 4) Others (specify)…………………………………...

…………………………………………………………………………………………………

26. What factors determine the means of transport used?…………………………………….

………

SECTION SIX: PRICES

27. At what price (in shs) do you buy field peas?

Source	Price	
	Fresh Field Peas	Dry Field Peas
Farmer		
Middleman		
Wholesaler		
Retailer		

28. How many kgs and at what price per kilogram do you sell your field peas?

Customer	Fresh Field Peas		Dry Field Peas	
	Quantity	Price	Quantity	Price
Consumer				
Retailer				
Wholesaler				
Exporter				
Others (Specify)				

29. Are customers always willing to pay this price? I) Yes. II) No.

30. If no what price per kilogram are they willing to offer?

Customer	Price offered
Consumer	
Retailer	
Wholesaler	
Exporter	
Others (specify)	

SECTION SEVEN: MARKETING CONSTRAINTS.

31. What problems do you face in marketing your field peas? What solutions do you suggest?

Problem	Solution

32. Do you experience any field pea losses during marketing? I) Yes. II) No.

33. If yes during which operation and what are the causes of the losses?

Marketing Operation	Cause of losses

34. Do you belong to a traders' association? 1) Yes. 2) No.

35. If yes, do you practice collective marketing? 1) Yes. 2) No.

36. Have you ever acquired a loan/credit for your business? 1) Yes. 2) No.

37. If yes, from where? (tick)

1) Bank. 2) Microfinance Institution. 3) Cooperative society. 4) Others (specify)………

……………………………………………………………………………………………………

38. How much did you acquire?...

Appendix 2:   **PRODUCERS' QUESTIONNAIRE**

MAKERERE UNIVERSITY
FACULTY OF AGRICULTURE
DEPERTMENT OF AGRICULTURAL ECONOMICS AND AGRIBUSINESS
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 Date of interview……………..

Questionnaire No………………….…   District…………………….

SECTION ONE: SOCIAL DEMOGRAPHIC INFORMATION.

1. Household location: Sub county…………………Village…………………….

2. Sex of respondent (tick):

1) Male. 2) Female.

3. Age……………..Years.

4. Marital status (tick).

1) Single. 2) Married. 3) Widowed. 4) Divorced/separated.

5. How many years did you spend in school?.............................years

6. How many years have you been practicing farming?......................years.

7. How many years have you been practicing field pea farming?......................years.

8. How many bags (100kgs) do you produce in a year?

Season	Area planted	Quantity harvested
First season		
Second season		

9. Of the total amount of field peas produced, how many kilograms do you use for the

following?

Use/purpose	Quantity/amount(kgs)	
	First season	Second season
Home consumption		
Sell		
Other uses (specify)		

10. Do the quantities harvested in a season take you to another season? 1) yes   2) No

11. How often do you consume/prepare field peas in a week?.....................times

12. Do you own Stores? 1) Yes. 2) No.

13. If no, give reasons why you do not store field peas…………………………………………

……………………………………………………………………………………………………...

14. If yes, for how long do you store field peas before selling and why?...............................

……………………………………………………………………………………………………...

15. What problems do you face while storing your field peas? (tick)

I) Storage space II) Storage containers III) Storage pests IV) Others……………………

16. Do you experience field pea losses during storage? 1) Yes 2) No.

17. If yes how much field peas (kgs) do you lose during storage?..

18. Do you add value to your field peas after harvest? 1) Yes. 2) No.

19. If yes, what are these value addition activities and costs incurred?

Activity	Cost

20. What are your sources of household income in order of importance?

Source	Rank

21. What are your sources (crops and animals) of household food in order of importance?

Source	Rank

MARKETING INFORMATION

22. To whom do you sell your field peas? (tick).

1) Consumer 2) Retailer 3) Wholesaler 4) Middlemen/collectors 5) Exporters 6) others

(specify)…………………………………………………………………………………....

23. How many kilograms of field peas do you sell and at what price?

Season	Quantity sold (kgs)			
	Fresh	Price per kg	Dry	Price per kg
First season				
Second season				

24. Are your customers always willing to pay this price? 1) Yes 2) No.

25. If no, what price are they willing to pay?

Customer	Price	
	Fresh Field Peas	Dry Field Peas
Consumer		
Retailer		
Wholesaler		
Exporter		
Middlemen		
Others (specify)		

26. What is the distance from your home to the market………………….kms.

27. Do you transport your field peas to the market? 1) Yes 2) No.

28. If yes, what means do you use and how much do you pay?

Means of transport	Cost

29. What constraints do you face when marketing your field peas? Suggest any possible

solutions.

Constraint	Solution

30. What costs do you incur to produce field peas?

Type of cost	Cost in shs
Costs of seeds	
Planting	
Harvesting	
Transport from the garden	
Others (specify)	

31. What costs do you incur in the marketing of your field peas?

Type of cost	Cost in shs
Value addition	
Transport to the market	
Market dues	
Loading	
Offloading	
Others (specify)	

32. Do you belong to a farmers' association? 1) Yes. 2) No.

33. If yes, is your group involved in marketing? 1) Yes. 2) No.

34. If yes, do you practice collective/Group marketing? 1) Yes. 2) No.

35. If yes, what commodities do you market?..

………………………………………………………………………………………..

36. Where do you sell your commodities?...

37. How often do you sell your commodities?...

38. Have you ever acquired a loan/credit for your business? 1) Yes. 2) No.

39. If yes, from where did you get the loan?

1) Bank. 2) Microfinance Institution. 3) Cooperative society. 4) Government poverty

alleviation schemes 5)Others (specify)…………………………………………………

40. How much did you acquire?...

Appendix 3: CONSUMERS QUESTIONNAIRE

MAKEREREUNIVERSITY
FACULTY OF AGRICULTURE
DEPERTMENT OF AGRICULTURAL ECONOMICS AND AGRIBUSINESS
MANAGEMENT

QUESTIONNAIRE FOR THE STUDY ON MARKET ANALYSIS OF FIELD PEAS IN
KABALE DISTRICT.

This study is aimed at analysing marketing of field peas in Kabale district.
Information given will be treated with utmost confidentiality.

QUESTIONNAIRE TO CONSUMERS.

Enumerator's Name…………………………………………………………………

Respondent's Name…………………………………………...

 Date of interview……………..

Questionnaire No………………….…District…………………….

SECTION ONE: SOCIAL DEMOGRAPHIC INFORMATION.

1. Household location…………………………………………………………………

2. Sex of respondent (tick):

1) Male. 2) Female.

3. Age……………..Years.

4. Marital status (tick).

1) Single. 2) Married. 3) Widowed. 4) Divorced/separated.

5. What is your family size?..

6. Number of years in school……………………….Years

7. What is your profession?..

8. What is your income level per month?...

9. What is your tribe?...

10. Do you consume field peas in your home? 1) Yes 2) No.

11. If yes, where do you buy field peas? 1) Market 2) Farm gate.

12. From which market do you buy field peas?...

13. How many times in a month do you purchase field peas?………………………..

14. What period of the year do you consume most peas?..

15. How many kilograms of field peas and beans do you buy a month and at what price?

Peas	Quantity (kgs)	Price (shs)
Fresh		
Dry		
Beans	**Quantity (kgs)**	**Price (shs)**
Fresh		
Dry		

16. Is the above the price you are willing to pay for peas? 1) Yes 2) No

17. If no, what price are you willing to pay?...

18. What is the distance between your home and the market?..kms

19. What problems do you face while purchasing field peas?..

20. What qualities do you look for while purchasing field peas?..

………………………………………………………………………………………………..

21. Do you store part of the field peas purchased from the market? 1) Yes 2) No