FACTORS AFFECTING TRADER PREFFERENCES FOR BEANS IN ZAMBIA

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UNZA

2013

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A Research Report Presented to the Department of Agricultural Economics and Extension of the University of Zambia

BY

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In Partial Fulfillment of the Requirements for the Degree of Bachelor of Agricultural Sciences

Acknowledgements

I would like to acknowledge my supervisor Dr. GelsonTembo and Mrs. Mwiinga for guiding me throughout the research as well as all the lecturers in the School of Agricultural Sciences for their constructive comments and suggestions. I would also like to acknowledge the Pulse Value Chain Initiative (PVCI) for the help offered to me and my two friends Elizabeth Chishimba and Robert N'hlane (The warriors).

I dedicate this study to late mother, Mrs. Feristus Mkandawire Sambo for raising, and educating me and her support and encouragements towards this great endeavor. May Her Soul Rest In Internal Peace (MHSRIP). Special thanks go to My Dad Mr. Morris Sambo and all my brothers and sisters for their support and encouragement. May I just say thank you and GOD bless you all? To God be the Glory.

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Abbreviations and Acronyms

CDF	Cumulative Distribution Function
CIAT	International Centre for Tropical Agriculture
COMESA	Common Market for Eastern and Southern Africa
CSO	Central Statistics Office
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
PVCI	Pulse Value Chain Initiative
RESET	Regression Specification Error Test
SADC	Southern Africa Development Community

ABSTRACT

Factors Affecting Trader Preferences for Beans in Zambia

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Studies on preferences in developing countries remain poorly understood because little research has been done to ascertain their impact on trader level incomes and economic development. Trader choice studies are of great importance in improving both the welfare of traders and increasing food security through efficient marketing and as a means of reducing poverty. Despite this knowledge, the main challenge is how to helpincrease income levels of traders and also how to reduce the transaction costs they face in the market.The overall objective of this study was to identify factors that affecttrader preferences for beans and their effect on specific beans varieties.

This study used the Probit model to analyze factors that affect trader choices for beans varieties with as sample size of 278 for both beans and cowpea traders. The estimation of the Probit model was done by using the beans varietyoptions as dependent variables and factors such as human capital, physical capital, beans coat color, level of trust, level of insects, minimum level of damage, farm-gate price, other beans varieties and grain size were used as independent variables.

The results indicated that the key factors which positively influence the choice of beans varieties are;physical assets: ownership of a car (p-value=0.015) for Lundazi beans, ownership of a television (p-value=0.007) for Solwezi beans, coat color of beans (p-value=0.002; 0.002) for Lusaka and Solwezi beans respectively, level of trust (p-value=0.081) for Lundazi beans, other variety type (p-value=0.006) for Solwezi beans, low levels of pests, insects and diseases (p-value=0.006) for Solwezi beans. Also, the results indicated that the factors that negatively influence the choice of ordering beans varieties are: level of education (p-value=0.049) for Lusaka beans, farm-gate price (p-value=0.082; 0.012) for White and Yellow and Lundazi beans respectively and grain size (p-value=0.000; 0.000) for Lusaka and Solwezi beans respectively.

Based on the above findings, there is need to invest in infrastructure, institutions, education, and provides loans to expand traders businesses. Concerted effort is also needed for the government to work hand in hand with research institutions to develop varieties with characteristics that are preferred by traders and consumers. There is need also to form coordinated linkages through Market Associations to enhance trusts and mutual relationships between traders and farmers.

CHAPTER ONE
INTRODUCTION

1.1 Introduction and Problem Statement

The consumption of beans in Zambia has increased over the years. According to the Central Statistical Office's (CSO's) crop forecast survey report, consumption of beans increased from 42,000 metric tons (MT) in 2007 to 83,000 MT in 2009 indicating a 97.6% increase in bean consumption. This increase is due to, among many other factors, a rise in population, government sensitization on the importance of pulse crops, and the fact that beans is a cheaper source of proteins than meat (CSO, 2006). Beans also have higher protein content than meat. Raw meat on average contains 25% protein while common white beans contain about 31.6% protein (William 2007; Mutambuka *et al.* 2012).

Beans can be used as a source of protein for the poor to provide the needed nutrients. Making beans readily available to all Zambians is one thing, but providing beans that is highly nutritious with the required characteristics is another. In Zambia, most agricultural commodity markets are not fully developed hence they lack grades and standards. One such market is the beans market. Grades and standards are important parameters of product quality. However, there is a lack of empirical evidence on the quality of beans sold on these markets. Furthermore, the characteristics that traders consider when purchasing beans are not known.

Most studies that have been done on preferences have been at consumer level and have focused on; cost-effectiveness (Langyintuo *et al.* 2004), specific species/varieties and their purposes (Jabbar 1997; Mundua 2010), cooking quality characteristics (Ndjeunga and Nelson 2005), effects of media information on consumers demand for organic fruits and vegetables (Smed 2012) and deriving economic value of upland rice traits (Dalton 2004). Trader preferences have been studied indirectly using quality control studies. These studies have focused on issues such as information flow about quality attributes along the value chain (Fafchamps *et al.*, 2008), impact of publicly subsidised agriculture extension services on yields and product quality (Maftioli *et al.*, 2011) and quality in relation to international trade (Saitone 2012). No study, to the best of our knowledge, has considered explicitly bean trader varietal preferences and choices needed to order beans. This warrants further research to bridge the gap.

1.2 Objectives

General Objective

The overall objective of this study was to identify factors that affect bean trader preferences for beans and their effect on specific beans varieties.

Specific Objectives

1. To identify the factors that traders consider when purchasing beans.
2. To determine whether these factors influence the choice of specific beans varieties.

1.3 Hypothesis

1. Factors such as grain size, education level and farm gate price significantly influence the choice to order beans.

1.4 Rationale

It was vital to conduct this study as it were going to help enhance the profits of traders as well as farmers. Knowledge of factors that affect trader preferences may help reduce wastage on the part of farmers as they would sell beans that would be preferred by traders. In additional, farmers would also have a clear knowledge of their markets served and attributes of the product that should be sold in these markets. Trader's transaction costs would also be reduced thereby enhancing and increasing the take home income of the traders and their overall welfare.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

In this section we review studies that are relevant to this study. Several studies on preferences have focused on farm input demand; consumer choices for agricultural commodities and preferences regarding traders have been indirectly studied using quality control programs.The literature reveals weaknesses and a dearth in empirical evidence of factors that affect trader preferences and their effects on the profitability of the bean trade enterprise. Sub-section 2.2 will cover on empirical studies for preferences and profitability analysis while section two covers onfactors that affect preferences for agricultural commodities with section three focusing on common methodologies that are used to conduct studies of preferences. We end this section by concluding on the above subject.

2.2 Factors that Affect Trader, Farmers and Consumers Preferences for Agricultural Commodities/ Inputs

A number of factors have been identified to affect preferences for agricultural commodities. These factors may be important in the preference functions of farmer, trader and/or consumers. Those factors that affect the farmer's preferences are; input characteristics or characteristics that consumers value, public extension services, color, elongation, tenderness, and height and plant cycle length, yield, labor, land tenure, access to institutions and markets, wealth, and farm level inputs, sex, level of education and age of the farmer (Helfand and Levine 2004; ICRISAT 2009; Dalton 2004). Those factors that affect trader preferences include; quality standards such as uniformity in size, grain shape, cleanliness, minimum damage, supplies, sales, prices of commodity, price of related commodities(substitutes or complements), transaction costs, search costs, level of education, sex and age (Jabbar 1997; ICRISAT 2009 ; Gabre-Madhin 2001). Consumer preferences are generally affect by cooking quality characteristics such as chewability, tastes, size, color, ease of preparation (Ndjeunga and Nelson 2005; Fafchamps *et al.*, 2008).

Mundua (2010) found that sex, variety type and education level were significant to explaining trader preferences. The study indicated that more women are involved in cowpea trading and that

66% of the women cherish this crop while the participation of men was insignificant. In a more similar study conducted by ICRISAT in 2009 on improving grain regumes in Ethiopia, men involved in beans trading constituted about 87% while women sell small quantities of beans as retailers in markets. From the study earlier mentioned by Mundua (2010), though similar, sex was significant for female traders but insignificant for female trader in a study done by ICRISAT. Furthermore findings showed that variety type of beans were significant to explaining trader preferences. For example in a study from Malawi by CIAT, a variety known as phalombe revealed a positive relationship between variety type for beans and preferences. Similar to the above findings by CIAT, Mundua (2010) also revealed that both consumers and traders were willing to pay a high premium for white cowpea varieties from their sellers. Therefore white varieties such as Ebalata were significant at explaining preferences. Also in a study by Jabbar (1997), it was revealed that species/ breed types of goats sold in the market were significant.

Fafchamps *et al.*, 2008 identified quite a number of attributes that were significant in a study on non-staple foods of Indian markets which included mangoes and potatoes. Color, shape and size were revealed to positively influence preferences while smell (level of damage) was observed to negatively affect preferences for all the crops. Unobservable attributes were seen not to positively impact on quality. In another study by Ndjeunga and Nelson (2005) on cooking quality characteristics, like in the earlier study, colors were observed to positively and significantly influence preferences. Both traders and consumers in the millet value chain were sensitive to the color of millet they choose on the market. Similar to a study by Fafchamps et al., (2008), insect damage or level of damage was observed to negatively influence Trader preferences (Mundua 2010, and Langyintuo 2004).

Transaction costs, Search costs, sales, price of a commodity, price of other related commodities and sales are also important factors that influence choice for the type beans or any agricultural commodity to purchase. In a study by Eleni Z. Gabre-Madhin in 2001 that assessed the influence of market intermediaries in the grain markets of Ethiopia, it revealed that search costs are important in determining trader welfare. Traders with high search costs in the market tend to lose out on welfare gains and that these costs significantly influence preferences. Similar but two separate studies showed that the price of cowpea, price of related commodities and sales were

significant to explaining the number of goats and sheep to be purchased or the quantities of cowpea demanded respectively (Jabbar 1997; Langyintuo 2004).

2.3 Empirical Evidence on Varietal Preferences by Traders

An important observation from the literature is that trader preferences are stumbled upon as a minor part of other studies; as opposed to being the major focus. In most cases, trader preferences are indirectly studied through quality control programs, quality obtained through extension services and quality of products in relation to international trade (Fafchamps *et al.*, 2008; Maftioli *et al.* 2011; Saitone 2012). In their study of quality control in non-staple food markets - which focused on the flow of information about quality attributes along the value chains of maize, potato, tomato, mango, and turmeric in India - Fafchamps *et al.*, (2008) observed that observable attributes flow freely from farmers to traders and through to consumers while unobservable traits do not flow quite freely. It was observed that traders along the chain were more interested in maize with unbroken grain, tomatoes that were firm, potatoes that were large in size, mangoes with an appealing color and turmeric with unbroken fingers. These features were significant at explaining price differentials among these crops. This provided new but relevant knowledge about product quality that traders unlike growers of these crops grant more weight to observable attributes than unobservable attributes such as sanitary factors which includes: pesticides, postharvest handling and fumigation. Similar conclusions have been drawn by studies on African pulse trade. Langyintuo *et al* (2004), for example, contends that cowpea traders in Ghana and Cameroun are interested in large-grain cowpea varieties, and specific color attributes. The study emphasized on the importance of breeding varieties that are acceptable by both consumers and traders in terms of the prices they fetch on the market. Also Dalton (2004) contends that, Prices are important for establishing the economic value of enterprises.

2.4 Common Methods for Preferences Analysis

Preference analyses are both vital and common to pulses and other commodities. Most studies involving preferences for either consumers or traders use either multiple linear regression analysis or hedonic price analysis. The hedonic price analysis is more common to studies that involve consumer preferences. The hedonic price model is generally used to determine the effects of various factors on price with the underlying hypothesis that products have utility bearing attributes and that the values of those attributes contribute to the price of the product (Jabbar1997; Languatuo 2004; Fafchamps *et al* 2008). However several studies on trader preferences use multiple regression analysis. This is because the dependent variable can be regressed on several variables that affect trader preferences and their marginal effect correctly and accurately captured. For example in a study done in kano state of Nigeria on cowpea value chain, regression analysis used trader preferences, consumer preferences and profitability as dependant while being regressed on gender, age, and quality characteristics. Furthermore, the multinomial logit models and probit models have also been used in many other preferences and farmer participation and adoption studies (Zivonomoyo and Mukarati 2013).

2.5 Conclusion

From the literature above, it was clear that most studies on preferences are done at consumer level, and at trader level but mainly using quality control studies. Therefore, there was still a dearth in knowledge with regards to factors that affect preferences at market and how these factors affect profitability. Also, it was very clear from the literature that most of the studies on trader preferences are done mainly on other agricultural commodities and not beans under this study. Furthermore, we saw that several factors that affect trader preferences were not covered or studied under the above research. Some of these factors included: ownership of assets, affiliation to an association, distance, transport cost and storage costs. That emission on very important factors warrants further research to be conducted. Finally, it was clear enough that the most widely used methods in preference analysis are multiple regression analysis, hedonic price analysis, Multinomial logit model and Probit model.

2.6 Conceptual Framework

Random Utility Framework is used in economics to model discrete choice decisions, for example, the choice of ordering specific beans varieties. According to the economics of choice theory (Becker 1962), choice decisions are determined by utility level U_{ij} (maximizing for consumer welfare and maximizing profits for the producers such as traders) that consumers/producers i derives from choosing alternative j.

A trader will choose whether or not to order a given beans variety depending on the relative utilities associated with two chooses. Hence some probabilities are used in order for a trader to choice a given variety j . On the other hand, the decision of the trader to choose or order a given variety is taken as a binary outcome given by: (U_{ij})

$$J_i \in \mathrm{j} = \begin{cases} 1 \text{ if } \mathrm{V} > 0 \\ 0 \text{ otherwise.} \end{cases}$$

Given that other factors are constant, a trader is assumed to select the alternative that provides the greatest utility, in this case maximizing income. Thus, the utility derived from ordering will motivate the trader to order in beans/crop markets only if it is greater than that derived from the other alternatives.

CHAPTER THREE
METHODS AND PROCEDURES

3.1 Empirical Model

The study used the Probit Model to analyze factors that that affect trader preferences and choices for beans varieties. Using the utility or choice theory outlined above, we estimated probit models to examine factors that affect trader preferences and choices for beans. A Probit Model was used in this study instead of Multinominal Logit model because the ordering/purchase of varieties in question was not mutually exclusive and because of the limited relevant sample size, Probit Model was expected to be superior to the logit model. The probit model was given as:

$$\boldsymbol{Prob}(w = 1) = \Phi(\beta + \boldsymbol{\delta}'\boldsymbol{X} + \varepsilon),$$

Where $\boldsymbol{w}$ a dichotomous variable is equal to one if the trader choices or orders a given variety and zero otherwise; $\boldsymbol{X}$ isa vector of trader choices and covariates which are postulated to influence trader preferences. These factors include : proxies to measure human capital such as education, marital status, trader sex and age; physical assets such ownership of a house, car, cell phone, television, bicycle and wheelbarrow, grain size, coat colour of beans, trader level of trust, farm gate price, minimum level of breakage, level of insect , pest, and diseases. Φ is a normal cumulative distribution function (CDF), ε is the error term, β and $\boldsymbol{\delta}$ are parameters and vector of parameter to be estimated.

3.2 Sampling

3.21 Area of Study

The survey was conducted in Lusaka and Chipata districts. In Lusaka, three markets were purposively selected, including Soweto, Chilenge and Mtendere. Soweto market was selected because it represents the largest beans and cowpeas trader market. The Soweto market is also the largest market in the region where all traders from both SADC and COMESA traders meet for trading.Being the single largest market in Zambia, Soweto market has stores and stands numbering well over 7,200 with estimated daily revenue of US$123,000. The products traded at

the market range from agricultural products to groceries, hard ware, wood products, second hand clothes and many more. It is a prominent distribution centre for most of the goods coming into Lusaka especially agricultural commodities from other provinces/towns and also from other countries like South Africa, Zimbabwe and Tanzania (Kanchela and LaFleur 2001).However, both the Chilenge and Mtendere markets were selected to act as representatives of small level markets for beans trading in Zambia. The Chilenge market in particular represented common markets; those markets that are more prevalent among middle income households. The Mtendere market was selected to represent those markets more prevalent among low income households. This in effect allowed for any kinds of comparisons across these markets. Furthermore, this helped us to understand what happens as beans leaves Soweto market to these smaller markets. Primary data was also collected in the Chipata markets. The Chipata market in which data was collected is the Saturday market. In the Chipata market, a pilot study was done and this presented a reason why this study did not use the data collected in this market. Only a sample of 25 traders was collected. The data collected was not as detailed as that collected in the Lusaka markets.

3.22 Sampling Method

Stratified Random Sampling was used to obtain a sample of 246 beans and cowpea traders. The 246 beans traders composed of traders from Soweto market, Mtendere, Chilenge market and the Chipata districts. Twenty five (25) beans traders from Chipata were interviewed. This was to provide us with the crew of the farm gate prices of beans and also on information of whether farmers grow their own beans. In Lusaka three markets were selected. In Chilenge all the 39 trader of beans were interviewed and in Mtendere all the 29 traders were interviewed. In Soweto market 153 traders were interviewed for both beans and cowpea trader. Traders for beans in Soweto market were more than the cowpea traders; hence for all cowpea traders a census was conducted.

This sampling was done in two – stages. The first stage involved the listing all the beans and cowpea traders and their characteristics i.e. trader type. This gave as an idea of the total number of traders involved in selling beans and cowpea in these markets. Within first stage, all the names in the listing book were entered in STATA to determine who among these traders were: Exporters, Imports, Retailers who purchase beans within the market, and Retailers who purchase

from outside the market, Wholesalers, Wholesalers/Retailers, cowpea traders and beans traders. Stage two involved sampling of all the retailers in the market. These retailers had a tendency of sitting close to each other as they sell beans. This would have replicated our results. However for the other categories of traders, a census was conducted on them. This increased the chances of including all trader types in the sample. A sample of 246 was selected from all the three markets within Lusaka and Chipata districts. Weights were then applied during the analysis because retailers at Soweto markets were sampled while for other traders a census was conducted.

Table 1: The Table Showing the Categories of Traders

Trader Category	**Number Listed**	**Number Interviewed**
Pure retail bean traders: local procurement	90	58
Pure retail bean traders but procures from outside	24	24
Wholesale bean traders: no exports, no institutional buyers	41	41
Wholesale bean traders no exports, institutional buyers	47	47
Export bean trader	21	21
Cowpea traders	55	55
Total	278	246

Source: Analysis (2013)

3.23 Data Collection

Data was collected from both Lusaka and Chipata districts using structured pretested questionnaires and also through the use of Personal Interviews with the traders. The data included all information concerning the variables that are required to carry out a Probit Model analysis on trader preferences. Data on Traders demographics, Family information, the several business activities they do which included both beans and cowpea selling activities and other business

activities they do, the revenue collected from the sale of the activities and their associated costs, perceptions of trading environment, constraints faced by these traders, information on assets and locations where they procure beans and cowpea from and trading barriers. The data was collected by Martha Sanderson from the University of East Agria, Kelvin Mulungu a student at the University of Pretoria, Jairos Sambo , Elizabeth Chishimba and Robert N'hlane all being the students from the University of Zambia. During the analysis of data in STATA and its interpretation, several personal interviews were carried out to probe more from traders so as to establish certain causal relationships that seemed meaningless from the results obtained.

3.24 Data Analysis

The Probit Model analysis was done or carried out in a statistical package known as STATA. The study used or estimated four probit models for each of the beans varieties namely: White and Yellow, Lusaka, Solwezi and Lundazi beans. However, it must be noted that Kabulangati was not used in any of our models because nearly a 96% of trader sell Kabulangeti in the market. As a result a flat Log Likelihood Function resulted when estimating a Probit model for Kabulangeti. After running all the four probit models, the marginal effects were obtained for all the models. As a way of specifying and testing the significance of the probit models, all the four models were regressed to correct for Omitted Variables, Heteroskedasticity and Multicollinality. The Ramsey (1969) Regression Specification Error Test (RESET) was done on all the four models to check if variables were omitted. Also the Breusch-Pagan/Cook-Weisberg test was done to check if Heteroskedasticity was a problem. For a White and Yellow probit model there were no omitted variables at 1% with a robust regression to correct for Heteroskadasticity and also the vif values were less than 10 indicating that Multicollinality was not a problem. For Lusaka beans' probit model there were no omitted variables at 1%, 5% and 10% and also Multicollinality and Heteroskadasticity were not a problem after regression. This is because the vif value was less than 10 and we had equal variances in the model. For Solwezi probit model, there were no omitted variables at 1% and 5%, Multicollinality was not a problem after regression but robust standard errors were obtained to correct for Heteroskedasticityand for Lundazi beans probit model there were no omitted variables at 1%, 5% and 10% significance level, Multicollinality was not a problem after regression but a robust model was estimated, hence taking care of

Heteroskedasticity. All the four probit models were significant at at least 10%. More information on the significance of the model is shown in table 5.

CHAPTER FOUR
RESULTS AND DISCUSSION

4.1 Introduction

This section presents the findings of the study as well as the interpretation and their discussion. We begin by first describing the characteristics of the traders followed by descriptive statistics of independent variables and then the findings of Probit Models.

4.2 Trader Characteristics

Table 2 describes the general characteristics of traders in Soweto, Chilenje and Mtendere markets. The Soweto market represented the largest numbers of all trader categories in the three markets. In fact, 100% of non-export wholesale traders who sale to institutional buyers were from Soweto market. Soweto market had about 92% of traders who are exporters and over 91% of non-export traders who do not sell to institutional buyers. On the other hand, Mtendere and Chilenge markets shared about 40% of pure retailers in total who procure outside the markets respectively.

Table 2: Categories of Traders in the Mtendere, Chilenje and Soweto Markets

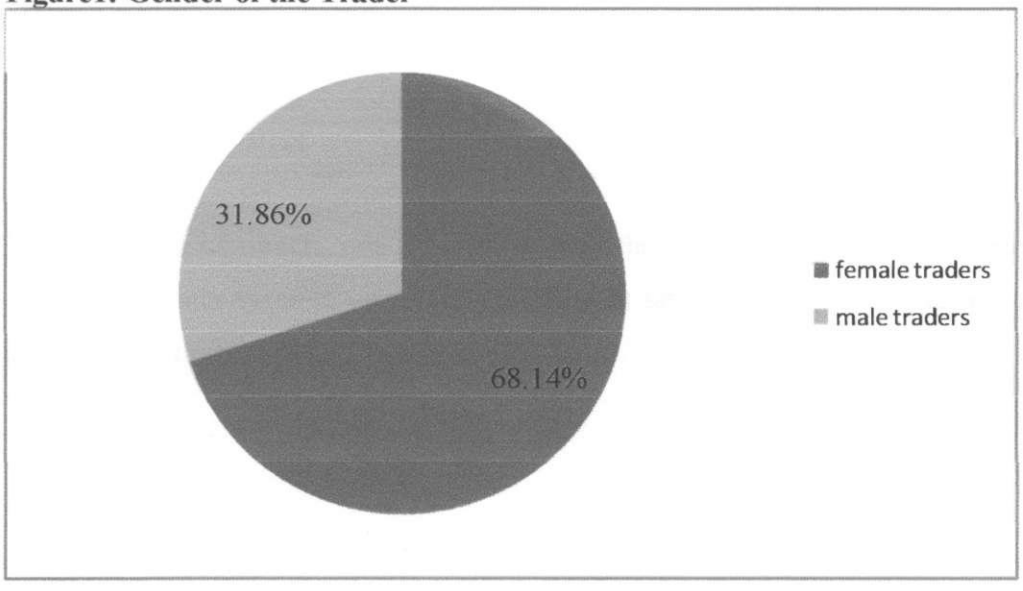
	Markets from which traders operate		
Categories	**Soweto**	**Chilenje**	**Mtendere**
Pure retailer who procure within	63.93	18.03	17.21
Pure retailer who procure outside	61.9	23.81	14.29
Non-export wholesalers who do not sale to institutions	91.3	4.35	2.17
Non-export wholesalers who sale to institutions	100	0	0
Export beans traders	91.67	0	8.33

Source: Analysis(2012)

Collectively, in all the three markets female traders were as twice as the males traders. The female traders accounted for 68.14% while the male traders were about 31.86% showing that

female traders are more involved in beans trading in Zambia. Figure 1 shows the distribution of traders by sex. The econometric results in Table 3 support these findings. We also found that that traders who are married especially women are more likely to order all the four different varieties. This could be that their husbands are supportive to their spouse's businesses because they add more income in these families. The results of this study were in accordance to the study carried out by Mundua in 2010 and ICRISAT in 2009 which indicated that women were more involved than men in both the beans and cowpea businesses.

Figure1: Gender of the Trader



Source: Analysis (2012)

All the three markets showed that traders have attained education up to upper primary which was from grades five (5) to seven (7) of Zambian curriculum with over 52% of those traders being pure retailers who procure from outside the market and about 45.65% of those traders being non-export wholesalers who did not sell to institutional buyers. Table 3gives a tabulation of the categories of trader's education level.

Table 3: Education Levels of all Trader Categories

	Education Level of the Trader					
Bean Trader Categories	**None**	**Lower pri**	**Upper primary**	**Junior secondary**	**Senior secondary**	**Tertiary**
Pure retailer who procure within	9.02	10.66	35.25	21.31	22.95	0.82
Pure retailer who procure outside	14.29	0	52.38	23.81	9.52	0
Non-export wholesalers who do not sale to institutions	2.17	4.35	45.65	32.61	15.22	0
Non-export wholesalers who sale to institutions	0	3.13	34.38	43.76	18.75	0
Export beans traders	0	8.33	41.67	33.33	16.67	0

Source: Analysis (2012)

The mean age of traders was 37.8 years with the eldest trader being 64 years. The standard deviation for age variable was 8.89 as shown in table 4.Theage variable was actually used to proxy for the trader's experience in trading beans.

4.3 Descriptive Statistics of the Study Variables

Table 4 presents the descriptive of all variables that were used in the study by showing the mean and their standard deviations.

Table 4: Descriptive Statistics

Variable	Description	Mean	Std. Dev.
Age	Age of the Trader	37.82073	8.891741
Tradersex	Sex of the Trader	.3183673	.4667965
Tedu	Level of Education of the Trader	2.486726	1.075919
Mast	Marital Status of the Trader	2.30531	1.162246
Gsize	Size of the Grain of Beans	.7433628	.437747
Fgprice	Ordering Price for Beans	.7300885	.444889
Binsect	Level of Insect, Pests& Diseases	.9115044	.2846447
Lvtrust	Amount/Level of Trust of the Trader	.7142857	.4526787
Other_vari~y	Other Variety types of Beans	.0857143	.22805147
Mindamage	Minimum/Breakage Level of Variety	.9734513	.16117
Bcol	Color of beans Variety	.8716814	0.3351866
Dradio	Ownership of the Radio	.8000000	.4008188
Dtv	Ownership of a Television	.8163265	.3880103
Dshop	Ownership of a Shop	.1061224	.3086248
Dcar	Ownership of a Car	.0204082	.1416813
Dhouse	Ownership of a House	.2693878	.4445499
Dbike	Ownership of a Bicycle	.3102041	.463524
Dwheelba	Ownership of a Wheelbarrow	.3061224	.4618247
Dcell	Ownership of a Cellphone	.9061224	.2922553

Source: Analysis(2012)

4.4 Interpretation of Study Results

Our econometrics results in table 5 showed that Education level of the trader tend to decrease the probability of choosing or ordering Lusaka beans. A unit increase in years of schooling will results in 5.91% decrease in ordering Lusaka beans. This was also supported by the results presented in table 3 on trader's categories of education which showed that most traders have only attend an upper primary education. Since the results are significant for Lusaka beans, it meant that traders are unable to utilize market information and take advantage of market opportunities. There was also a negative relationship between education level and choice of White and Yellow, Lundazi and Solwezi beans though the effect was insignificant.

The results showed a negative relationship between farm gate price and the probability of ordering Lundazi beans. Hence, a one kwacha increase in the farm gate price decreases or reduces the probability of ordering Lundazi beans by 13.2%.The negative relationship exhibited by Lundazi beans was in accordance with the law of demand (Ahuja, 2006). Traders would buy less of this variety if its price increases.However, there was a positive relationship between farm gate order price and the probability of ordering White and Yellow beans. It is possible that White and Yellow variety has a nearly perfect inelastic demand curve. Since it is significant at ten percent, a one kwachaincrease in price of White and Yellow beans increases the probability to order by 8.93%. This means that even if the price was to increase, traders will still order White and Yellow beans. According to an interview we conducted with the traders, they said that White and Yellow beans are liked by their customers so much in comparison to the other varieties. This is because White and Yellow beans have been an indigenous variety for years in the history of Zambia. Therefore, even if the price was to change by a small amount, traders will still demand more of White and Yellow beans in comparison to the other three varieties.

The results showed a positive relationship between beans coat color and the probability of ordering Lusaka, Solwezi, and Lundazi beans. Beans color is necessary in determining the choice of ordering beans by traders. Beans color for the above three varieties increases the probability of ordering them by 33.7%, 34.4% and 25.3% respectively. After some interviews and Direct Observations with some traders, they indicated and mentioned that they customers more

interested to purchase varieties that are appealing in their eyes and have the appropriate desired color. The color usually tells the customers from a distance about the different varieties the trader has in stock. These results are similar to findings on a study on quality control in non staple food marketsthat was done inIndia (Fafchamps *et al.*, 2008). There was also a positive relationship between colorand choice of White and Yellow beans though the effect was insignificant.

Our econometrics results in table 5 showed that choice of ordering other beans varieties increases the probability of ordering Solwezi beans. Ordering other types of beans varieties increases the probability of ordering Solwezi beans by 23.1%. This suggests that other variety types and Solwezibeans are complements to each other. This was evidence enough in that other varieties were significant at 1% in influencing the choice of Solwezi beans. There was also a positive relationship between colorand choice of Lusaka and Lundazibeans though the effect was insignificant. However, ordering other beans variety reduces the probability of ordering White and Yellow beans. Therefore, the choice of ordering other types of beans varieties decreases the probability of ordering White and Yellow by 22.3%. This could be because the choice of ordering other beans varieties and White and Yellow are substitutes to each other. It follows that if a trader buys more of other beans varieties, then less of White and Yellow beanswill have to be purchased.

Table 5: Results of Probit Model (Marginal Effects)

VARIABLES	(1) White and Yellow	(2) Lusaka	(3) Solwezi	(4) Lundazi
Age	0.00232	-0.00447	-0.00819**	-0.00290
	(0.00323)	(0.00411)	(0.00367)	(0.00255)
Tradersex	0.0234	0.104	-0.0146	-0.0671
	(0.0513)	(0.0684)	(0.0587)	(0.0504)
Tedu	-0.0134	-0.0591**	-0.0350	-0.0211
	(0.0259)	(0.0300)	(0.0253)	(0.0205)
Mast	0.0469	0.0725***	0.0391	0.0285
	(0.0299)	(0.0278)	(0.0242)	(0.0198)
Gsize	-0.0788	-0.304***	-0.297***	-0.0227
	(0.0629)	(0.0823)	(0.0675)	(0.0547)
Fgprice	0.0893*	-0.0467	-0.0817	-0.132**
	(0.0514)	(0.0772)	(0.0705)	(0.0523)
Binsect	-0.0731	0.133	0.203*	0.163*
	(0.0815)	(0.120)	(0.104)	(0.0845)
Lvtrust	-0.0774	-0.115	0.0907	0.105*
	(0.0537)	(0.0767)	(0.0779)	(0.0603)
other_variety	-0.223***	0.181	0.231***	0.0507
	(0.0666)	(0.113)	(0.0847)	(0.0725)
Mindamage	0.0440	0.169	0.0945	-0.165
	(0.122)	(0.205)	(0.188)	(0.127)
Bcol	0.0829	0.337***	0.344***	0.253***
	(0.0737)	(0.106)	(0.113)	(0.0979)
Dradio	0.0652	0.0166	-0.0167	-0.0251
	(0.0626)	(0.0940)	(0.0758)	(0.0577)
Dtv	0.0441	-0.0156	0.203***	0.00998
	(0.0587)	(0.0939)	(0.0750)	(0.0630)
Dshop	0.0521	-0.0567	-0.00323	0.000133
	(0.0891)	(0.105)	(0.0931)	(0.0637)
Dcar	-0.0404	0.286	-0.105	0.246**
	(0.158)	(0.220)	(0.143)	(0.101)
Dhouse	0.0725	0.0300	0.0401	0.0166
	(0.0636)	(0.0797)	(0.0692)	(0.0504)
Dbike	0.0438	-0.0233	-0.0572	0.00926
	(0.0569)	(0.0764)	(0.0662)	(0.0483)
Dwheelba	-0.0734	0.125*	0.0693	0.0658
	(0.0558)	(0.0723)	(0.0676)	(0.0487)
Dcell	0.105	0.0271	-0.00442	0.104
	(0.0778)	(0.110)	(0.102)	(0.0938)
Pseudolikelihood	-88.955352	-134.61398	-110.41046	-79.153227
Prob> chi2	0.2468	0.0053	0.0017	0.1118
Pseudo R2	0.1155	0.1248	0.1603	0.1398
Observations	225	225	225	225

Standard errors in Parentheses
*** p<0.01, ** p<0.05, * p<0.1

Grain size in our econometrics results presented in table 5 showed that it negatively influences the choice to order beans for all the varieties of beans in the model. In fact it was significant at 1% for both Lusaka and Lundazi beans. Hence, a unit increase in the size of the grain decreases the probability of order Lusaka and Solwezi beans by 30.4% and 29.7% respectively. According to some traders communicated to on a telephone interview, stated that buyers of beans are more interested in small sized beans varieties that are easy to cook requiring a shorter cooking period of time. These results are however contrary to most studies on trader and consumer preferences. Traders tend to demand for large sized beans and cowpeas (Fafchamps et al., 2008).

Beans varieties with low levels of pests, diseases and insects tend to positively influence the choice of ordering Solwezi and Lundazi beans. Beans with less pests and insects, increases the probability of ordering Solwezi and Lundazi beans by 20.3% and 16.3% respectively. Traders are more interested in beans varieties that have minimum levels insects, pests and diseases. This allows for these varieties to be attractive to consumers who are very responsive to any remarkable changes in beans quality. These results are similar to findings on a study of estimation of consumer preferences for cowpea varieties that was done in Kumi and Sorifi districts, Uganda (Mundua, 2010). There was also a positive relationship between the level of pests and insects and choice of ordering Lusaka beans though the effect was insignificant.

Trusting the sellers of beans in the beans market had a positively influence on the choice of ordering Lundazi beans. The level of trust was significant at 10% for ordering Lundazi beans. This evidence suggests that the level of trust increases the probability of ordering Lundazi beans by 10.5%. This explains the importance of creating mutual relationships between beans traders and farmers. The traders that order Lundazi beans have these built in mutual relationships with farmers or buyers, hence they have a ready market from which to purchase at some reduced or subsidized farm gate price. There was also a positive relationship between the level of trust and choice of ordering Solwezi beans though the effect was insignificant.

Ownership of a radio, television and cellphone were used to proxy for the easy to access of ordering information and any market level dynamics. Owning a radio, television and cell phone tends to increase the probability of ordering beans varieties. Owning a television increases the

probability of ordering Solwezi beans by 20.3%. This may be because when traders have a television, they can easily get information from the TV about the beans that is available for sell and also have access to all types of beans being sold. With better communication between the farmers and the traders, then efficient bean trading will result, hence leading to increased profits between the two parties.There was also a positive relationship between owning both the radio and TV and choice of ordering White and Yellow, Lundazi and Lusaka beans though the effect was insignificant.

Ownership of the car was used to proxy the easy of transportation of beans from the source to the market, transportation costs and size of distance covered to transport beans. Owning a car increases the probability of ordering Lundazi beans by 24.6%. Our econometrics results showed that owning a car was significant at influencing the choice of ordering Lundazi beans at 5%. This explains that if a trader owns a car, transportation costs could be reduced since he/she does not need hire public transportof which he/she is likely to be over charged for carrying heavy bags of beans. Reduced transport costs would imply that revenue or trader surplus is increased. Also our econometrics results showed that owning a wheelbarrow increases the probability of ordering Lusaka beans by 12.5%. Ownership of a wheelbarrow could easy carriage of beans within the market and allow for faster/efficient level of doing business.

CHAPTER FIVE
CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The Government of Zambia has shown interest in Pulse crops especially for Beans and Cowpeas production and marketing among small scale farmers and traders in order accelerate economic growth and reduce poverty through increased income. In many African countries, factors that affect trader preferences are usually fragmented, though their proper knowledge could be essential for proper government planning that would help enhance trader's incomes and the ultimate standard of living. This study estimated traders probit models and generated descriptive statistics on major markets of Lusaka to examine factors that affect trader preferences for beans in Zambia. In conclusion the study highlights the following salient finding;

The factors that are likely to positively influence trader preferences and choices for beans among traders are: Ownership of physical assets such as a cell phone, radio, television, wheelbarrow and a bicycle; coat colour for beans; other varieties of beans traded especially complements and the level of trust traders have for their sellers of beans (farmers). These factors positively influence the choice of all the four varieties namely: White and Yellow, Lusaka, Solwezi and Lundazi beans. On the other hand education level of the trader, the farm-gate price and grain size are likely to negatively influence the choice of ordering beans varieties among traders.

5.2 Recommendations

Evidence presented in this study raises critical issues that need to be considered in addressing challenges of beans and cowpea production and marketing. Key public sector planning is needed to enhance trader choices and preferences through investment in Education accompanied with some level of experience on market dynamics and the changing consumer preferences and tastes. Furthermore, there is need to invest increating/building Institutions, Infrastructure and provide Loans to traders that would help expand their businesses and help them increase on the physical assets in order to operationalize their day-to-day businesses. Concerted effort is also needed for the government to work hand in hand with Research Institutions such as The University of Zambia to develop varieties with characteristics that preferred by traders and consumers. There is

need also to form Coordinated Linkages between traders and farmers through Market Associations to enhance Trusts and Mutual Relationships among themselves.

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APPENDIX 1: Questionnaire

The University of Zambia

Department of Agricultural Economics and Extension

Pulse Value Chain Initiative - Zambia

Bean and Cowpea Trader Survey Questionnaire

1. District name and code	**dist**	
2. Market from which trader operates (1=Soweto; 2=Chilenje; 3=Mtendere; 4=Buseko; 5= Ng'ombe; 6=Mandevu)	**mkt**	
3a. Trader name and code	**trader**	
3b. Respondent relationship (1= owner; 2= Employee; 3= Family/friend; 4=spouse; 5 =other (specify))	**resp**	
3c. Category of trader (1=Retail trader; 2=Wholesale trader; 3=Both wholesale and retail)	**tcat**	
4. Trader date of birth (dd/mm/yyyy)	**dob**	
5. Sex of trader (1=male; 2=female)	**tsex**	
6. Education level of trader (0=none; 1=lower primary; 2=upper primary; 3=junior secondary; 4=senior secondary; 5=tertiary)	**tedu**	
6b. Trader's marital status (1= never married; 2=married; 4=divorced; 5= widowed; 6=separated; 7=cohabiting)	**mast**	

7. Demographics of trader's household		Number of members		Number chronically ill
		Male	Female	
	7.1 Children under 5 years			
	7.2 Children 5-14.99 years			
	7.3 Prime-age adults 15-59.9 years			
	7.4 Elderly members 60 years or older			

8. Enumerator name and code (1=Elizabeth Chishimba; 2=Kelvin Mulungu; 3=Robert Nhlane 4=Jairos Sambo; 5=Martha Sanderson)	**enum**	
9. Date of enumeration (dd/mm/yyyy)	**denum**	

SECTION 1:: INCOME GENERATING ACTIVITIES from the 1st May 2011 to the 30th April 2012.

We would now like to ask about the earnings from each business activity that you have been involved in between 1st May 2011 and 30th April 2012.

Table 1.1. All Business Activities *Key Variables: DIST, MKT, TRADER, BACT* ***Reference Period: 1st May 2011 to 30th April 2012***

Please list all economic activities that you were involved in at any time from 1 May 2011 to 30 April 2012. ***See codes below***	Where did You carry out this activity? ***See codes below***	For which months was revenue ….. *(ask none first, low second and high last)* ***1= None; 2 = Low; 3 = High*** ***If earnings are constant for all months, probe further.***												In a typical high revenue month, how much did you receive/spend on …?		In a typical low revenue month, how much did you receive/spend on …?	
		2011								2012				Total **Gross Income** *(ZMK)*	Total **Expenses** *(ZMK)*	Total **Gross Income** *(ZMK)*	Total **Expenses** *(ZMK)*
		May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	April				
BACT	**B01**	**B02**	**B03**	**B04**	**B05**	**B06**	**B07**	**B08**	**B09**	**B10**	**B11**	**B12**	**B13**	**B14**	**B15**	**B16**	**B17**

Economic Activities (BACT)

41 = selling own beans
42 = selling own cowpeas
43=Bean trading
44=Cowpea trading
45=Maize trading
46=Vegetables and fruits
1= agricultural trading (other crops)
2=livestock trading
3= retailer/shop owner
4=marketeer/hawker/vender
5=firewood/charcoal production and selling
6 =carpentry
7=builder / construction
8=local brewing and selling
9=butchery (including game, cooked or uncooked)
10=agricultural services (e.g., ploughing, planting)
11=milling
12=cooking oil processing and selling
13=agro-processing
14=tailoring
15=bicycle repairing
16=weaving (cloth and reed/basketry) and selling
17=blacksmithing
18=traditional healing
19=fishing and selling
20=precious stone mining (small scale)
21=gathering ants and caterpillars and selling
22=collecting mushroom and selling
23=collecting wild honey and selling
24=beekeeping and honey selling
25=curio business
26=hair salon / barbershop business
27=Employment
28=other (specify) _____

Location of activity (B01)

0=at market
1=within Lusaka
2=other district in LP
4=other province
5=other country

SECTION 2: SOURCES OF BEANS AND COWPEAS from the 1st May 2011 to the 30th April 2012.

We would like now to know the sources of beans and cowpeas between 1st May 2011 and 30th April 2012.

Table 2.1. Sources of Beans and Cowpeas Only *Key Variables: DIST, MKT, TRADER, MONTH* ***Reference Period: 1st May 2011 to 30th April 2012***

Month/Year	Did you order beans in ...? 1=yes 2=no→ *PS07*	How many times did you order beans in ...?	Where did you order your beans from in...? *See codes below* *If 1→PS05* *If 3→PS04* *Enter all that apply*	If within Lusaka where in ...? *See codes below*	Which source district supplied beans in ...? *Use district codes at the back* *Enter all that apply separated with a comma*	What was the size of a typical order of beans in ...?		Did you order cowpeas in ...? 1=yes 2=no→ *next month*	How many times did you order cowpeas in ...?	Where did you order cowpeas from in...? *See codes below* *If 1→PS11* *If 3→PS10* *Enter all that apply*	If within Lusaka, where in ...? *See codes below*	Which source district supplied cowpeas in ...? *Use district codes* *Enter all that apply separated with a comma*	What was the size of a typical order of cowpeas in ...?	
						Quantity	Unit (*see units below*)						Quantity	Unit (*see units below*)
MONTH	**PS01**	**PS02**	**PS03**	**PS03b**	**PS04**	**PS05**	**PS06**	**PS07**	**PS08**	**PS09**	**PS09b**	**PS10**	**PS11**	**PS12**
1=May 2011														
2=June 2011														
3=July 2011														
4=Aug 2011														
5=Sep 2011														
6=Oct 2011														
7=Nov 2011														
8=Dec 2011														
9=Jan 2012														
10=Feb 2012														
11=Mar 2012														
12=Apr 2012														

Table 2.2 Beans/cowpeas contracts

Crop		Did you have a contract with any of the supplier/buyer of ...? 1=yes; 2=no; 96=N/A→ ***next category/section 3***	How long was the contract?				Was the contract verbal or written? 1=Written 2=verbal
			Start month (mm)	Start year (yyyy)	End month (mm)	End year (yyyy)	
CROP	**BUY**	**C01**	**C02**	**C03**	**C04**	**C05**	**C06**
12=Beans	1=Suppliers						
	2=Buyers						
14=Cowpeas	1=Suppliers						
	2=Buyers						

Source of beans (PS03, PS09)

1= Within the market (farmers bring)

2= Within Lusaka but not market

Sources within Lusaka (PS03b; PS09b)

1=Soweto

2=Libala

Unit codes (PS06, PS12)

1=90kg bag 4=10kg bag 12=Meda

2=50kg bag 10=Tin/bucket (16-20 kg) 17=tones

3=Outside Lusaka 3=Other (spefiey) 3=25kg bag 11=5lt gallon 20=kilogram

SECTION 3: COST OF PROCURING BEANS AND COWPEAS (1st May 2011 to 30th April 2012 Marketing Season)

Table 3.1 Beans and Cowpeas *Key Variables: DIST, MKT, TRADER, CROP, MONCAT* ***Reference Period: 1st May 2011 to 30th April 2012***

Crop	Category of months by volume of business	Did you have to go out in the field to buy the majority of ...(crop) in this period? 1=yes 2=no→ *PC10*	How much did you pay for your own transport to the location from which you procured beans/cowpeas in a typical ... month? (ZMK)	Did you pay for crop during the low/high volume on cash or by barter? 1=Cash 2=Barter→ *indicate cost in VB02/VC02 by calculating value of exchanged goods*	How long did you stay at source during a typical order in a typical ... month? (Days)	What was the cost of upkeep and other costs per trip during...? (ZMK)	How much did you pay to transport the crop from the source (village) to the district centre (Boma) *Enter 0 if they did not stop at Boma, and enter entire cost in PC08*		How much did you pay to transport the crop from the source district centre to Lusaka	
							ZMK	Unit (*see codes below*)	Charge (ZMK)	Per (Unit) *See codes below*
CROP	**MONCA**	**PC01**	**PC02**	**PC03**	**PC04**	**PC05**	**PC06**	**PC07**	**PC08**	**PC09**
12=Beans	2=Low									
	3=High									
14=Cowpeas	2=Low									
	3=High									

3.1 Did you incur any extra cost/charges at the point of procurement other than that of the crop itself? (1=yes; 2=no→*Section 4A*) |____|

Table 3.2 Other Costs Incurred *Key Variables: DIST, MKT, TRADER, CROP, MONCAT* ***Reference Period: 1st May 2011 to 30th April 2012***

Category of months by volume of business		Fixed Storage charge (*Ya Kabende*)		Wheelbarrow charges to and from stand per day	Cost of sorting per unit		Charge for empty bags		Other costs (specify)		
		Charge (ZMK)	Unit (*See codes below*)	Charge (ZMK)	Charge (ZMK)	Unit (*See codes below*	Charge (ZMK)	Unit (*See codes below*)	Name of cost	Charge (ZMK)	Unit (*See codes below*)
CROP	**MONCAT**	**EC01**	**EC02**	**EC03**	**EC04**	**EC05**	**EC06**	**EC07**	**EC08**	**EC09**	**EC10**
12=Beans	2=Low volume										
	3=High volume										
14=Cowpeas	2=Low volume										
	3=High volume										

Unit codes (PC07, PC09, PC11, EC05, EC07, EC10)

1=90kg bag	4=10kg bag	12=Meda
2 50kg bag	10 Tin/bucket (16-20 kg)	17=tonnes

3=25kg bag 11=5lt gallon 20=kilogram

SECTION 4A: B E A N / C O W P E A STOCKS AND SALES (1st May 2011 to 30th April 2012 Marketing Season)

Enumerator: ***Tell respondent that we would like to know more information about bean and cowpea sales.***

Table 4.1 Sales to individual and institutional buyers *Key Variables: DIST, MKT, TRADER, CROP, MONCAT* ***Reference Period: 1st May 2011 to 30th April 2012***

Crop	Category of months by volume of business	Did you sell this crop to individual consumers during…? 1=yes 2=no→SL06 96=N/A	In a typical … month, what quantity do you sell to individual consumers?		What proportion of these individual buyers were buying for reselling? *(See codes below) Enter 0 if none*	Did you sell this crop to any institutional buyers during …? 1=yes 2=no→ *next crop/month category*	Who was your major institutional buyer of …? *(see codes below)*	How far is this institutional buyer from your market? (km) *(1 mile=1.6 kilometre) Enter 0 if at market*	Did you deliver to any of these buyers? 1=Yes 2=No→ *SL10*	If yes, how much did you pay for transportation (ZMK) *Enter zero if none (buyer paid)*	Did you sell on cash basis or credit to the institutional buyer? 1=Cash 2=Credit	If you sold on credit, how long did it take for the institutional buyer to pay you? (weeks) *Enter 0 if it took less than a week*	In a typical … month, what quantity do you sell to institutional consumers?	
			Quantity	Unit *(See codes below)*									Quantity	Unit *(See codes below)*
CROP	MONCAT	SL01	SL02	SL03	SL04	SL05	SL06	SL07	SL08	SL09	SL10	SL11	SL12	SL13
12=Beans	2=Low volume													
	3=High volume													
14=Cowpeas	2=Low volume													
	3=High volume													

Proportion (SL04)

1=Less than a ¼
2=Between a ¼ and ½
3=Between ½ and ¾
4=More than ¾
5=All of them

Unit codes (SL03, SL13)

1=90kg bag
2=50kg bag
3=25kg bag
4=10kg bag
10=Tin/bucket (16-20 kg)
20=kilogram
11=5lt gallon
12=MEDA
17=tonnes
21= ka BP

Buyer codes (SL06)

1=Construction companies
2=Churches
3=Hospitals
4= Lodges
5=Schools
6=other (specify)

SECTION 4B: BEAN/COWPEA STOCKS AND STORAGE

Table 4.2 Bean/cowpea storage costs ***Key Variables:*** *DIST, MKT, TRADER, CROP, MONCAT* ***Reference Period: 1st May 2011 to 30th April 2012***

Crop	Category of months by volume of business	What is the typical quantity of your stock per order…?		How long did it take you to sell/clear this stock during…? *See codes below*	Are you charged to store your stock? 1=yes 2=no→ WT07	What was the storage charge?			Did you consider storage costs when pricing the …(crop) during the … period? 1=yes 2=no	Did you use any chemicals/ measures to protect your stock that had stayed long to protect it from pests? 1=yes 2=no→*next row*	What chemicals/measures did you use and their cost?			
		Quantity	Units *(See codes below)*			Charge	Unit *(See codes below)*	Per (Period) *(See codes below)*			Chemicals/ measures *(See codes below)*	Quantity	Units	Cost per unit (ZMK)
CROP	**MONCAT**	**WT01**	**WT02**	**WT03**	**WT04**	**WT05**	**WT06**	**WT07**	**WT08**	**WT09**	**WT10**	**WT11**	**WT12**	**WT13**
12=Beans	2=Low Volume													
	3=High volume													
14=Cowpeas	2=Low volume													
	3=High volume													

4.7. Did/do you own a storage shed? (1=yes; 2= no→*section 5*) ____

4.8. Is the storage exclusively yours or shared? (1=exclusive owner; 2= shared) ____

4.9 How much did other pay to rent the shed to store their beans/cowpeas?

Charge	Quantity (*See codes* (WT02))	Period (*See codes below*)

4.10. What is the structure like?

Roof/lid: 1=Iron sheets/asbestos 2= Grass thatched 3= plastic cover 4= metal 5=other (specify) ____

Walls : 1= burnt bricks 2= Wood 3= Block 4= open wall 5=Other (specify) ____

Floor: 1= concrete 2= earth 3= wooden 4= Mud 5= other (specify) ____

WT02, WT06

1=90kg bag
2=50kg bag
3=25kg bag
4=10kg bag
10=Tin/bucket (16-20 kg)
11=5lt gallon
12=MEDA
17=tonnes
20=kilogram

Length of storage (WT03)

1=Less than a week
2=1-2 weeks
3=2-3 weeks
4= 3-4 weeks
5=More than one month

Period

1= Per day
2= Per week
4=Per month
5=Until stock is cleared (indefinite)

Chemicals (WT08)

1=Chilindamatula dust
4=Other (specify)

SECTION 4C: BEAN VARIETIES AND PRICES (1st May 2011 to 30th April 2012 Marketing Season)

We would now like to know about the varieties that you dealt in and their prices

Table 4.3 Bean varieties and prices ***Key Variables:*** *DIST, MKT, TRADER, CROP, MONCAT* ***Reference Period: 1st May 2011 to 30th April 2012***

Crop	Category of months by volume of business	What varieties of beans did you sell during ... months? *Enter the codes below*	What was the farm level price of the ... variety during the ... month?		What was the wholesale price for ....variety during ..?		Retail price		Did you sell this crop variety to institutional buyers? 1=Yes; 2=No	What was the price of this variety to institutional buyers?	
			Price (ZMK)	Unit (*See codes WT02*)	Price (ZMK)	Unit (*See codes WT02*)	Price (ZMK)	Unit (*See codes WT02*)		Price (ZMK)	Unit (*See codes WT02*)
CROP	**MONCAT**	**VB01**	**VB02**	**VB03**	**VB04**	**VB05**	**VB06**	**VB07**	**VB08**	**VB09**	**VB10**
12=Beans	2=Low volume										
	3=High Volume										

Table 4.4 Cowpea varieties and prices

Crop	Category of months by volume of business	What varieties of cowpeas did you sell during ...months? *Enter the codes below*	What was the farm level price of the ... variety during the ... month?		What was the wholesale price for ....variety during ..?		Retail price		Did you sell this crop variety to institutional buyers? 1=Yes; 2=No	What was the price of this variety to institutional buyers?	
			Price (ZMK)	Unit (*See codes WT02*)	Price (ZMK)	Unit (*See codes WT02*)	Price (ZMK)	Price (ZMK)		Price (ZMK)	Unit (*See codes WT02*)
CROP	**MONCAT**	**VC01**	**VC02**	**VC03**	**VC04**	**VC05**	**VC06**	**VC07**	**VC08**	**VC09**	**VC10**
14=Cowpeas	2=Low volume										
	3=High Volume										

Beans Varieties (VB01)

1=Kabulangeti 4=Solwezi
2=White and Yellow 5=Lundazi (Red beans)

Cowpeas varieties (VC01)

1=Local Maroon 4=Local speckled brown black 7= Local speckled brown white 10=Local light brown
2=Local purple 5=Local speckled purple grey 8=Local white 11=Musandile

3=Lusaka (yellow) 6=Others 3=Bubebe 6=Local speckled brown grey 9= Luntembwe

SECTION 4D: QUESTIONS ON IMPORT AND EXPORTS OF CROPS *from 1st May 2011 to 30th April 2012*

4.16 Did you import beans/cowpeas between 1st May 2011 to 30th April 2012? Yes=1 No=2→*4.17* beans ☐ cowpeas ☐

Table 4.4 Questions on importation of crops

CropS	Which month did you import [crop]? *(mm/yyyy)*	Which countries did you import from? *(see codes below*	Which varieties did you import? *(see codes VB01/VC01)*	How much [crop] did you import?		What was the order price in the country?		What was the transport cost of [crop]?		What were the border fees incurred?		What were other fees you incurred? *(insert 96 if none incurred)*		
				Quantity	Unit *(see codes WT02*	Price (ZMK)	Unit *(see codes WT02*	Price (ZMK) *(insert 0 if none paid*	Unit *(see codes WT02*	Price *(ZMK) (insert 0 if n/a)*	Unit *(see codes WT02*	Cost name	Price (ZMK)	Unit *(see codes WT02*
CROP	IMPO1	IMPO2	IMPO3	IMPO4	IMPO5	IMPO6	IMPO7	IMPO8	IMPO9	IMP10	IMP11	IMP12	IMP13	IMP14
12=beans														
14=beans														

4.17 Did you export beans/cowpea between 1st May 2011 to 30th April 2012? Yes=1 No=2→*skip to section 5* beans ☐ cowpeas ☐

Table 4.5 Questions on exportation of crops

Crop	Which month did you export [crop]? *(mm/yyyy)*	Which countries did you import from? *(see codes below*	Which varieties did you import? *(see codes VB01/VC01)*	How much [crop] did you import?		What was the order price in the country?		What was the transport cost of [crop]?		What were the border fees incurred?		What were other fees you incurred? *(insert 96 if none incurred)*		
				Quantity	Unit *(see codes WT02*	Price (ZMK)	Unit *(see codes WT02*	Price (ZMK) *(insert 0 if none paid*	Unit *(see codes WT02*	Price *(ZMK) (insert 0 if n/a)*	Unit *(see codes WT02*	Cost name	Price (ZMK)	Unit *(see codes WT02*
CROP	EXPO1	EXPO2	EXPO3	EXPO4	EXPO5	EXPO6	EXPO7	EXPO8	EXPO9	EXP10	EXP11	EXP12	EXP13	EXP14
12=beans														
14=beans														

County codes (IMP02) (EXPO2) 1=Angola 2=Zimbabwe 3=Malawi 4=Tanzania 5=Namibia 6=Congo D.R. 7=Other (specify)

4.11 To what extent do you trust the people you procure beans/cowpeas from? (1=Not at all; 2=Somewhat; 3=A lot; 96=N/A)

4.12 To what extent do you trust the people to whom you sell beans/cowpeas? (1=Not at all; 2=Somewhat; 3=A lot; 96=N/A)

	Beans	Cowpeas
Individual buyers		
Institutional buyers		

	Beans	Cowpeas
4.13. Do you sell beans/cowpeas on credit? (1=Yes; 2=No→*4.15)*		
4.14. If a buyer does not pay you, do other traders get to know about it? (1=Yes; 2=No)		

4.15 What is your main source of capital?

1. Other traders
2. Friends and family
3. Financial institution
4. Own capital
5. Other (specify)_____

SECTION 5: QUESTIONS ABOUT AGRICULTURAL INFORMATION, DISTANCES TO AND COST OF AGRICULTURAL SERVICES

5.1 Access to information about prices

Crop	Do you get access to information about …(crop) prices? 1=Yes 2=No→*next row*	What is your main source of information? *See codes below*	What is your second most important source of information *(See codes below)*
	IP01	**IP02**	**IP03**
12=Beans			
14=Cowpeas			
1=Maize			

IP02; IP03					
1 = Extension Agent	4 = Pamphlet/Newspaper	7 = ZNFU SMS	12 = Outgrowers	15 = Television	18 = Other (specify)
2 = Farmer/neighbor	5 = Workshop	8 = NGO	13 = Shops	16 = Market place	
3 = Radio Program	6 = Field Day	11 = Trader / Marketeer	14 = Headman	17 = Farmer group – cooperative	

5.2. Which varieties are most popular among your customers (list by order of preference, starting with the most preferred)?

12=Beans	
14=Cowpeas	

	Beans		Cowpeas	
	Length	Unit	Length	Unit
5.3. How long have you been selling beans/cowpeas? (*Unit codes: 1=Months; 2=Years*)				

5.4. How do you determine the price for beans and cowpeas you sell in the market? (1=yes; 2=no; 96=N/A)

	Beans	Cowpea
1=Whatever other traders are selling at		
2=Looking at the cost of ordering the stock		
3=Availability of the crop		
4=Seed variety		
5 = Quality and buyer willingness to pay		
6=Other (specify)		

5.5. Do you keep any business records (1=yes; 2=no→5.7) ____

5.6 If yes, which of the following business records do you keep? (1=yes; 2=no)

5.6a. Sales and purchases records ____

5.6b. Cashflow records ____

5.6c. Operations records ____

5.6d. Inventory records ____

5.7. If no to 5.4 above, would you like to keep business records? (1=yes; 2=no) ____

5.8. Are you a crop farmer? (1=yes; 2= no→*Section 6*)

Table 5.1 Information about growing of beans/cowpeas

Crop	Season	Did you grow beans/cowpeas that you sold between 1st May 2011 and 30th April 2012? 1=yes; 2=no→*next season/crop*	What was the size of the beans/cowpeas field?		What was the yield for beans/cowpeas?	
			Quantity	Unit *(see codes below)*	Quantity	Unit *(for units refer to WT02 on page 6)*
CROP	**SEASON**	**CG01**	**CG02**	**CG03**	**CG04**	**CG05**
12=Beans	1=2010-2011					
	2=2011-2012					
14=Cowpeas	1=2010-2011					
	2=2011-2012					

CGO3
1=Lima 3=Hectare
2=Acre 4=Meter square

SECTION 6: HOUSEHOLD MARKETING ASSETS/IMPLEMENTS

Please tell us about the type and number of assets in working condition owned by the household.

Table 6. Traders selling beans/cowpeas ***Key Variables:*** *DIST, MKT, TRADER, CROP, MONCAT* ***Reference Period: 1 May 2011 to 30 April 2012***

Type of Assets ***Enumerator: Please ask AST01***		During the period between 1st May 2011-30th April 2012 did you own..... *1 = Yes* *2 = No –> **go to AST03***	How many.....did you have in working condition on 1st May 2011? ***(Enter 0 if none)***	Do you own any ..... in working condition now? *1 = Yes* *2 = No –> **go to next asset***	How many ..... do you have in working condition now? ***(Enter the number)***
	ASSET	**AST01**	**AST02**	**AST03**	**AST04**
Storage Shed	1				
House	2				
Pick up vehicle	3				
Truck	4				
Bicycle	5				
Wheelbarrow	6				
Shop	7				
Cell phone	8				
Market stand	9				
Radio	10				
TV	11				
Weighing scale	12				
Car	13				
Farmland*	14				

*for farmland, put size in Hectares (ha) in AST02

ZMK	Per (Unit)

6.1 **[If trader owns a stand]** How much were rentals for your stand? (*Unit codes: 1=per day; 2=week; 3=Month; 4=Year*)

6.2 Are you a member of a traders association? (1=yes; 2=no→*Section 7*)

6.3 Is it mandatory to be a member? (1=yes; 2= no)

ZMK	Per (Unit)

6.4 What is the membership fee in the association? (*Unit codes: 1=per day; 2=week; 3=Month; 4=Year*)

SECTION 7: TRADER PERCEPTIONS OF THE TRADING ENVIRONMENT

7.1 Constraints faced at different stages and solutions suggested

Stage	Did you face any constraints at any of the following stages? 1=Yes 2=No→*next row*	**Constraint**	**What can be done**	**By who**
1=Procurement				
2=Transportation				
3=Storage				
4=Actual selling				
5=Other (specify)				

7.2 How important do you consider the following when ordering beans/cowpeas (1=very important; 2=important; 3=not important)?

	Beans	Cowpeas
7.2a. Insect, pest, disease free		
7.2b. Variety		
7.2c. niininal damage/breakage		
7.2d. Price		
7.2e. Colour		

7.3 Do you think that there are major entry barriers in the beans/cowpeas trade? (1=yes; 2= no)

7.2f. Size of grains

7.4 If yes, what are the major entry barriers?	
12=Beans	
14=Cowpeas	

Thank you!

SECTION 8: FOR INTERVIEWER ONLY

Answer the questions below after an interview before moving on to the next trader/respondent

8.1 How easy was it for the respondent to understand and answer the questions? (1=Very difficult; 2=Difficult; 3=Easy; 4=Very easy)

8.2 In your view, was the respondent giving honest answers? (1=yes; 2= no)

Appendix 1: District Codes

101=Chibombo
102=Kabwe
103=Kapiri-Mposhi
104=Mkushi
105=Mumbwa
106=Serenje
201=Chililabombwe
202=Chingola
203=Kalulushi
204=Kitwe
205=Luanshya
206=Lufwanyama
207=Masaiti
208=Mpongwe
209=Mufulira
210=Ndola
301=Chadiza
302=Chipata
303=Katete
305=Mambwe
306=Nyimba
307=Petauke
401=Chienge
402=Kawambwa
403=Mansa
404=Milenge
405=Mwense
406=Nchelenge
407=Samfya
501=Chongwe
502=Kafue
503=Luangwa
504=Lusaka
601=Chama
602=Chinsali
603=Isoka
604=Mafinga
605=Mpika
701=Chilubi
702=Kaputa
703=Kasama
704=Luwingu
705=Mbala
706=Mporokoso
707=Mpulungu
708=Mungwi
801=Chavuma
802=Ikelenge
803=Kabompo
804=Kasempa
805=Mufumbwe
806=Mwinilunga
807=Solwezi
808=Zambezi
901=Choma
902=Gwembe
903=Itezhi-tezhi
904=Kalomo
905=Kazungula
906=Livingstone
907=Mazabuka
908=Monze
909=Namwala
910=Siavonga
911=Sinazongwe
1001=Kalabo
1002=Kaoma
1003=Lukulu
1004=Mongu
1005=Senanga
1006= Sesheke
1007=Shang'ombo
606=Nakonde
304=Lundazi