

COOPERATIVE MARKETING AND TRANSACTION COST ECONOMICS: A STUDY
OF BWANJE VALLEY RICE FARMERS IN MALAWI

By

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LIST OF ABBREVIATIONS

ADMARC	Agricultural Development and Marketing Cooperation
ADD	Agricultural Development Division
AEDC	Agricultural Extension Development Coordinator
EPA	Extension Planning Area
Coop	Cooperative
GDP	Gross domestic product
GoM	Government of Malawi
ICA	International Cooperative Alliance
IRB	Internal Review Board
JICA	Japanese International Cooperation Agency
MoAFS	Ministry of Agriculture and Food Security
TC	Transaction costs

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By

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The study investigated the role marketing cooperatives and transaction costs play in small scale farmers' marketing of agricultural produce, especially rice from Bwanje Valley, Dedza district in Malawi. Production and marketing cooperatives are currently being promoted in Malawi with a goal to reduce the problems faced by small-scale farmers in marketing their produce. The study specifically looked at the consideration that farmers give to transaction costs when making a decision to participate in the marketing cooperatives and consequently the effect that membership has on incomes earned from rice. The study also researched sources of the transaction costs that these farmers face and if the sources are associated with cooperative membership.

A probit analysis was used to establish the relationship between transactions costs and farmers' decision to join the cooperative. The results show the effect and relationship between the transaction cost proxies that were used and the farmers' choice decision on whether to join the cooperative or not. The key conclusion from this analysis is that little consideration is given to transaction costs when the farmers are making a decision about participating in a cooperative.

A regression model was used to determine the relationship between cooperative membership and incomes earned from rice marketing. The results from this analysis suggest that cooperative membership has a significant positive effect on the income earned by the farmers who are cooperative members.

CHAPTER 1
INTRODUCTION, PROBLEM STATEMENT, STUDY OBJECTIVES, TESTABLE
ASSERTIONS, ANTICIPATED BENEFITS, AGRICULTURAL PRODUCTION IN
MALAWI

Introduction

Agricultural marketing for small scale farmers in Malawi became an issue after several changes in policies were executed, following the Structural Adjustment Program implementation in 1981. Malawi is an agro-based country with 74% of the population depending on agriculture for food and income. Better, more effective marketing of agricultural produce is a key strategy for improving the incomes of these farmers. The agriculture sector is dual in nature with the small-scale and estate sectors. The small-scale sector contributes a higher percentage of the production and employment especially in the rural areas (more than 70% of the agricultural gross domestic product, GDP) compared with the estate sector.

These small-scale farmers are mostly based in the rural areas where access to a lot of facilities, like good markets, is limited. Before market liberalization the Agricultural Marketing and Development Corporation (ADMARC), a state owned marketing board, controlled the marketing of all agricultural produce in the country. Despite the inefficiencies associated with the board, it worked to the benefit of the small-scale farmers living in the rural areas by providing a market for their production.

The liberalization of agricultural marketing was expected to provide incentives for the participation of the private sector, with consequences of competitive marketing benefiting smallholder farmers through better marketing arrangements and higher prices. However due to lack of supporting infrastructure like good roads, markets and a proper system to support the liberalization, the results have not produced the intended

benefits. The evidence from rural Malawi does suggest that smallholder farmers, particularly, the poor have benefitted less because of unfair trading practices and monopsony power of private traders, and lack of reliable markets for agricultural produce and inputs.(E. Chirwa et.al, 2006)

These small-scale farmers now have problems of access to better and reliable markets. The farmers' inability to find alternative markets has eroded their bargaining power for good prices. This coupled with other problems associated with small scale production, like being in the rural areas where access to good roads, information, and urban markets is limited, renders marketing of produce to be expensive, which contributes to low incomes for these farmers.

One of the proposed solutions for improving marketing for small-scale farmers in order to enhance their incomes was the use of institutional arrangements such as cooperatives. These cooperatives are intended in part to minimize the cost of carrying out transactions in marketing. The cooperatives offer an alternative market for produce as well as providing access to inputs, such as fertilizers, for its members. Theory states that use of institutional arrangements such as cooperatives can minimize transaction costs. Some empirical studies conducted earlier, for example in Canada, have also shown that cooperatives can minimize transaction costs. However most of these studies were conducted in different scenarios as compared to small scale farmers in Malawi.

Small-scale farmers in Malawi offer a different perspective of the transaction cost problems because of other additional problems that they face like poor road infrastructure and a general lack of organized forms of marketing, which farmers from

developed countries rarely face. These additional problems are likely to have an effect on the choice to participate in a cooperative. Given this context, this study focuses on the question: Do transaction costs, as compared to the other factors, have a significant influence on the farmer's decision to join a cooperative in Malawi?

Anticipated Benefits

The Government of Malawi (GoM), through the Ministry of Agriculture and Food Security (MoAFS), with support from development partners, is promoting the formation of cooperatives as an institutional arrangement for assisting small-scale farmers by helping them earn more revenue from their production. It is anticipated that this study will assist policy makers interested in the appropriateness of using cooperatives as a means to improving small-scale farmers' marketing of agricultural produce and enhancing their incomes.

It is also anticipated that the results from the study will benefit the farmers in Malawi, specifically in the area of study, by helping them make a more informed, better choice when deciding whether to participate in cooperatives or not, if their goal is to minimize transaction costs. Finally the study will contribute empirically to the literature on transaction cost theory and cooperatives as an institutional arrangement for minimizing cost, in relation to small scale farmers in a developing country.

Problem Statement

Malawi is characterized by widespread poverty with 52% of population living on less than one dollar a day. The majority of the population, 80%, lives in the rural areas surviving on subsistence farming with a small surplus to sell for income. National surveys estimate that crop production accounts for 74% of all rural incomes and agriculture is the most important occupation for 71% of the rural population (Chirwa,

2006). Considering the predominance of agriculture in the lives of many Malawians for food as well as income, marketing strategies being implemented need to benefit the farmers by lowering the cost of marketing and increasing their returns.

As indicated earlier, theory and empirical evidence in developed countries indicate that cooperatives can work to minimize transaction costs incurred by its members. However, small-scale farmers in Malawi offer a different perspective of the transaction cost problem due to other additional problems faced in low income countries. Looking at these inherent problems faced by the farmers, and also the promotion of cooperatives by government and development partners as means for improving small scale farmers' marketing, it is vital to find out empirically what role cooperatives play in small scale farmers' marketing of their production in relation to transaction costs, which are said to be high for small scale farmers. The focus was on finding out if transaction costs influence the decision to join the cooperative, despite all the inherent problems indicated earlier and the costs associated with membership. This will give an indication as to whether cooperatives are an appropriate solution to dealing with high transaction costs problems faced by small scale farmers. It will also be beneficial to find out if the cooperative membership has an influence on the incomes of the small holder farmers. The outcome of the study will help to determine if improving the marketing of small scale farmers' production through promotion of cooperatives is an effective means to enhancing small scale farmers' income.

Study Objectives

This study assesses what role transaction costs and marketing cooperatives, as an institutional arrangement in marketing, play in small scale farmers' marketing. Specifically the study will look at the following objectives:

1. Identify the major sources of transaction costs that affect rice farmers (cooperative as well as non-cooperative members).
2. Analyze the association between cooperative membership and transaction costs.
3. Determine if transaction costs influence the decision on whether farmers would join the cooperative or not.
4. Determine if cooperative membership influences incomes earned from selling rice for small-scale farmers.
5. Identify other factors that influence farmers' decision to join the cooperative.

Testable Assertions

This study aims to contribute to the understanding of the role of transaction costs in small-scale farmers marketing of agricultural produce, specifically rice. The following assertions are addressed in this thesis:

Assertion 1 - Since small-scale farmers are located in remote areas far away from service providers and major consumers of farm products, the distance to the market, together with the poor infrastructure, poor access to other facilities and information is manifested in high exchange costs due to hold up problems.

Assertion 2 - Transaction costs prevail for small-scale farmers in rural Malawi. This is reflected by the higher levels of asset specificity, information asymmetry and transaction frequency leading to low returns from marketing produce.

Assertion 3 – Cooperative members in the study area have lower transaction costs, and this cost savings creates an incentive for farmers to join the cooperative, positively influencing their decisions to join.

Assertion 4 – Since cooperative members have lower transaction costs, the incomes of cooperative members are higher than non-cooperative members.

Agricultural Production in Malawi

Agricultural production is still considered the mainstay of the country's economy. It remains the major source of food and income for the majority of Malawian households and also a major foreign exchange earner for the country, contributing over 80% of total foreign exchange into the country. The importance of agriculture in Malawi is evident in

its share to the GDP for the country. Currently agriculture contributes over 35% to the country's total GDP (National Economic Council, 2002).

The agricultural sector in Malawi is dual in nature with both a small-scale and an estate sector, with the small-scale sector being the larger sector. Production for most of the crops is by the small-scale sector. The major crops grown in the country include maize, which is the staple food for the country and usually grown for home consumption, tobacco, which is the major foreign exchange earner for the country, rice, tea, cotton, coffee, and ground nuts.

Rice production and marketing in Malawi; Maize remains Malawi's staple food with rice only coming second in most parts of the country. Rice is grown in districts that are along the valleys of Lake Malawi and Lake Chiuta. Rice production is mainly by small-scale farmers. Most of the rice producing sites were developed into irrigation schemes during the post colonial era. Due to transition problems in management of the schemes, the land was distributed to small-scale farmers for the production of rice in the previously government owned schemes. In addition to these irrigation schemes other farmers grow their rice in upland areas where it is usually swampy during the rainy season.

Presently the irrigation schemes are being rehabilitated with the help of development partners' funds to assist the small-scale farmers to stop reliance on rain-fed production and start production through irrigation.

Before market liberalization the marketing of agricultural products was controlled by the state owned agricultural marketing board. Farmers sold all their surplus produce to the board. After market liberalization private traders constitute the majority of buyers

in the marketing of agricultural produce including rice. These private traders usually purchase paddy which they later either sell to rice milling companies or polish it and sell at retail to consumers in the city. The selling of paddy entails very low value addition to the rice on the side of the farmers. This can have an influence on the price that the farmer is offered. Rice sold to consumers by the middlemen is usually sold unpacked. It is either weighed and sold per kilogram or it is sold using plates and charged according to the size of the plate.

The promotion of marketing cooperatives by government has opened a new market for farmers marketing rice. These rice marketing cooperatives process rice from their member-farmers for sale directly to the consumers through supermarkets. However private traders remain the biggest source of market opportunities for most rice farmers due to low operational scale for most of the cooperatives, which then results in them not being able to buy all the cooperative member farmers' as well other farmers' rice.

CHAPTER 2 LITERATURE REVIEW

Marketing of produce involves carrying out transactions and transactions are said to have a cost. Different frameworks have been provided to describe the aspects that surround the cost of carrying out a transaction. Similarly literature has provided a number of ways to manage or minimize the cost of transacting, one of which is the use of alternative institutional arrangements besides market exchange. The paper reviews some of the literature on transaction costs, both theory and empirical, and the ways to minimize these costs for small-scale farmers.

Transaction Cost Theory

Overview

The transaction cost paradigm was pioneered by Coase in 1937. In his article, *The Nature of the Firm*, Coase argued that market exchange is not without costs. He recognized the role of transaction costs in the organization of firms, and other contracts. Transaction costs include the costs of information, negotiation, monitoring, coordination, and enforcement of contracts. He explains that firms emerge to economize on the transaction costs of market exchange and that the boundary of a firm or the extent of vertical integration will depend on the magnitude of the transaction costs.

The work of Williamson (1993, and 1996) on the economics of organization and contracts follows on from Coase's line of thinking. Williamson combines the concepts of bounded rationality and opportunistic behavior to explain contractual choice and the ownership structure of firms. Opportunistic behavior manifests itself as adverse selection, moral hazard, cheating, and other forms of strategic behavior. In Williamson's framework, a trade-off has to be made between the costs of coordination and hierarchy

within an organization, and the costs of transacting and forming contracts in the market (Drugger, 1983). This trade-off will depend on the magnitude of the transaction costs.

Williamson rests his arguments on the bounded rationality and opportunism assumptions. He states that if these assumptions are not valid then the effects of the variables that affect the transaction costs will not be valid.

Bounded Rationality and Opportunism

In transaction cost economics, all players are assumed to behave rationally. Their bounded rationality results, in part, from the fact that they have limited resources, time and energy. *Bounded rationality* also refers to the fact that people have limited memories and limited cognitive processing power. We cannot assimilate all the information at our disposal, nor can we accurately work out the consequences of the information we do have. Herbert Simon originally defined bounded rationality as the behavior that is intendedly rational but only limitedly (as cited by Williamson, 1979). Others like Posner describe bounded rationality as not only being that information is costly to acquire and to process, but also refers to the impossibility of thinking through the complex but well structured problems (Posner R. A 1998)

Bounded rationality affects the certainty of a transaction. The transaction cost economics approach focuses on how the characteristics of a transaction affect the costs of handling it through markets, bureaucracies, and other forms of organization.

Williamson identifies the critical dimensions of characterizing a transaction and links these to the institutional governance structure of transactions. The principle dimensions describing a transaction are uncertainty, frequency of exchange, and the degree to which investment are transaction-specific. Transaction costs include the costs of gathering and processing the information needed to carry out a transaction, of reaching

decisions, of negotiating contracts, and of policing and enforcing those contracts. All these transaction costs derive from a combination of bounded rationality (which reflects both imperfect information and a limited capacity to analyze it) and opportunism, which Williamson (1996) defines as “self-interest seeking with guile”. Given imperfect information about the future, all contracts are said to be necessarily incomplete. If people were never opportunistic, however, incomplete contracts would not lead to contract enforcement problems; contracts would simply state that if unforeseen contingencies arose, the parties would act in a manner acceptable to all.

Asset Specificity

Williamson further develops Coase’s idea. He recognizes that transaction costs are more likely to be important when economic agents make relationship-specific investments, that is, investments are specific to a particular group of individuals or assets. The party which makes relationship-specific investments is susceptible to the holdup problem. This leads us to the problem of asset specificity. This is because, once this kind of investment is made, that party is somewhat locked in the relationship: there is no competitive price for such investments once they are made. And furthermore, Williamson claims that every contract is inherently incomplete in that people cannot foresee all the contingencies of the future. The existence of incomplete contracts makes the ex post surplus sharing sometimes unrelated to ex ante investments. This is similar to what happens in a group setting. As a result, incomplete contract and relationship-specific investment leads to under-investment, if the two parties are separate firms. Williamson claims that integrating a transaction into the firm mitigates this opportunistic under-investment.

Farmers with specific experience in production of a particular crop, and/or production investments related to a particular crop, will have human and physical asset specificity and are liable to hold up problems.

A study in Kenya used proxy indicators such as perishability of products and period of production, to analyze the conditions of asset specificity and uncertainty for each of Kenya's most important horticultural products, in order to determine the expected institutional arrangement for linking producers and exporters/processors (D. Tschirley et al., 2004). The study found that the dominant institutional arrangement for coordination was that of long-term contracts and vertical integration, rather than spot market exchange.

Transaction Costs Studies

There have been a number of fairly recent applications of transactions cost economics in different fields of the food and agricultural sector. Examples of these studies are Staal, *et al.* (1997), Key, et al. (2000) and Hobbs (1997). Very few empirical studies have actually measured transaction costs to date. Staal, *et al.* (1997) asserts that the limited empirical evidence on the nature and importance of transaction costs is mainly caused by conceptual and measurement difficulties. For example, when transaction costs are sufficiently high such that they prevent exchanges from occurring, then, by definition, these costs cannot be observed because no transaction took place. The available studies have tended to focus on distance to market as a single indicator of transaction costs (Omamo, 1998).

One of the earlier studies in agriculture to carry out empirical measurement of transaction costs was the innovative approach by Hobbs (1997). Hobbs carried out a study about measuring the Importance of Transaction Costs in Cattle Marketing. The

study revealed that some transaction costs variables (such as grade uncertainty, risk of not selling, time spent at the auction) were significant factors affecting the choice of either live-ring auction or direct-to-packer sales.

A number of studies in Africa have employed a variety of techniques to measure transaction costs in small-scale farming systems (Makhura, 2001; Staal *et al*, 1997; Matungul, Lyne & Ortmann, 2001). Most of these studies have measured the effect of transaction costs on small-scale farmers in relation to selection of marketing channel and commercialization of the farmers. Few studies have considered the effect of transaction costs on decision to participate in a cooperative. Participation in organizational arrangements like a cooperative can be a result of many factors, one of which could be transaction costs. If the farmer considers the transaction costs he incurs to be high, then he will be expected to decide to join the cooperative in order to reduce his transaction costs. This is based on the theory by Williamson that economic agents will choose institutions, organizational forms and transactions that minimize the cost of exchange. One way of determining if the theory applies to small scale farmers is through assessing the impact of transaction costs on the individual farmer's decision to opt for the organizational arrangement.

Transaction cost theory indicates that vertical integration can lower transaction costs. However most of this research has been in relation to well established organizations. For example a study in Canada for milk producers compared transaction costs of farmers selling through the marketing board *vis a vis* farmers selling directly to the processors. As will be discussed later in the proposal, this study provides a similar scenario for farmers selling through the marketing cooperative and farmers selling

directly to buyers. The results from the study in Canada found that farmers selling their milk through the marketing board incur less transaction costs compared to farmers who sell directly to buyers (Royer et al, 2003).

There are many differences between these farmers and the small scale farmers in a developing country. Small-scale farmers in Africa have other challenges, like low literacy levels, poor infrastructure, small scale of production, lack or limited access to production inputs, of which in most of the study scenarios are not major challenges. These differences provide a different scenario to the studies conducted in developed countries.

Transaction Costs and Organization Theory

Transaction costs theory examines the comparative economic costs of transactions, which are the transfer of goods or services across a technologically separable interface (Williamson, 1985). This theory explores the costs associated with the organizational forms used to complete transactions when the exchanging parties are risk neutral, predicting that the more efficient governance structure – i.e., the organizational form that reduces transaction costs more – will be chosen. The general hypothesis of this strand of the New Institutional Economics is that institutions or organizational forms are transaction cost-minimizing arrangements that may change and evolve with changes in the nature and sources of transaction costs. Coase (1937) pioneered this work when he argued that market exchange is not costless.

Transaction cost theory is based on three behavioral assumptions: bounded rationality, opportunism, and risk neutrality. This implies that a transaction is associated with contractual risks, for example the opportunistic behavior of one of the contracting parties, or the so called hold-up problem that “comes up if one contracting party tries to

exploit the other party's vulnerability connected to his asset specific investments" (Royer, 1999). Asset specificity is important in transaction cost theory (Williamson, 1985) because rising asymmetric specific asset investments make markets less competitive by reducing the number of potential trading partners, locking one partner to the other and offering increasing incentives for renegotiation. As economic incentives to behave opportunistically rise, the preferences of the contracting parties diverge: while the exchanging firms have an incentive to jointly maximize long-term profits, each also wishes to maximize its return in the short term by appropriating as much of the gains as possible whenever contractual changes are required (Williamson, 1979). The condition of diverging preferences is known as goal incongruence, or a lack of overlapping goals (Ouchi, 1980). Cooperation is difficult to achieve in conditions of goal incongruence because the individuals involved each follow their own differing objectives (Mahoney J.T &R.C McNally, 2004) The conceptualization of transaction costs theory assumes goal incongruence is given, although some transaction costs theorists acknowledge that incentive alignment or loyalty may reduce goal incongruence (Alchian & Demsetz, 1972; Williamson, 1975)]. Organization theorists, on the other hand, place particular emphasis on the ability to reduce goal incongruence through means other than incentives because doing so may increase exchange efficiency (Ouchi, 1980). Organization theory adds cultural control as a mechanism to reduce goal incongruence. Cultural control focuses on aligning the views of governance structure members through organization culture, which is a fairly stable set of assumptions, beliefs, meanings, and values that individuals use to orient their thinking and to guide their actions (Scott, 1998).

Transaction costs theory shows that transaction cost problems can be dealt with using the different forms of governance structures. Organizational theory forms the basis for the concepts underlying the different governance structures. In trying to deal with transaction costs we cannot run away from organizational theories. In Williamson's framework, a trade-off has to be made between the costs of coordination and hierarchy within an organization, and the costs of transacting and forming contracts in the market (Williamson, 1985). This trade-off will depend on the magnitude of the transaction costs.

Marketing Cooperatives

Cooperatives and farmer organizations are institutional arrangements, the importance of which has re-emerged recently as small scale farmers in developing countries seek ways to organize themselves in the wake of agricultural market liberalization. Rhodes (1995) defines a cooperative as a business firm owned and operated by a voluntary association of member- patrons for mutual benefit. He goes on to describe those members of a cooperative, that as owners they have the additional perspective of patrons; and as patrons they have the owners' perspective that they can affect services and activities.

Opportunism from the side of the processor and marketer is often mentioned as one of the main reasons for farmers to set up a co-operative and carry out the processing and marketing of farm products under their control. Farmers can prevent being held-up by internalizing the transaction, that is, by integrating forward via the creation of a proprietary co-operative firm. Whether farmers will do so, also depends on the type of farm product (perishable or not) and the size of relationship-specific investments (in relation to total investments). "The incentives for farmers to integrate vertically via a cooperative firm to avoid opportunistic behavior are greatest where the

proportion of sunk costs to total costs at the time of the transaction is high and the product is highly perishable, making its transfer to alternative markets on short notice very difficult. Fruits, certain vegetables, and dairy products are examples.”(Staatz, 1989).

Theory and some empirical studies suggest that the advantages of organizing farmers into groups include, among other factors, a reduction in the transaction costs of accessing input and output markets, as well as improving the negotiating power of smaller farmers *vis-à-vis* large buyers or sellers (Iliopoulos & Cook, 1999). Other studies looked at the characteristics of transactions between farmers and their cooperatives and concluded that the cooperative “represents a hybrid organizational mode blending market forces with elements of internal organization designed to minimize transaction costs” (Iliopoulos & Cook, 1999).

The history of traditional cooperatives, on the other hand, suggests that cooperatives have not always been successful at serving the needs of its members, and their popularity had waned in the few decades preceding the 1990s. Cooperatives suffered from various organizational problems and a lack of clearly defined property rights assignments resulting in opportunistic behavior (such as free-riding, moral hazard, agency problems, etc.), bureaucratic inefficiencies, and under-investment in the cooperative (Cook, 1995; Cook & Iliopoulos, 1999).

Other research building on agency and game theory suggests that traditional cooperative principles undermine optimal resources allocation and investment policies (Vitaliano, 1983), as well as the stability of members’ coalition (Sexton and Julie, 1993; Staatz, 1989). In other words, major problems of cooperative farming appear related to

membership desertion (Barham and Childress, 1992), heterogeneous membership occasioning free-riding behavior and limited investments and capital mobilization due to horizon problems. However cooperatives remain one of the most promoted way of dealing with small scale farmers marketing problems in developing countries.

The literature review has shown that transactions are not costless and that there are many ways of looking at the cost of carrying out a transaction. The theory that was developed in the early 1930's forms the basis for most of the transaction costs studies. It has however been established that transaction costs are difficult to measure and most studies look at the cost of transacting in one contractual form or the other to establish the effects of transaction costs. One of the areas that were looked at is the use of vertical integration or institutional arrangements to minimize transaction costs. Most of the studies in this area have looked at the effects of transaction costs in the different forms of organizational arrangements to determine the best organizational form to carry out a transaction. For small-scale farmers, studies in this area have focused on the effect of transaction costs on the farmer's commercialization. Not much information was found from the studies conducted on whether the transaction costs are considered by the small-scale farmers in deciding to participate in a cooperative, a specific institutional arrangement that can potentially lower transaction costs for these farmers.

Institutions have also been said to be cost minimizing arrangements and that economic agents choose institutions or organizational forms that minimize the cost of transacting. Results from some studies that were carried out, found that organizational forms such as cooperatives lower the costs of transactions for farmers. These lower

costs of transacting could be an incentive for farmers as economic agents to choose to participate in such arrangements in order for them to minimize costs.

Since institutions and the institutional framework provide the incentives for production and for people to engage in economic activity, an institutional analysis is required to explain why the cost of transacting is so high in developing countries. The frequent occurrence of market failure and incomplete markets (because of higher transaction costs and information asymmetries) in developing countries cannot be explained by conventional neo-classical economics and requires an institutional analysis. Many of the institutions or formal rules of behavior that are taken for granted in developed countries and that facilitate market exchange are absent in low-income countries. Therefore, theories of institutional economics provide a useful framework that could help determine the types of institutions needed (either formal or informal) to improve agricultural marketing in developing countries.

CHAPTER 3 MATERIAL AND METHODS OF STUDY

Data Collection

Data was collected through one-to-one interviews using a semi-structured questionnaire (See Appendix 1). The questionnaire was administered to sampled cooperative members and non-cooperative member farmers. Data that were collected include social economic characteristics of the farmers, types of markets the farmers access, market information sources and use, type of rice buyers in the markets, period taken to sell rice, frequency at which the farmers sell their rice, and rice prices. The following information was also collected on cooperative membership: why they joined if they are cooperative members and why not if they are non cooperative members, period of membership, knowledge of members before joining the cooperative, their intention on cooperative membership if they were given a choice to join.

Prior to data collection an application was made to the University of Florida's Internal Review Board (IRB) for approval of the study. An application form together with the questionnaire and consent forms were submitted to the IRB. The consent form was translated into Chichewa which is a local language as was required by the IRB. Data collection proceeded after IRB approved the study.

Pre-testing was done before the actual data collection. This was done to get feedback on the quality of the questionnaire so that all omitted, irrelevant or misunderstood questions and mistakes could be rectified. The pre-testing was done with approximately 20 farmers in the same study area. Some minor changes were made to the questionnaire following the findings and comments from the pre-testing.

The actual data collection covered a period of 3 weeks from 26th October to 11th November, 2009. Two enumerators were hired to assist with the data collection. These enumerators are Bunda College of Agriculture graduates who had just finished their final year at college. Before going to the field for data collection, training of the enumerators was conducted to reduce human error and also to ensure that the questions were clearly understood and properly translated into Chichewa¹ since they were originally in English.

Study Area

The study was conducted in Malawi. Malawi is in the southern part of Africa. The country is divided into three regions geographically Southern, Central and Northern regions. The regions are further divided into 28 administrative districts.

In the agricultural sector, the country is divided into 8 divisions called Agricultural Development Divisions (ADD). These ADDs are constituted of districts which are controlled by the District Agricultural Offices (DAO). There are a total of 28 DAOs in the country divided among the ADDs. These ADDs have between 2 to 7 DAOs in one ADD. The highest number of DAOs in one ADD is 7 which is Blantyre ADD. Each district is further divided into Extension Planning Areas (EPA) which are further divided into sections. The sections are then organized according to villages in the area. The extension workers are based in the sections and work with the villages that are within the section.

This study was conducted within Dedza district, particularly Bwanje valley in Mtakataka EPA. Dedza DAO falls under the Lilongwe ADD which is in the central

¹ Chichewa is the local language through which the questionnaire were administered

region of the country. The district was purposively selected because the valley is a rice growing region and also because they have an established rice production and marketing cooperative. The cooperative was also purposively selected from the district since it is the only rice production and marketing cooperative in the district. The study targeted Bwanje Valley Rice Production and Marketing Cooperative (BVRPC). This cooperative has been in operation for more than 10 years.

Refer to appendix B for a map of Malawi showing the study area.

Sampling Design

According to Cochran(1977), a formula for determining a sample size expressed as a percentage is;

$$n = \frac{(t^2)(p)(q)}{(j^2)} \dots\dots\dots(3-1)$$

where t^2 = the standard deviation score that represents the probability level of a variable of falling within a confidence interval when the variable is normally distributed

$(p)(q)$ = Variance

j^2 = confidence interval

We yielded the following results after incorporating our data variables into the formula: this is what were represented as follows:

$$n = \frac{(1.96^2)(.5)(.5)}{(.05^2)} \dots\dots\dots(3-2)$$

$$n \approx 384$$

The probability level and confidence interval of 1.96 and 0.05 respectively were used as these are the commonly used estimates and normally accord estimation process

efficiency. The variables making up the variance represent the proportion of farmers who are cooperative members and those who are non cooperative members., Czaja R. and Jonny B. (1995) recommends that a 50% proportion for each is ideal in a situation where the it is difficult to source the specific estimates for these proportions. The study needed to collect a sample size of about 384 to be able to represent the target population of our study. However, due to budgetary constraints, time and other factors, the study managed to collect a sample size of 190 . This is still a significant figure considering that it's still a large sample and it was randomly collected.

A two-stage sampling was employed to come up with the sampling units. The selection of Lilongwe ADD and Dedza district was the first stage. Dedza DAO has only one rice production and marketing cooperative hence the cooperative was purposively selected. The second stage was the selection of villages in the EPA where the cooperative is based. The following villages were selected Mchanja, Fole, Mthembanji, Bwanamakowa, Chatewa, Madziansatsi, Kafulama, Ndongwe. It was found out later that Ndongwe and Chanja villages belong to Golomoti EPA. They were still selected due to their closeness with the irrigation scheme and since most of the farmers from the area were cooperative members who were farming in the irrigation scheme.

A stratified sampling technique was used where the farmers were stratified into two strata, rice farmers in a cooperative and rice farmers not in a cooperative. Using a list of farm families maintained by the Agricultural Extension Development Coordinators (AEDC) in the area as a sampling framework, a total of 200 farmers were then randomly sampled from the strata , 110 from the cooperative and 90 non cooperative,. This represents 3.3% of the total population of farm families in the villages from the area

under study. For coop members a total of 110 were sampled from 2062 cooperative members representing about 5.3% of the total cooperative membership. For the non coop members a total of 90 were sampled from a total population of 3919 farm families who are not coop members in the area representing 2.3% of the population.

A total of 179 interviews were achieved due to other problems like movement, death and unwillingness to participate in the study of the sampled respondents.

Analytical Framework

Analytical Approach

SPSS 15.0 and Stata were used for data analysis. Both qualitative and quantitative analytical approaches were employed in analyzing the data. The two approaches were used in order to widen the explanation base for the results that were found.

The data have been analyzed in two parts. The first part includes the descriptive analysis, cross tabulations and contingency tables. The Chi square is used to test the presence of significant association between cooperative membership and proxy variables that are used to determine the extent of transaction costs. The second part is a regression analysis of survey data.

Descriptive Analysis

Frequencies, means, and percentages were computed to determine and rank the constraints farmers face in marketing their rice. The descriptive statistics were also used to summarize and categorize the information that was collected. Information on marketing constraints, information sources and information use were analyzed to determine the sources of transaction costs the farmers face in the area.

Analysis of Transaction Costs and Cooperative Membership

Test of association

Transaction costs, especially for small scale farmers, are difficult to measure quantitatively. This research focused on assessing and documenting specific dimensions of a transaction (asset specificity, transaction frequency and information asymmetry). As noted in the literature review (Chapter 2), proxies for information and search costs such as availability and access to market information, bargaining and negotiation costs such as number of available buyers, or how long it takes for farmers to sell their produce, have been used to determine the extent of transaction costs farmers incur while marketing their produce. When used in these studies, these proxies provided keys to understanding organizational effects on transaction costs for individual farmers.

For this thesis, the analysis is comparative, assessing the cost of conducting transactions in one organizational or contractual form relative to another. With this concept in mind, the goal of the tests of association was not to measure the absolute amount of transaction costs, but the relative ranking of transaction costs associated with different organizational or contractual choices. Furthermore, as reported in numerous project reports and related unpublished empirical studies, transaction costs are not directly measured (Wang N., 2003) Certain proxies, such as uncertainty, transaction frequency, asset specificity, opportunism, and so on, are used instead, which are believed to critically affect the cost of transactions. A statistically significant relationship between the chosen proxy and organizational governance suffices to make the point clear that economizing on transaction costs is the unifying logic behind various contractual arrangements of production. (Wang N., 2003). Hence, these studies are

able to move around the tricky question of quantifying the absolute level of transaction costs.

For this thesis the following variables were used to approximate the extent of information costs and bargaining costs. These variables are considered to have an effect on transaction costs

Information and search

Knowledge about buyer
Knowledge about distant market
Time to sell in market
Knew price in market of transaction
Knowledge of prices in the other markets
Frequency of sale

Bargaining and negotiation

Average price received (K/kg)
Number of available buyers
Farm experience (years)
Land redeployment to other crops

Other control variables

Farmer's age (years)
Farmer's education (years)
Gender of the farmer
Membership in cooperative
Land holding size

The study concentrated on the search and negotiation costs to establish the relationship between the transaction costs and cooperative membership due to the nature of the data that was expected to be collected. The inability of the target population to access well established markets and other limitations result in sales without properly prepared contracts with buyers. This makes it difficult to identify enforcement and monitoring costs and determine the relationship. Proxies will be used

in the to establish the existence of transaction costs among the farmers due to the difficulties associated with the measurement of transaction costs.

Regression analysis: Participation model

The regression analysis will be used to determine the significance and direction of the effect of the proxy variables on the choice decision to join a cooperative or not and the effect of membership on income. During the pre-test it was discovered that cooperative membership for Bwanje Valley Rice Production and Marketing Cooperative is restricted to those farmers who have plots of land in the irrigation scheme. With the restricted participation it would be difficult to establish the effect of the TC variables on the decision to join the cooperative. In order to find the effect on ones decision regarding cooperative participation, the study considered asking the farmers their intention on choice given a scenario where membership is not restricted. The choice that they indicated they would make was used in finding out the effect of the TC variables on the choice decision of participating in a cooperative.

The TC variables that were used in the study are those that are said to affect the three principle dimensions describing a transaction as identified by Williamson, 1979. The dimensions include uncertainty, frequency of exchange, and the degree to which investment are transaction-specific. The assumption is that a change in the variables affecting these three dimensions will have an effect on the cost of the transaction. The variables have been discussed below in relation to the transaction characteristics;

Asset specificity : This will be determined by the farmer's level of experience in the production, ease of redeployment of the resource (rice field) and probability of being held up by the buyer (dependency on the buyer). Asset specificity has an impact

on the negotiation cost and higher levels of asset specificity lead to high negotiation costs.

Uncertainty: Lack of sufficient information contributes to bounded rationality and uncertainty about the transaction. Finding a buyer for the produce and assessing the fairness of his or her offers requires availability of sufficient information. Search cost will be determined by level of knowledge or the amount of information (about the markets, buyers and prices) that the farmer has at the time of sale and source of information.

Frequency of transaction: Transaction costs are transaction specific. Farmers who carry out many transactions each with a different buyer are likely to incur more costs because for each of the transactions they carry out they will need to search for a buyer. The cost of carrying out a transaction is also increased because there is a higher probability of opportunistic behavior if there is no buyer-seller relationship. For such farmer the higher the number of transactions, the more likely the farmer is a member of the cooperative, as membership will help reduce the transaction cost incurred for each transaction.

Other variables that were expected to affect the choice decision, to be a cooperative member or not, were used as control variables in order to reduce the omitted variable bias. The following variables were used as control variables - education level of farmer, gender of farmer, age of farmer, and distance to the nearest market. A regression was run to establish the relationship between transaction costs and the choice of cooperative membership.

Econometrically the specification problem followed a latent regression model

$$y^* = \beta' X + \varepsilon \quad (3-3)$$

Where y^* the latent variable is unobserved (i.e., the importance of transaction costs in the decision process). What we observe is a dummy variable y defined by

$$y = 1 \text{ if } y^* > 0$$

$$y = 0 \text{ otherwise}$$

Here X is the vector of transaction costs proxies and other variables that influence cooperative membership choice decision and ε_1 is the error term following normal distribution. Probit method was used to estimate this equation. The likelihood function of this model can be written as:

$$P(\beta, \sigma | y_i, X_i) = \prod \Phi(-\beta' X) \prod [1 - \Phi(-\beta' X)] \quad (3-4)$$

The marginal effects of this model can be written as:

$$\frac{\partial P(X_i' \beta)}{\partial X_{ik}} = \phi(X_i' \beta) \beta_k \quad (3-5)$$

To test the hypothesis, a probit analysis was run on the model indicated below.

$$\begin{aligned} \text{Join} = & \beta_0 + \beta_1 \text{AGE} + \beta_2 \text{AGESQR} + \beta_3 \text{FAEXPER} + \beta_4 \text{BUYDEP} + \beta_5 \text{ASSETRED} \\ & + \beta_6 \text{BUYINFO} + \beta_7 \text{MKTINFO} + \beta_8 \text{PRICINFO} + \beta_9 \text{EDUC} + \beta_{10} \text{FREQ} + \beta_{11} \text{GNDR} \\ & + \beta_{12} \text{DIST} + \beta_{13} \text{TYPBUYER} + \beta_{14} \text{MEMBER} + \text{FAEXPSQ} + \varepsilon_1 \end{aligned} \quad (3-6)$$

In the model, Join was the dependent variable which took on a value of 1 if the respondent indicated that they would join the cooperative and 0 otherwise. The following are the independent variables that were used in the model,

AGE	=	Age of the respondent
AGESQR	=	Age of respondent squared
FAEXPER	=	Farmers experience in rice production
FAEXPSQ	=	Farmer experience squared
BUYDEP	=	Farmer level of dependency on buyers

costs are associated with haggling, verification problems, and other bargaining difficulties that may arise because of inappropriate or ambiguous performance measures, hidden information, or moral hazards. The variable TYPBYR which stands for type of buyer was included in the model after establishing that it had some influence on the negotiation abilities of the farmers. This was established during the discussion held with the farmers on their ability to negotiate.

Knowledge about the buyer/s, knowledge about availability of markets, knowledge about prices: In order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with. Therefore information becomes vital for the transaction to take place. These variables have an effect on information asymmetry. This can impact on the level of uncertainty and opportunistic behavior which will have a bearing on the search cost. The expectation is that when faced with high costs the farmer is likely to become a member of a cooperative.

Education: It is expected that farmers with more years of education will be able to understand the benefits of membership to a cooperative and they are more likely to join it.

Age and Agesq: Age is the age of the respondent and Agesq the age square which was used to capture the diminishing effect of a respondents age

Experience : Experience refers to the period the farmer has been growing rice

Distance: Distance to nearest reliable produce market is expected to have a positive relationship with participation in the cooperative. The further away the nearest reliable produce market is the more likely it will be for farmers to become cooperative members in order to access a markets through the cooperative.

Regression analysis: Income model

The second model that was run was the income model. It was expected that the incomes of the cooperative members will be higher than the incomes of non-cooperative members, holding all other factors constant, following the low transaction costs that are said to be associated with cooperative membership. Cooperative membership in this case is considered to be an endogenous variable and as a result it will be included as an instrumental variable in the income equation.

In an Instrumental Variable setting, we need to find a variable which should be highly correlated with the treatment but not with the error term or the other explanatory variables, i.e. $Cov(z, D_i) \neq 0$, $cov(z_i x_i) = 0$, and $cov(z_i u) = 0$ where u is an error term (Wooldridge 2003) .

Wooldridge (2003) showed that (IV) can consistently estimate the population average treatment effects under weaker assumptions than those needed for two stage least squares plug-in estimators proposed by Heckman (1998). Blundell (2002) also indicated that given cross-sectional data, instrumental variables can be a reliable tool for evaluating program impacts as long as it satisfies the required assumptions. Under the required assumptions an (IV) provides the required randomness in the assignment rule. Thus the relationship between the instrument and the outcome for different participation groups identifies the impact of treatment avoiding selection problems. Selection problems arise because ones decision to join a program may be determined by other factors for example education. Higher education might influence their incomes positively and entailing that the high incomes would be as a result of the high education and not necessarily the program participation.

The problem could be written as follows;

$$Y_2 = \beta_1 X + d_1 Z_{\text{member}} + e_1 \quad (3-7)$$

$$z = \beta_2 w + e_2 \quad (3-8)$$

Where Y_2 will be the logarithm of rice incomes while z is a dummy for membership into the cooperative and X contains age, education and gender of the farmer, land holding size, membership to cooperative, production, off farm income, .

In the model Z will be the coop membership while w will contain Distance, Knew coop members and experience, these variables will be used as instruments for cooperative membership. It is assumed that these variables are correlated with cooperative membership but are not regressors in the income model and they are not correlated with the error term.

Following this, the empirical model for income can be written as;

$$\text{Log income} = \beta_1 + \beta_2 \text{quantity} + \beta_3 \text{age} + \beta_3 \text{agesqr} + \beta_4 \text{educ} + \beta_5 \text{off farminc} + \beta_6 \text{coop} + \beta_7 \text{land} + \beta_8 \text{male} + \varepsilon \quad (3-9)$$

Where:

Dependent variable is the log income. This is the log of rice incomes the farmer has attained in the previous growing season. The income was determined by multiplying the quantity the farmer sold and the average price at which the farmer sold his rice. Log of income was used in order to reduce the fluctuations in the income data.

The following are the independent variables:

Quantity: The quantity the farmer produced during the period. Since the study is focusing on rice incomes then the quantity the farmer is able to produce will positively affect the income they realize from the rice sales. This variable was later dropped

because it was highly correlated with the land variable which is the size of the plot of land the farmer has.

Age: In the model age is the age of the farmer. Age is likely to have a positive and negative effect on income because the older people are less likely to work as well as the younger ones and this will affect the output. Age square was used to capture the diminishing effect of age on the income

Education: The number of formal education years attained by the farmer. Education affects the farmers' ability to comprehend issues and also the level of technology adoption. These have an effect on the farmers' production levels and consequently the income realized.

Off farminc. This is the availability of off farm income for the farmer. For farmers with more sources of off farm income they are likely to have more purchasing power to access inputs and other production requirements. This will have an impact on the quantity and quality of the rice they sell. In the end it affects the income realized from rice sales.

Coop: This value is from the estimated model of cooperative membership.

Land : This is the size of the rice fields the farmer used to produce the rice during the period being studied. It is expected the farmers with larger fields will have higher incomes as a result of higher production for their field. ,

Gender: This is the gender of the farmer taking the value of 1 if the farmer is a male and 0 for female.

The following instruments were used for cooperative membership to deal with the problem of selection bias.

Experience: This is the period the farmer has been growing rice. The assumption is that farmers who have been growing rice for a long time has a higher chance of getting a plot of land in the scheme and participating in the cooperative.

Knew coop members: This is a dummy variable taking a value of one if the farmer knew any coop members and 0 if not.

Distance: This is the distance to the nearest market.

Expected Relationship

The table below shows the relationship that is expected between the dependent variable and the independent variables listed in the models explained above. These expected relationships were derived from theory and other similar empirical studies reviewed in this study. In some instances the relationships are difficult to determine as they might either be negative or positive.

Table 3-1. Variables and their expected relationship

Variable Description	Variable	Participation	Income
Number of buyer farmer encounters	Nobuyer	-	
Farmers experience in rice production	faexper		+/-
Age of the farmer	Age	+/-	+/-
Level of buyer dependency	buyerdep	+	
Asset redeployment	Assetred	-	
Information about the market	marketinfo	-	
Knowledge about the prices	Priceinfo	-	
Number of times farmer sells	frequency	+	
Gender of the farmer	Male	+/-	+/-
Distance to the market	Distance	+	-
Quantity produced in the previous season	quantity		+
Education level of the farmer	Education	+/-	+
Farmers' membership in a cooperative	Coop		+
Farmers off farm income	offfarminc		+
Land holding size	Land		+

CHAPTER 4 SOCIAL AND ECONOMIC CHARACTERISTICS OF THE FARMERS

Age and Gender of Farmers

A total of 200 rice farmers were sampled in the study with 110 farmers from the coop and 90 farmers from a target population of non coop members as described in chapter 3. A total of 101 and 78 farmers respectively were successfully interviewed. Results from the study show that no gender category is fully dominating in rice production. For non coop members 50% of the sample were males and 50% were females while for coop members 54.5% were males and 45.5% were females. For the coop members, the percentage composition from the sample does not follow the composition of the total membership of the cooperative which has a higher percentage of females than males, 53.4% females and 46.6% males. However the results show that no gender category largely dominates the participation in the coop which is similar to the total membership composition as shown by the small difference in the percentage of men and women in both the sample and the total population.

It can be noted that age was somewhat evenly distributed in both samples (coop members and non-coop members). No age group was dominating as shown by the results. From the sample 28.7% was between the ages of 18 to 24, 21.8% were in the age group of 25 to 34 while 19% were in the age group between 45 to 51 years.

Table 4-1 shows the age distribution for the respondents according to their membership status.

A difference can be noted in the age group of 25 to 34 where for the non cop members only 12% belong to this group while for the coop members it was 21%. For the higher ages participation in the coop is lower as shown by the dwindling

percentages in the sample while for non coop members the percentages are going up. This shows that , currently, farmers tend to participate more in the groups when they are younger and less when they grow older. Only 3% of the coop members were above the age of 50. This may be a generational effect, such that as current young members age, they will maintain their cooperative membership, thus in time, there will be less difference across age categories in the future.

Table 4-1. Age of farmers

Age	Coop membership status	
	Coop members	Non-Coop members
18 to 24 years	28.7%	26.9%
25 to 34 years	21.8%	12.8%
35 to 44 years	26.7%	29.5%
45 to 51 years	19.8%	24.4%
Above 51 years	3%	6.4%

Farmers Education Levels

Education plays an important role in economic development. In addition farmers who are literate are expected to better understand instructions and comprehend issues. When farmers attain a certain level of education they adopt new technologies faster than the less educated farmers. Their level of understanding is expected to improve and enable them to participate in groups. In this study, farmers with no education level are those that have not had any kind of formal education.

From the sampled farmers 62.7% of the coop members had some formal education up to 5 years while 27.4 had never had any kind of formal education. Only 4 percent had more than 8 years of formal education. Similarly for non coop members the majority in the sample had up to 5 years of education,51.3% and 34.9% never had any kind of formal education. Only 2.6% had more than 8 years of education.

Table 4-2. Education levels for farmers

Education level	Coop membership status	
	Coop members	Non-Coop members
None	27.4%	34.9%
1 to 5 years	62.7%	51.3%
6 to 8 years	11.5%	5.9%
More than 8 years	4%	2.6%

With most of the members having very low education levels or none at all, it provides a challenge for the cooperative in terms of management. This is so considering that management positions in the cooperative are occupied by the farmers themselves, who are responsible for decision making for the cooperative. These proposed decisions made in the cooperative are then voted for by the members who have one vote each regardless of the number of shares one owns or the amount of business one does with the cooperative. It could be a challenge for members to comprehend issues properly and vote wisely for the decisions.

Purpose of Producing Rice

In Malawi, maize is the staple food and other crops like rice are usually grown for cash or for batter trade where they exchange rice for maize. However in some areas where rice is grown in abundance it becomes a substitute for maize with some households growing it for food. Most of the farmers along the valleys grow rice because maize does not do well due to the nature of the soils. Soils in these areas are usually water logged in the rainy season making it hard to grow maize. Bwanje valley is one of those areas where most of the land is water logged during the rainy season making production of maize difficult.

In this sample 57.4% of the coop members indicated that they grow rice mainly for food but they also keep some to sell while 40.6% indicated that their primary goal for

producing rice is to sell but they also keep some for home consumption. Similarly for non coop members the majority which is 64.1% indicated that they grow rice primarily for consumption but they keep some to sell while 33.3% indicated that they grow rice primarily to sell while keeping some for home consumption. Only about 1% in both cases indicated that they grow rice just to sell or just for consumption.

Table 4-3. Purpose for rice production

Purpose	Coop membership status	
	Coop members	Non-Coop members
Consumption only	1.0%	1.3%
Consumption and sell	57.4%	64.1%
Sell only	1.3%	1.3%
Sell and consumption	40.6%	33.3%

It can be noted from the results that from the coop members a higher percentage indicated that they grow rice with a primary purpose to sell and only keep some for home consumption compared to the non coop members who indicated the same. This could be attributed to the business exposure through various trainings that the coop members are exposed to, which is not the case for their non coop counterparts. However the difference between the two groups is not significant.

Farmers' Source of Income

Most rural Malawians depend on farming as their source of income. The study's findings concur with statistics that indicate that the majority of rural households depend on agriculture as their source of income. From the results 84.4% of the total sample indicated that they depend on rice production as their main source of income, while 15.6% indicated that they depend mostly on other sources. These results are similar to those of other GoM statistics which indicate that 80% of rural households depend on farming as their major source of income.

Other income generating activities for most rural households include small enterprises, piece works, and remittances. Off farm income has an effect on the use of inputs by the farmers. Availability of off farm income improves the farmers access to inputs which in turn is expected to improve their yields. It can be noted from the results that the majority of the farmers did not have any other source of income other than farming. This figure is higher for farmers who are not coop members than the farmers who are coop members, 59.0% and 43.6% respectively. The study found that the other major source of income apart from farming is small enterprise, which includes hawkers, beer brewing, and small scale bakeries.

Table 4-4. Farmers' sources of off-farm income

Source of Income	Coop membership status	
	Coop members	Non-Coop members
Small Business	37.4%	24.4%
Piece Works	18.8%	15.4%
Employment	3.0%	0
Remittances	.0	1.3%
None	43.6%	59%

From the sample 34.7% of the coop members indicate that they are involved in some kind of a small business while for non coop members 24.4% indicated that they have a small business.

The results indicate that most of the coop members have other sources of income. In this case it would be expected that they would have a higher production than their non member counterparts since their access to inputs would be higher. It can also be noted that the other source of off farm income is piece works. The piece works involves mainly working on other peoples' farms. From the sample 18.8% of the coop members

indicate that they earn additional income from piece works while for non coop members it was 15.4% who indicated piece works as their other source of income.

Remittances and employment have very minimal significance as sources of income for the farmers in this area of study. Only 3% from the coop members indicated that they are employed and none from the non coop members while only 1.3% from the non coop members indicated getting remittances as additional source of income and none from the coop members indicated that they get remittances.

Rice Production and Marketing

Rice Production

Bwanje valley is one of the major rice growing areas in Malawi. Production of rice in the area is done by small scale farmers. Development of an irrigation scheme improved production by controlling the supply of irrigation water to the rice fields. However production is also done in fields outside the irrigation scheme. All Cooperative members have plots of land in the scheme where they grow their rice and some also have additional plots of land outside the scheme where they also grow rice.

Rice production for these small scale farmers is still on the lower side compared to the potential of 6000kgs per hectare (Malawi Government, 2002) which translates to 2450kgs or 48 50kg bags per acre. From the sample production ranged from 2 to 80 50Kg bags of rice which is 100 to 4000Kgs. The average production was 22 bags and the median was 18 bags. It can be noted from the average and the median that production is still low especially considering that most of these farmers, 76%, had one or greater than one acres of land.

It can be noted from the study results that for most of the cooperative member farmers, production was higher than that of the non member farmers. From the sample

46.2% of the non member farmers had a production of less than 10 bags of rice compared to only 21 % from the coop member farmers.

Table 4-5. Rice production quantities, reported in 50kg bags

Quantity	Coop membership status	
	Coop members	Non-Coop members
Less than 10	21.8%	46.2%
11-20 bags	22.8%	26.9%
21 – 30 bag	23.8%	10.3%
31 – 40 bags	17.8%	10.3%
Above 40 bags	13.9%	6.4%

A chi square test of association reveals that there is a strong association between rice production level and farmers membership to a cooperative at 99% level of significance. The table below shows results from a cross tabulation between production and membership.

Table 4-6. Results for cross tabulation between coop membership and production

	Less than and equal to 20 bags	More than 20 bags
Cooperative member	45	56
Non Cooperative member	57	21

Pearson Chi2 = 14.607 Pr = 0.000

This can be attributed to the benefits that the coop member farmers enjoy in the irrigation scheme which include extension services, controlled water supply and inputs such as fertilizer.

The major problem facing the plots outside the scheme that was indicated as lack of water control where sometimes there is too much for the crops or the water does not get to the fields in adequate amounts. From the study it can also be noted that for the coop members a higher percentage produces between 31 to 40 bags and only 13%

produces more than 40 bags. The productivity however is still lower than the potential even for the farmers in the irrigation scheme.

Rice Marketing

Kohls and Uhl (1990) defined agricultural marketing as comprising the business activities associated with the flow of goods and services from agricultural production to food and fiber consumption. Marketing enables agricultural producers to break out of a subsistence “straight jacket” and to grow produce for sale. In this way, it gives the farmers more income so that they constitute a growing market for domestic industry (Nyirenda, 1988). This was evident in the study as almost all the sampled farmers sold some of the rice they produced for income. However following the low levels of production most farmers reported that they only sell their production when cash is needed as evidenced by 57.4% of the coop member farmers sampled who indicated that they only sell when the need arises and 62.8% non coop member farmers who indicated the same.

Availability of markets is one element for improving the marketing of agricultural products. When farmers are making a decision on where to sell a particular crop they base their decision not only on the prices they expect to receive in each of the market but also on additional costs related to transacting in these markets (R. Vakis et al, 2003). The study found that most of the farmers sold their rice at the farm gate. From the sample 85.9% of the non coop member farmers indicated that they sold their rice at the farm gate and 73.7% of coop members indicated that they sold their rice at farm gate. It is interesting to note however that for the coop members the figure is lower than the non coop members. This indicates that coop members access other markets which

most of the non coop members do not. The table below shows the percentages of farmers which patronize the different markets.

Table 4-7. Farmers markets

Market	Coop membership status	
	Coop members	Non-Coop members
Farm gate	73.7%	85.9%
Local	20.5%	29.3%
Distant	9.1%	6.4%
Cooperative	7.1%	0%

From the results it was found that a higher percentage of coop member farmers sold their rice at the local market as well as the distant market, 29.3% and 9.1% respectively compared to 20.5% and 6.4% of the non coop member farmers. Distant market is the least accessed market. The reason indicated for not accessing the distant market was mainly the high transportation cost that is associated with selling at the distant markets. Most farmers indicate that they have little information about the distant markets and accessing the market would be risky for them.

The study results also show that the cooperative market was only accessed by the coop member farmers. Only 7.1% of the coop member farmers sold their rice to the cooperative. It was found out that the cooperative had some financial problems and hence they were not able to purchase rice from most of their members for two growing seasons. As a result of this most of the members resorted to identifying other markets to sell their rice. Failure of the cooperative to provide a market to all its members in this case provides a challenge to one of the essential objectives of a marketing cooperative which is to improve the members' access to markets by providing a market for their produce.

Access to the different markets will have a bearing on the transaction costs that the farmer faces. For example if a farmer only sells at the farm gate he is likely to avoid incurring costs like transportation, time spent at the market, however competition is likely to be low at the farm gate and prices are hence also likely to be low. The choice of farm gate could be attributed to the nature of the business activity the farmers carry out and also the production level. The study found that 59.9% of farmers sell their rice when need arises. This means it would be costly for them to take a few bags to the market for sell every time need arises. Selling at the farm gate becomes a less costly option for the farmer.

Major Types of Rice Buyers in the Area

The study identified the types of buyers that are major players in the rice market in the area. The table below shows the typical buyers to whom the farmers usually sell their rice.

Table 4-8. Type of major rice buyers in the area

Buyers	Coop membership status	
	Coop members	Non-Coop members
End consumers only	3%	3.8%
Mostly consumers but also assemblers	2%	1.3%
Assemblers only	72.3%	69.2%
Mostly assemblers but also consumers	22.8%	25.6%.

From the study results it was found that the majority of the farmers sell their rice to assemblers. Out of the sample 72.3% of the coop members indicated that they sell their rice only to assemblers and 69.2% of the non coop member farmers indicated selling their rice only to assemblers. Some farmers indicated that they sell to assemblers but they also sell directly to consumers. From the sample 25.6% of the non coop members

and 22.8% of the coop member-farmers indicated that they also sell to consumer but assemblers are their main buyers.

The assemblers are usually the middle men that come to buy the rice from the area for resale at markets in the cities of Lilongwe and Blantyre as well as neighboring districts. However the farmers also indicated that some of the assemblers are local people from the area who also buy the rice to sell at distant markets.

From the sample only 3.8% of the non coop members and 3% of the coop members indicated selling only to end consumers while 1.3% of non coop members and 2% of the coop members indicated selling primarily to consumers but they also sell to assemblers. The farmers who indicated selling their rice to consumers said that they sold polished rice. They mill the rice and usually sell it at the market in small portion as demanded by the consumer. These portions could be as little as 250 grams. They also pointed out that sometimes they do sell around their neighborhood through door to door selling.

It can be noted from the results that middlemen are still the major players in the marketing of rice in the area. These middlemen usually sell the rice that they purchase to the rice milling companies in the city at higher prices than the prices they offer the farmer. Rice Milling Company is one of the companies which package polished rice. They indicated that they buy their entire paddy from middlemen who bring it to their door step. This shows that the farmers would be able to sell their rice at higher prices if they were able to access such markets directly. However it entails a higher investment in terms of transportation and also farmers' willingness to wait for payment for a specified

period of time which is agreed upon with the buyer. These two factors also contribute to the farmers' failure to utilize such markets to sell their rice.

The study also looked at the type of relationship the farmers had with the buyer. Knowing the buyer would improve the farmers' access to the buyer and reduce his search cost because the farmer would know who to contact when they want to sell their rice and also the negotiation cost because of the built trust between the buyer and the farmer. From the study results it was found that most of the farmers sell their rice to total strangers. From the sample 72.6% indicated that they sell their rice to people they do not know at all while 17.9% indicated that they somehow know the buyers from past transactions. Only 5.6% indicated that they know their buyers very well while 3.9% indicated that when selling to consumers they know them but when selling to assemblers they do not know them.

This can be attributed to the earlier results which show that the majority of the farmers sell their rice to assemblers who might not always be the same people. The low percentage of buyers being known makes a lot of sense because very few farmers from earlier results said that they sell to end consumers. These end consumers are likely to be people they know because they mentioned that they sell to consumers around the same area or in their neighborhood.

Results from a cross tabulation between production sold and knowledge of the buyer shows that the farmers who sell to buyers they do not know are the ones selling lower volumes of rice than the farmers who sell to people they somewhat know from past transactions. The difference was marginally significant at 10% level of confidence. This could be as a result of the buyer farmer relationship that the farmers who sell more

are likely to establish with the buyers. It could be likely that farmers who sell lower volumes do not really establish relationships with the buyers and hence sell to anyone who comes to buy. However there is a need to get more insight into this relationship to objectively describe the reason behind this. The table below shows the results of the cross tabulation

Table 4-9. Results for cross tabulation between buyer knowledge and sales volume

	Less than and equal to 15 bags	More than 15 bags
Do not know buyer at all	91	39
Somewhat know Buyer	24	8

Pearson Chi2 = 6.2938 Pr = .09

Rice Marketing Constraints

The farmers cited various constraints that they face when marketing their rice. The major problems include: lack of proper and organized markets, low producer prices, exploitation by buyers, poor road infrastructure, high transportation costs and lack of market information among others. Table 4-10 below explains more in terms of percentages.

Table 4-10. Rice marketing constraints

Market	Coop membership status	
	Coop members	Non-Coop members
Lack of markets	33%	35.1%
Low prices	83%	77.9%
Poor road infrastructure	18%	10.3%
Too few buyers`	33%	50.6%
High transportation cost	19%	14.3%
Buyers cheating farmers	36%	26%
No proper link for buyers and farmers	18%	10.4%
Lack of market information	32%	23.4%

From the study results the major constraints that were cited by the farmers were low producer prices (83% for coop members and 77.9% for non coop members), too few buyers (50.6% for non coop members and 33% for coop members) and lack of markets (35.1% for coop members and 33% for non coop members). Low producer prices could be attributed to fact that most of the farmers sell their rice soon after harvest when the supply is very high. The farmers indicated that they are desperate for money at this time of the season because they have a lot of bills to settle which are usually due at harvesting time. This makes them vulnerable to selling at any price the buyer offers so that they can get the money that is needed. The middle men who are usually the buyers take advantage of this and offer very low prices. These prices however improve as the supply gets low. For those farmers who are able to keep some of their production to sell later, they benefit from the improved prices. The farmers could benefit from the improved prices by staggering the sale of their produce so that they sell some of their produce during the off season period to benefit from the higher prices.

The other important problems were: poor road infrastructure, lack of market information, farmer exploitation by buyers and high transportation costs. In some areas the roads were impassable during and soon after the rainy season. This hinders access to the place by the buyers and most of the farmers cannot manage to transport their rice to other markets. This then makes the few buyers who have managed to reach the area to offer very low prices leaving the farmer with very few options either to sell at the giveaway price or to keep his rice with very few prospects of selling in the near future.

The study also tried to seek ideas from the farmers on what they think could be the solutions to the challenges indicated above. Suggestions to improve the situation

include: improvement of road infrastructure to improve transportation and access to the area, government intervention and regulation on producer prices, all farmers in the area getting more organized to form an association, and government to assist the farmers by identifying markets or reopen ADMARC² markets in the areas.

² ADMARC markets were closed down in the area following the restructuring of the marketing board

CHAPTER 5 TRANSACTION COSTS AND COOPERATIVE MEMBERSHIP

Transaction Costs Sources

As discussed earlier, transaction costs include information, bargaining, and monitoring costs. Information costs occur before the exchange takes place and include aspects such as searching for attributes that could facilitate the transactions, seeking better prices, and looking for potential buyers. Bargaining or negotiation costs are incurred during the exchange and include the time to negotiate a contract, reach an agreement, and make arrangements for payment. Transaction costs are difficult to measure directly. Certain proxies that are believed to affect the cost of transacting are used instead. The study identified the aspects of a transaction that are a major source of transaction costs for the farmers in the area. The transaction costs sources include: market information (information about prices, other markets), availability of few buyers in the market, limited other uses for land and poor road infrastructure.

Market Information

Market Information encompasses a number of areas which include information about goods, quantities, qualities, markets, prices, buyers both for the market of transaction as well as others. The purpose of market information is to assist both producers and traders in balancing supply and demand so as to limit excessive price rises and surpluses (Abbot, 1967). Market information is very crucial in agricultural marketing since it highlights availability of good quality products and prices and it enables both traders and producers to make informed decisions in regards to marketing activities. When estimating transaction costs, market information affects search costs. For the farmers to identify a buyer for their produce, make a choice on where to sell and

at what price, they need to have information in order to make informed decisions. Lack of market information will hinder farmers from selling in more lucrative markets and transacting at lower costs.

The study focused on information about availability of other markets and prices in other markets before the farmer makes a sale. Table 5-1 presents information on the source of information for the traders.

Table 5-1. Sources of Market Information

Source	Coop membership status	
	Coop members	Non-Coop members
Radio	18.8%	33.3%
Family and Friends	22.8%	30.8%
Extension Worker	5%	5.1%
Cooperative	8.9%	1.3%
Buyers	14.9%	2.6%
No Information	29.7%	26.9%

It can be noted from the results that most of the farmers depended on family and friends as a main source of information. From the sample 30.8% of the non coop member farmers and 22.8% of the coop member farmers indicated family and friends as their major source of information. Other sources of information were; extension worker, 5% and 5.1%, cooperative (8.9% and 1.3%), Radio (18.8% and 33.3%) and Buyers (4.9% and 2.6%) for coop member and non coop member farmers respectively.

It would also be interesting to note that 29.7% and 22.9% of the coop member farmers and non coop member farmers respectively, indicated that they do not have any kind of market information. This translates into 28.5% of the total sample indicating that they do not have any kind of information. This makes market information as one of the major sources of transaction costs in this area. This lack of market information would increase the farmers cost of searching for a buyer and increases the chances of not

finding the buyer in advance thereby also increasing the time taken to sell the product in the market.

A chi square test of association indicates that there is a significant association between cooperative membership and source of market information. There is sufficient evidence at 1% level of significance that source of information and coop memberships are co-dependent. This means that coop membership may have an influence on the farmers' access to information. The study however found that cooperative is one of the least indicated sources of information and that non coop members had more information compared to the coop members as shown by 29% of coop members who indicated not having any kind of information compared to 26% for non coop members. The magnitude of the association cannot be explained by this test because chi square only measures any evidence of association (Algresti and Finlay, 2008).

A study by Vakis et al in Peru found that farmers selling their produce at farm gate had more information about prices in other markets than those selling at the local and distant markets (R.Vakis et al, 2003)..This is similar to the results found by this study. The earlier findings indicate that the majority of non coop members sell their rice at farm gate than the coop member farmers and they have more information.

One other interesting aspect of the findings was that buyers are a source of information. From the total sample, 9.5% indicated that they get information from the buyers. It would be important to find out the quality of the information the buyer provides to the farmers. Human beings are said to be opportunistic in nature (Coase, 1937), which suggests an interesting research question – do buyers provide correct and adequate information to the farmers.

Availability of Few Buyers in the Market

One of the assumptions of perfect competition is many sellers and buyers in the market. This ensures that prices are set fairly and determined through supply and demand. Having few buyers may reduce competition and create opportunistic behavior as buyers try to demand low prices. The study results show that few buyers in the market was one of the major sources of transaction costs in the study area, evidenced by 33% and 50.6% of coop and non coop member farmers respectively who indicated few buyers in the market as one of the challenges. To the farmers few buyers would increase their negotiation costs. The farmers would have few alternatives which will make them take longer to negotiate for a better price. Sometimes at the end , an agreement might fail to be reached upon and no sale takes place. This becomes a cost to the seller who has not made a sale but at the same time lost time negotiating for a better price.

The study found that negotiating for a better price was indicated as one of the areas where farmers spend a lot of time. From the sample 73.3% of coop members and 75.3% of non coop members indicated that they have problems negotiating for a better price with the buyer more so when they are selling to assemblers. It should however be noted that this could also be attributed to other factors such as age, experience, quality of product in addition to the number of buyers.

The study also found that there is no significant association between cooperative membership and number of buyer the farmer encounters in this area. Also, no significant association was found between challenges in negotiating for price and cooperative membership.

Poor Road Infrastructure

Transportation is one attribute of transaction costs. Farmers' access to markets other than farm gate requires that they transport their product to the said market. Equally buyers' access to farm gate markets requires that the roads be passable to enable them to get to the farmers. Poor road infrastructure would deter many buyers from going to buy farmers produce. This would create a non-competitive marketing environment with the few buyers that will manage to get to the farm gate. With few buyers, bargaining becomes difficult for the farmers due to limited alternatives for potential buyers. For the farmers willing to sell their produce at local or distant markets poor road infrastructure limits their ability to access these markets. It becomes costly to transport produce in terms of transport cost and time spent to get to the market.

Results from the study indicate that poor road infrastructure was one of the challenges the farmers meet in marketing their produce. The study found that the challenge was experienced only in some parts of the study area. From the sample only 17.3% indicated bad roads as a challenge to their marketing. Farmers from these particular areas indicated that during and soon after rainy season the roads are impassable thereby limiting access to and from the area. Vehicles travelling to and from the area wait for a number of days after a rain storm to be able to use the roads, these delays increase transaction costs.

Asset Specificity Levels: Land Use

When an asset is specific to a particular use it leads to hold up problems. Rice production requires very wet conditions and few other crops grow well in a similar environment. The results from the study indicate that most of the farmers in the area grow rice because the type of soil is suitable for rice production only. The farmers

indicated that during the rainy season the land is usually waterlogged. The only other crop they think would do well is sugarcane. They however indicated that sugarcane would not be as lucrative as rice is because of lack of market. From the study 87.2% of the non coop members indicated using the land only for rice production while for coop members 99% indicated growing only rice. In addition to the nature of the land, the coop members are also bound by the irrigation scheme requirement that they grow only rice during the rainy season. During the dry period they use the land for production of maize.

It can be noted from the results that 12.8% of the non coop members indicated using their land for other crops. Further inquiry indicated that in some of the areas outside the scheme the water flow sometimes changes course leaving some areas dry. This makes it impossible to produce rice, so farmers in these areas grow other crops such as cotton.

The farmers were also asked how easy it would be for them to use their plot of land for production of other cash crops. From the sample 74% of the non coop members and 65% of coop members indicated that it would be very difficult for them to use the plot of land for production of other cash crops. These results are interesting to note because from earlier results 99% of coop members indicated growing only rice in their field from season to season but only 65% mentioned that it would be very difficult for them to grow a different crop for cash on the field. The expectation was that a much higher percentage of the coop members would find it very difficult to grow a different crop on their field because they are bound by scheme requirements to produce rice only during the rainy season. These results might also mean that 34% of the farmers would grow a different crop given a chance. However, the farmers indicated that it is difficult

for them to grow a different crop because the only other crop which can do well in the area is sugarcane which does not have a ready market and would earn very little compared to rice. The results show the high levels of specificity the land has to the production of rice.

A chi square test of association indicates that there is no significant association between land use and cooperative membership. This could be attributed to the fact that other than the scheme requirement that all farmers in the irrigation scheme should grow only rice the type of soil for the whole area is suitable for crops that grow well in water logged conditions. Rice happens to be the crop that suits the area.

It can be noted from the results that there is a high level of asset specificity when it comes to use of land in the area. This creates a high probability of the farmers facing hold up problems because they are stuck with production of rice every season regardless of how the market for rice is behaving. This would create more room for opportunistic behavior on the part of buyers because the farmers will still grow rice even if the prices are low because they do not have an alternative crop for income.

Uncertainty Levels

Williamsons (1975) argued that in the imperfect world, where people have limited information processing capacity and are subject to opportunistic bargaining, high uncertainty makes it difficult for one party to determine correctness of the other party's actions in a transaction. Uncertainty is exacerbated by lack of information. Earlier findings from the study indicated that lack of market information is one of the constraints the farmers face when marketing their produce.

The table below shows the kind of information about which the farmers were certain at the time they were carrying out the transaction.

Table 5-2. Information about which farmers are certain at time of sale

Type of information	Coop membership status	
	Coop members	Non-Coop members
Number of buyer	6.2%	2.6%
Price to be received	60.8%	55.8%
How long it will take to sell	23.7%	16.9%
Location of sell	87.6%	88.3%
Prices in other markets	16.5%	22.1%
Other available markets	32%	42.2%
Transportation costs	26.8%	22.7%

It can be noted from the results that the uncertainty level is high. Most of the farmers are only certain on the location of sale. From the sample, 87.6% of the coop members and 88.3 % of non- coop members indicated being certain of the place of sale at or before they carry out the transaction. These findings correspond to earlier findings which indicated that most of the farmers sell their rice at farm gate. They could be more certain about the place of sale because they always sell their rice at the farm gate. What is more interesting to note is the percentage of farmers who indicated being certain about price they would receive at the time of sale. From the sample 60.8% of the coop members and 55.8% of the non coop members indicated that they are certain about the price they will receive at the time of sell. This was not expected because when asked about how the prices are determined the majority of the farmers (76.2% and 84.6% of the coop and non coop members, respectively) indicated that the price is determined through negotiations between the farmers and the buyers. The expectation is that the farmers would be certain about the prices if there were standard prices set for the market. It can however be noted that in the rest of the areas, most of the farmers are not certain of what the outcome would be at the time of sale as shown by low percentages of farmers who were certain about the information.

Frequency

Frequency is one of the transaction dimensions that affect the cost of transaction (Williamson, 1979). Transaction costs are transaction specific and the more transactions the farmer carries out with a different buyer for each transaction the more costly it will be to him/her. The table below shows the frequency at which the farmers go to sell their rice

Table 5-3. Frequency of transactions

Frequency	Coop membership status	
	Coop members	Non-Coop members
One trip and sell everything	5.9%	14.1%
Several trips within short period	5.9%	5.1%
Several trips over long period	30.7%	17.9%
Always at farm gate as need arises	57.4%	62.8%

It can be noted from the results that most of the farmers indicate that they only sell their rice as need arises. From the sample 62.4% and 57.2% of non coop and coop members respectively indicated selling their rice at farm gate only as need arises while 30.7% and 17.9% of coop and non coop members indicated that they make several trips to the market over a long period of time. Some of the farmers indicated that they make several trips to the market over a short period of time as shown by 5.9% of coop member farmers and 5.1% of non coop member farmer. Only 5.9% of coop members and 14.1% of non coop members indicated that they make only one trip to the market and sell everything.

This shows a low level of business activity associated with the small scale farmers in the area. Coupled with the nature of rice (its long shelf life) the farmers are able to sell only when they have cash needs at the household. However due to poverty levels which are high in the rural areas and low levels of production, as shown from

earlier results, it was indicated that it is difficult for the farmers to keep their produce for much longer to benefit from increased prices resulting from dwindling supplies. High levels of frequency of transaction will have a notable impact on the cost of transaction mainly for those farmers who sell their produce at the local and distant markets when selling to a different buyer all the time. A chi-square test of association shows that there is some level of association between the frequency level and cooperative membership at 10% level of significance with coop member farmers having fewer transactions than non coop member farmers

Cooperative Membership

There are many reasons why farmers organize themselves into groups. Some of the reasons include improving access to inputs, credit, and markets as well as identification of new markets, improving crop production and increasing their bargaining power for better prices. Farmers often can also procure their inputs more easily through the cooperative rather than working on an individual basis.

According to the International Cooperative Alliance (ICA), a cooperative is supposed to be an autonomous association of persons united voluntarily to meet their economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise. The study however found that the BVRPMC is not based on the voluntary membership per se. The cooperative was formed on the basis of the area having an irrigation scheme which was originally government-owned but was passed on to the farmers after the Japanese International Cooperation Agency (JICA) rehabilitated it. The farmers were allocated a plot in the irrigation scheme based on their involvement during the scheme rehabilitation as part of the project's local community

contribution. Survey respondents indicated that it was a requirement that all farmers who have a plot in the irrigation scheme should become cooperative members.

This finding created a challenge in determining factors that affect a farmer's decision to participate in the cooperative or not. The farmer's intentions on choice decision were used to determine if transaction costs would influence a farmer's participation decision in the cooperative. This will be discussed under the regression results.

Reasons for Participating in the Cooperative

As just indicated, the irrigation scheme had a requirement for all farmers with plots of land in the irrigation scheme to be members of the cooperative. Other farmers indicated additional reasons for participating in the cooperative. The table below shows reasons why farmers joined the cooperative.

Table 5-4. Reasons why farmers joined the cooperative

Participation Reason	Percentage
It was a must since I had a plot in the scheme	58.3%
I just followed my friends	10.2%
I wanted to get support from friends	10.2%
To access extension messages	8.3%
To access markets	6.5%
Source of inputs	6.5%

From the results it can be noted that the scheme requirement was the major reason why most of the farmers joined the cooperative. 58.3% of the coop member farmers mentioned that they joined the cooperative because they had a plot of land in the irrigation scheme. The other reasons some farmers indicated were the social benefit from the cooperative. 10.2% of the members said they joined the cooperative just to follow their friends and another 10.2% said they wanted to get support from friends.

It can be said that social benefit is another major reason for the farmer participation. Further inquiry showed that the farmers who are members of the cooperative assist each other in time of need. For example when one is sick fellow members take up the responsibility of looking after the sick member's plot. They assist their fellow members with necessary agricultural practices such as cultivating the field, weeding and other activities.

Few farmers indicated reasons such as improving access to markets and inputs as the reason for participating shown by 6.5% on both reasons and 8.3% for access to extension messages. This shows that little consideration is given to issues concerning transaction costs when the farmers are working in a group.

Reason for Not Participating in the Cooperative

Similar to the participation reason the reason for not participating was also largely influenced by the restriction that was put by the cooperative on membership. Membership is restricted to those farmers who have a plot of land in the irrigation scheme. The table below shows reasons mentioned by farmers on why they were not cooperative members.

Table 5-5. Reasons for not participating

Participation Reason	Percentage
I did not get plot of land in the scheme therefore did not qualify	26%
The cooperative is far	10.4%
I was not interested	6.5%

The study however discovered that in addition to the restriction that was set by the cooperative some farmers did not have information on the cooperative. Some farmers only knew of the availability of the irrigation scheme but did not know of the grouping called the cooperative. These farmers said that they thought the grouping was

only concerned with the irrigation scheme and since they do not have a plot of land in the irrigation scheme they gave it little attention. The results also confirm the influence of the membership restriction, as 26% of farmers who indicated that they were not members because they do not have a plot of land in the irrigation scheme. The majority of the farmers, 57.1% who were not members mentioned that they did not have much information concerning the cooperative. This could have been a result of the membership restriction that made it seem less important to create more awareness about the cooperative in the area for the other farmers to have sufficient information about the cooperative.

Social Network

The study tried to find out if social networks would have an influence on a farmer's participation in the cooperative. Social network in this case refers to the farmers' knowledge of or relation to cooperative members prior to joining the cooperative. The results showed that most of the members have been members since the establishment of the cooperative and hence they did not have knowledge of anyone who belonged to a cooperative prior to their joining. This is shown by 70% of the members indicating that they did not know any member of a cooperative prior to joining. 30% of the sample indicated knowing some cooperative members prior to joining. These are farmers who joined the cooperative later mostly after inheriting or renting, on long-term, a plot of land in the irrigation scheme. As a result most of the people they knew were extended family members such as brothers, sisters, parents and cousins.

For farmers who were not members of the cooperative, the majority also said they did not know many cooperative members. This could be attributed to lack of sufficient knowledge about the cooperative since many of these same respondents

indicated that they know farmers who have plots of land in the irrigation scheme. The social network could not have had much influence, even if information about the cooperative was made available and the farmers knew some cooperative members, due to the restriction that was placed on membership.

Membership Restriction

After establishing that there was a restriction on membership the study investigated if the members were aware of this restriction and the reasons behind it. From the results it was discovered that most of the members were aware of the restriction that was placed on membership. From the sample 89.9% mentioned that they knew that membership is restricted while 6.1% said that membership is not restricted and 4% indicated not being aware of the restriction.

The farmers gave varying reasons to why membership was restricted. This creates a lot of skepticism relating to the information that was communicated to the members as being the reason for the restriction. The reasons that were pointed out by the members include;

1. Rules laid down by the scheme
2. Most of the rules in the cooperative relate to the irrigation scheme and those who do not have fields in the scheme will not feel as part of the group
3. To create uniformity since the irrigation scheme has rules that are followed
4. Farmers who do not have a plot of land in the irrigation scheme would not be committed to the cooperative.

More information needs to be collected on how the decision to place a restriction was made and if the farmers were involved in the decision process. There is also need to find out how valid the reasons that were given are because the restriction and the

forced participation are violating one of the principles of a cooperative, which is voluntary participation.

Regression Analysis Results

Participation Model

Two models were run to establish the significance and direction of the effect of the TC proxies on the decision to participate in the cooperative and on income. As indicated earlier on in the thesis (chapter 3), the participation model used the respondents intended choice in participation rather than the actual membership. This adjustment was made following the discovery made during pre-testing that participation was restricted. “Join” was used as the dependent variable taking the value of 1 if the respondent indicated that they would join the cooperative and 0 if they indicated that they would not join the cooperative given a chance to make a voluntary decision. Table 5-6 shows the frequencies on coop and non coop member responses to the join question.

Table 5-6. Frequencies on join responses

Frequency	Coop membership status	
	Coop members	Non-Coop members
I would join	75	69
I would not join	20	6
I don't know	6	3

The results for the probit analysis are shown in Table 5-7. It can be seen that not all coefficient signs were as expected. For example the sign for MKTINFO was expected to be negative, such that the more information one has about availability of other markets the less likely they would want to join the cooperative. BUYERDEP also did not turn out the way it was expected.

Table 5-7. Participation model results

Join	Coefficient	Std Errors	Marginal Effects	Std Errors
Age	.07531	(.08872)	-.015018	(.01741)
Agesq	-.00312	(.00184)	-.015018	(.09977)
Exper	.09507**	(.05619)	.01896	(.01113)
Expersq	.00297**	(.00164)	-.000592	(.00032)
Prcinfo	.51216*	(.21831)	-.10215	(.04252)
Buyerdep	.09994	(.12075)	-.01993	(.02394)
Mktinfo	.32796	(.30275)	.06247	(.05488)
Assetred	.01706	(.10104)	.003402	(.02016)
Dist	.01046	(.03536)	.002086	(.00706)
Typbuyer	.38396**	(.16869)	.076586	(.03296)
Educ	-.01663	(.05940)	-.003317	(.01183)
Member	-.79202*	(.30164)	.14947	(.0518)
Constant	.25751			
Psuedo R ²	.1677			
Log Likelihood	-64.036			

Note: Significance levels: * 1% , ** 5%, *** 10%. Standard errors are in parentheses

The results show a negative relationship between buyer dependency and participation in the cooperative although it is not significant. The expectation was that the more the farmer is dependent on the buyer the more likely they are to participate in the cooperative. The variable member was included in the model after it was discovered that a high number of members indicated that they would not want to join the cooperative in a voluntary participation situation. Member is a dummy variable which took on the value of one for members and zero for non cooperative members.

Four variables were found to be significant in explaining the choice decision the farmer would make to participate in the cooperative if they were given a chance to make a voluntary choice. The four variables are Information about price, member, experience and type of buyer at 1% for member and information about prices, 5% for type of buyer and 10% level of significant for experience. Price information has a negative relationship with the decision to join the cooperative. This shows that the more information the farmer has about prices in other markets the less likely it is for them to join the

cooperative. The marginal effects for this variable shows that additional information would reduce the probability of choosing to participate in a cooperative by 4.2%. This could be explained in a way that once the farmer has information about prices in other markets it could form as a basis for them to negotiate efficiently with the buyers. This will make them feel empowered to make informed decisions about a sale based on the fact that they have the information. Opportunism on the side of the buyer would be less since the farmer has information.

Membership status of the farmers had a negative significant effect on the farmers decision to participate in the cooperative. The marginal effects shows that the probability of choosing to participate in the cooperative is 14.94% lower for members than non members. The respondent were asked to give a reason for their choice. Most of the members who indicated that they would not join the cooperative indicated that the cooperative has not met their expectations in terms of the benefits they anticipated and that it is too involving for them in terms of the contributions and activities to do with the cooperative. This could explain the lower probability for members since they have experience cooperative membership and are making a more informed decision. The other significant variable was the type of buyer. This variable as indicated earlier on showed a significant influence on the decision the farmer makes to join the cooperative. The type of buyer variable has a positive relationship with the decision to join the cooperative. From the way the variable was set (as a score variable) it shows that the farmers who sell to assemblers are more likely to join the cooperative than the farmers who sell typically to consumers. This could be attributed to the fact that the farmers selling to assemblers face the challenge of trying to negotiate with a big buyer who

sometimes is likely to dominate and dictate prices unlike consumers who buy in small quantities and usually do not have the same bargaining position as the wholesaler. Given this scenario then the farmers selling to the wholesalers would likely want to form a collective action to deal with large scale buyers. They would negotiate more effectively as a group than as individuals.

It is surprising that in this study gender and education were not significant as it is with most participation studies. However this could be linked with earlier results that showed that there was no major difference in participation in the cooperative between men and women. Earlier study results on education (from chapter 4) also showed that the majority of the farmers were less educated (less than 5 years of education). Very few farmers in the sample had up to eight years of education (as low as 3%). This could explain why education did not have any significant influence on the decision to join the cooperative.

Income Model

The basic assertion on income was that since cooperatives members have lower transaction costs, their incomes on average are higher than other farmers who are not cooperative members but have similar characteristics. This was tested by checking whether the variable Coop was significant in the model whose dependent variable was the logarithm of rice incomes the farmers earned in the previous production season. As would probably be expected income was found to be determined by a number of variables including membership in the cooperative

In the model, the primary determinants of income were found to be land, age and gender and cooperative membership which were significant at 1% for land, cooperative membership and gender and 5% for age. Agesq and off-farm income were marginally

significant at 10%. From the results the coefficient on coop shows that membership can increase rice incomes by 76.6%. Considering that the cooperative has not been providing marketing services to most of its members, the increase can be attributed to the higher production that is associated with cooperative farmers. This is so because all cooperative farmers have plots of land in the irrigation scheme where water supply to the crop is controlled and there are also intensive extension services being provided to farmers, which probably also helps increase their production. This is also in line with earlier results which indicate that cooperative farmers have higher production than non cooperative farmers and hence their incomes are expected to be higher.

Table 5-8. Income Model Results

Logincome	Coefficient	Std Errors
Age	.7758*	.2153
Agesq	-.1434**	.0524
Educ	-.0112	.0333
Land	.3271*	.0929
Gender	.4306*	.1478
Coop	.7664*	.2154
Off-farminc	.2798***	.1441
Constant	8.3615	.3816
R2	.3190	

Note: Significance levels: * 1% , **5% and ***10%

The analysis shows that membership increases incomes for the small scale rice farmers in the area. However it is very hard to associate such differences in incomes with cooperative membership due to the mandatory participation of scheme farmers into the cooperative. In a way it could be said that the cooperative member farmers, who also have irrigated lands have higher incomes because they own a plot of land in the irrigation scheme and not necessarily because they belong to a cooperative.

CHAPTER 6 CONCLUSIONS AND POLICY IMPLICATIONS

Conclusion

The major objective of the study was to assess the role transaction costs and marketing cooperatives play in small scale farmers marketing of rice in the Bwanje valley area. In order to achieve this, the study researched if small scale farmers consider transaction costs when making the decision to participate in a cooperative. Results from the study provide information to policy makers concerning the current promotion of agricultural and marketing cooperatives in the country. The study was also aimed at finding out if there is any association between cooperative membership and some dimensions of a transaction that affect the cost of transacting as well as the role cooperative membership has on the incomes the farmers earn from rice.

A number of areas were discovered to be the major sources of transaction costs for the farmers in the study area. These sources include limited access to market information (about prices, markets and buyers) which hindered the farmers capability to make informed sales decisions, poor road infrastructure which limits the farmers access to markets as well as buyers access to the farmers, and availability of few buyers in the area which increased the cost of negotiation for the farmers since they were negotiating in less competitive marketing environments. These factors affected the cost of transaction for the farmers through search costs and negotiation costs. Most of the transaction cost proxies that were used were found not to have any significant association with cooperative membership. It was hard to establish a relationship between transaction cost proxies and cooperative membership because of the restriction on membership into the cooperative. It was found that membership into the

cooperative is limited to those farmers who have plots of land in the irrigation scheme. This posed a major challenge to most of the study's frameworks that were used.

For example, the participation model did not use membership as the dependent variable. The model, instead, used a choice decision the farmers would make if membership was voluntary. The results found that only three of the transaction cost variables had a significant influence on the choice decision to participate in the cooperative. The significant variables were type of buyer, information on prices and membership status of the farmer. The challenge remained the membership restriction, which is considered to have influenced each farmer's decision on the choice made on whether they would voluntarily participate in the cooperative or not. The study also found that cooperative membership has a significant positive effect on the incomes of the farmers in the area. However it was discovered that the cooperative was not buying rice from its member farmers. This could have had some effect on the outcome of the results since the cooperative is currently not providing the required services to its members. The statistically significant effect could be a result of other benefits that increase the farmers' level of production such as access to inputs on loan, access to extension services and participation in the irrigation scheme.

The study also identified other factors that would influence farmers' participation in the cooperative. The factors the farmers indicated include getting support from friends in the cooperative, accessing extension messages and as a source of inputs. These were indicated as additional reasons why farmers joined the cooperative in addition to membership being a requirement for those farmers with plots of land in the irrigation scheme.

Other interesting findings included learning that buyers are a source of market information for many of the farmers. It would be beneficial to identify the type and adequacy of the information the buyers give to the farmers considering that human beings are said to be opportunistic.

Finally it was difficult to determine the actual role the cooperative is playing in the marketing of rice for farmers in the area because of the current operational status of the cooperative and the restriction on membership. The cooperative was not buying rice from most of its members due to financial problems. Hence, few of the interviewed farmers benefitted from the marketing services of the cooperative. The farmers only benefitted through the controlled water supply in the irrigation scheme, which increased their production, and some inputs which were given to the farmers on loan. This most likely explains why farmers in the cooperative reported higher production and hence higher incomes than farmers who were not in the cooperative.

Policy Implications

Based upon the analysis of the empirical findings of this research, the following policy initiatives have been identified for potential interventions in order to improve some of the negative factors affecting farmers in the study area:

Market Information Systems: The study results show that availability of market information plays a significant role in small-scale farmers marketing as shown by its significance in the farmers' choice decision. However, the study also found that information that goes to the farmers is limited and most of the farmers depend on friends and relatives for market information and sometimes on buyers. In order to improve in this area there is a need to strengthen the market information systems to ensure the required information about available markets and quantities demanded,

prices in other markets, and available means of transportation, is delivered to the farmers in a timely manner. This could be achieved through intensifying the information delivery through the radio during the farmer radio programs and also making use of extension workers by providing them with current and updated information regularly. In addition the study results show that the extension workers are the least common source of marketing information for the farmers, i.e. 5% of respondents indicated extension worker as their source of marketing information (Study Results). This could be as a result of lack of knowledge and skills in the marketing field or insufficient numbers of extension workers in the area.

In order to improve farmers access to information through the extension workers, there is a need to consider areas of capacity building of the extension workers in the field of marketing and also improving the farmer extension worker ratio to ensure that most of the farmers are being reached with the required extension messages in the areas of production and marketing. This will help improve the farmers' production levels as well as their marketing skills, both of which should help them increase their on-farm income.

Financial Credit for Farmers and Cooperatives: Financial limitation is one of the major problems rice farmers face. For marketing institutions lack of adequate capital to invest is also one of the major challenges they face. The study found that the cooperative is failing to provide marketing services to its members due to financial problems. There is need to improve access to credit facilities for the cooperative to operate to its full capacity and in turn provide the needed services to its members. However there is need to improve the capacity of those in management positions in the

cooperative for them to be able to improve their management skills and operate efficiently. This could in turn assist them to be able to identify the requirements of the cooperative and lobby for the necessary support.

Contract Farming: One way to improve the marketing of rice for the small scale farmer in the area would be to initiate contract farming between the cooperative and rice milling companies that would be interested in buying paddy from these farmers. This will ensure a ready market for the farmers which would then reduce the farmers search and negotiation costs since they will be negotiating as a cooperative with the rice milling companies. The availability of this kind of scheme which could ensure improved production and the organization of the farmers would be considered as positive steps for the development of partnerships between the farmers and the buyers through contract farming.

Cooperative Awareness: There is need to increase awareness in the general area of collective action in marketing by small-scale farmers through cooperatives, including the potential benefits and costs associated with it. The study results found that most of the farmers in the area do not have adequate information concerning cooperatives. It was found that there was a very low understanding of what a cooperative entails and what the farmers would benefit from as well as the cost to the farmer if they joined.

The results also show that cooperative membership is strongly correlated with higher farmers' incomes, hence the need for the farmers to be provided with more information concerning the cooperatives and the associated benefits.

Further Research: The study established a number of research objectives which proved to be difficult to test empirically or that conflicted with the actual conditions in the target population. These included restrictions on cooperative membership (where some farmers were required to join, while others were banned from joining), and the operational status of the cooperative in the area of marketing. These are believed to have influenced the results of the study significantly. Re-designing the study at this later stage was difficult due to time and resource constraints. Further research would therefore be recommended in the area which would include some of the raised issues in the design of the study.

APPENDIX A
QUESTIONNAIRE FOR THE STUDY

INVESTIGATION OF THE RELATIONSHIP BETWEEN COOPERATIVES AND TRANSACTION
COSTS FOR SMALL-SCALE FARMERS IN MALAWI, AUGUST – OCTOBER 2009

DATE OF INTERVIEW: _____

INTERVIEWER(S)/ENUMERATOR(S): _____

FARMER'S NAME: _____

FARMER'S LOCATION: _____

QUESTIONNAIRE CODE NUMBER: _____

1. When you grow rice, what are your plans for your production? **[Check only one!]**

___ I plan to sell all of my production.

___ I plan to use all of my production for home consumption.

___ I plan to use my production primarily for home consumption, but will sell some if there is a surplus.

___ I plan to produce enough with each crop to sell some and keep some for home consumption.

2. In your opinion what do you think is **the most important** problem rice farmers face in marketing their production?

3. What do you think is the solution to the problem that you have mentioned above?

4. In addition to the problem you just mentioned, are there other problems that rice farmers in your area have when they try to market their production? **[Check all that apply]**

- Too few buyers
- Too little information about prices
- Prices are too low
- Urban markets are far away from the farms
- Commercial traders/buyers treat farmers unfairly/try to cheat them
- Roads are bad
- Transportation of rice to markets is expensive
- Other: _____
- Other2: _____

5. Approximately, how much land do you use/farm for rice production?

- Less than 0.5 hectare; less than one-half of an hectare
- 0.5 – .99 hectares
- 1 – 1.99 hectares
- Greater than 2 hectares

6. How much rice did you produce last growing season? (**please indicate the number in terms of 50 kg bags**)

7. How much of your total production did you sell?(**please indicate the number in terms of 50 Kg bags**)_____

8. On fields where you grow rice, do you always grow rice from season to season?

- Yes
- No

9. If you stopped growing rice in your rice fields, how easily could you use these same fields to grow **a different food crop** for home consumption, with 1 being very easily and 5 being very difficult? **Please check one.**

1 <i>Very Easily</i>	2 <i>Somewhat Easily</i>	3 <i>Neutral</i>	4 <i>Somewhat difficult</i>	5 <i>Very difficult</i>
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10. If you stopped growing rice in your rice fields, how easily could you use these same fields to **grow a different cash crop** for sale in markets, with 1 being very easily and 5 being very difficult? **Please check one.**

1 <i>Very Easily</i>	2 <i>Somewhat Easily</i>	3 <i>Neutral</i>	4 <i>Somewhat difficult</i>	5 <i>Very difficult</i>
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11. Please tell us your reasons for growing rice on your fields instead of other crops.

12. Please tell us your sources of income from the farm (please check all that apply)

- Rice production
- Other cereal grains
- Fruits and vegetables
- Livestock production, specify: _____ (e.g., poultry, pigs, etc.)
- Other ?
- specify _____

13. From these sources of income that you have just told us, please tell us which one is the most important source?

14. Do you have other sources of income in addition to income from farming?

- Employment
- Business (Small enterprise)
- Remittances
- Pension pay
- None
- Other, Specify_____

15. For how many years have you grown rice on your farm?_____

16. When you decide to sell your rice where do you go to sell **(Please check all that apply)**?

- Farm gate
- Local market
- Distant market
- Cooperative
- Other,
specify_____

17. How far do you have to travel to get to the closest main market where you are able to sell rice? _____Kms

18. What do you think are the advantages and disadvantages of selling your rice in the closest local market?

19. What do you think are the advantages and disadvantages of selling your rice in the market you use most frequently?

20. What are/would be the advantages and disadvantages of selling your rice in a district market?

21. When you sell your rice, do you typically

make one trip to the market and sell all the rice that you plan to sell from that growing harvest

make several trips to market within a one to two week period, selling as much of your rice as you can with each trip

make several trips to market, but spreading them out over a more extended period of time, perhaps as much as one or two months

Other? Specify _____

22. On an average day when you are selling your rice how many wholesalers/assembler/buyers do you see in the market?

One

2 to 5

6 to 10

More than 10

23. Typically to whom do you sell your rice?

Only wholesalers/assemblers

Only to end consumers

Mostly to wholesaler buyers and assemblers but also to some consumers

Mostly to consumers but also to wholesale buyers and assemblers

Other? Specify _____

24. When selling your rice how often do you refuse offers from buyers? _____
25. Please tell us the reason why you refuse the offers for the number of times you have indicated in the above question.
26. When you sell your rice, how much time does it usually take?
 ___ less than 30 minutes after I arrive at market
 ___ 30 minutes to one hour
 ___ two to five hours
 ___ every day is different...sometimes I sell quickly, sometimes it takes all day
 ___ Other? Specify _____
27. How well do you know the buyers of your rice?
 ___ very well (they are my neighbors, family, etc.)
 ___ casually (I often sell to the same buyers, so I know them from past sales)
 ___ not at all
 ___ It depends...when I sell to consumers, I know them but when I sell to assemblers/wholesalers, I do not know them
 ___ Other? Specify
28. When you sell your rice, how is the price that you receive determined?
 ___ the buyer sets price, no negotiation
 ___ you, as the seller, set the price, no negotiation
 ___ negotiation between you and the buyer
 ___ farmer coop/association announces price
 ___ there is a standard price in the market that everyone uses
 ___ other?
29. Can you negotiate a better price if the quality of your rice is better than other rice being sold? Yes No
30. Must you accept a lower price if the quality of your rice is worse than other rice being sold? Yes No

31. When selling to assemblers/wholesalers, do you trust your buyer(s) to give you a fair market price for your products?

- I completely trust the buyer to be fair
- The buyer is usually fair, but I have to bargain with him/her to get a fair price
- I worry that the buyer may not be giving me the best price
- I do not trust the buyer at all to be fair
- Other? Specify _____

32. On a scale of 1 to 5 with 1 being complete trust in the buyer and 5 being no trust at all in the buyer, how much would you say you trust the wholesalers/trades that buy your rice?

1	2	3	4	5
<i>Very much</i>	<i>Somewhat</i>	<i>Neutral</i>	<i>Not Very much</i>	<i>Not at All</i>

33. What was the highest price that you received for your rice this last growing season? Kwacha / Kg _____

34. What was the lowest price that you received when selling rice? Kwacha / Kg _____

35. What was the most common price that you received Kwacha / Kg _____

36. Which of the following potential problems do you **encounter most frequently** when marketing your produce

- Finding a buyer
- Negotiating for price
- Enforcing the contract / making sure that buyer sticks to agreed terms
- Finding information about prices
- Finding information about buyers/ other markets

37. When you sell your rice, what information about the sale do you know **before** taking your rice to market? (***Please Check all that apply***)

- The number of buyers in the market
- The name of the buyer who will buy your product
- The price you will receive

- ___ The amount of time it will take to negotiate the sale
- ___ The location of the sale/market transaction
- ___ Prices in other markets
- ___ Availability of other markets
- ___ Any price premiums or price reductions related to the quality of the product
- ___ Transportation costs to get the product to market

38. We would like you to tell us how certain or uncertain you were about the information you just indicated. Using this ruler/chart, with 1 indicating most certain and 7 indicating most uncertain, your opinion about the certainty of each bit of information that you have before you take your rice to market.

most certain/-----1-----2-----3-----4-----5-----6-----7-----
-/most uncertain

RANK	RESPONSES
1	
2	
3	
4	
5	
6	
7	

39. What is the most important source of information about market s that you use when making plans to sell your rice? **Please check only ONE.**

- Radio
- Extension worker
- Family or friends
- Cooperative
- Other specify _____

40. How often do you use the market information that you get from this source in your sales plan (for negotiating a price or market selection) when you are selling your rice?

- ___ Not at all
- ___ Only sometimes
- ___ Most of the time
- ___ All the time

41. Are you a member of a cooperative?

- Yes
- No
- I don't know

If yes then go to question 42; If no then skip to Question 49.

42. For how long have you been a member? _____

43. What was/were the major reason(s) that influenced your decision to join the cooperative (check all that apply)

- To get access to markets
- To find a source of inputs
- To get support from friends
- Just followed my friends
- Other; specify: _____

44. Before you joined the cooperative, did you know relatives or close friends who were members of the cooperative? Yes No

45. If yes, what is your exact relationship with these cooperative members?

46. How many cooperative members did you know prior to joining?

47. Is membership to the cooperative restricted to the farmers who have fields in the scheme? _____

48. If yes, why was membership restricted to only those who have fields in the scheme?

49. **If you answered no to question 41**, why did you not join the cooperative?

- I did not have much information
- Its costly
- I don't qualify
- I was refused
- I don't have any marketing problems
- Other? _____

50. Do you know any relatives or friends who are members of a cooperative? _____

51. If yes, how many cooperative members do you know? _____

52. What is your exact relationship with these cooperative members?

53. Given a situation that membership rules were changed and that everyone in this area is eligible and free to choose whether to become a member of the cooperative or not regardless of the location of their plot . what would be your decision given an opportunity to make a choice between joining the cooperative or not,

- I would not join the cooperative
- I would join the cooperative
- I don't know

54. What are the reasons that would influence your decision indicated in the previous question? _____

55. What year were you born? _____

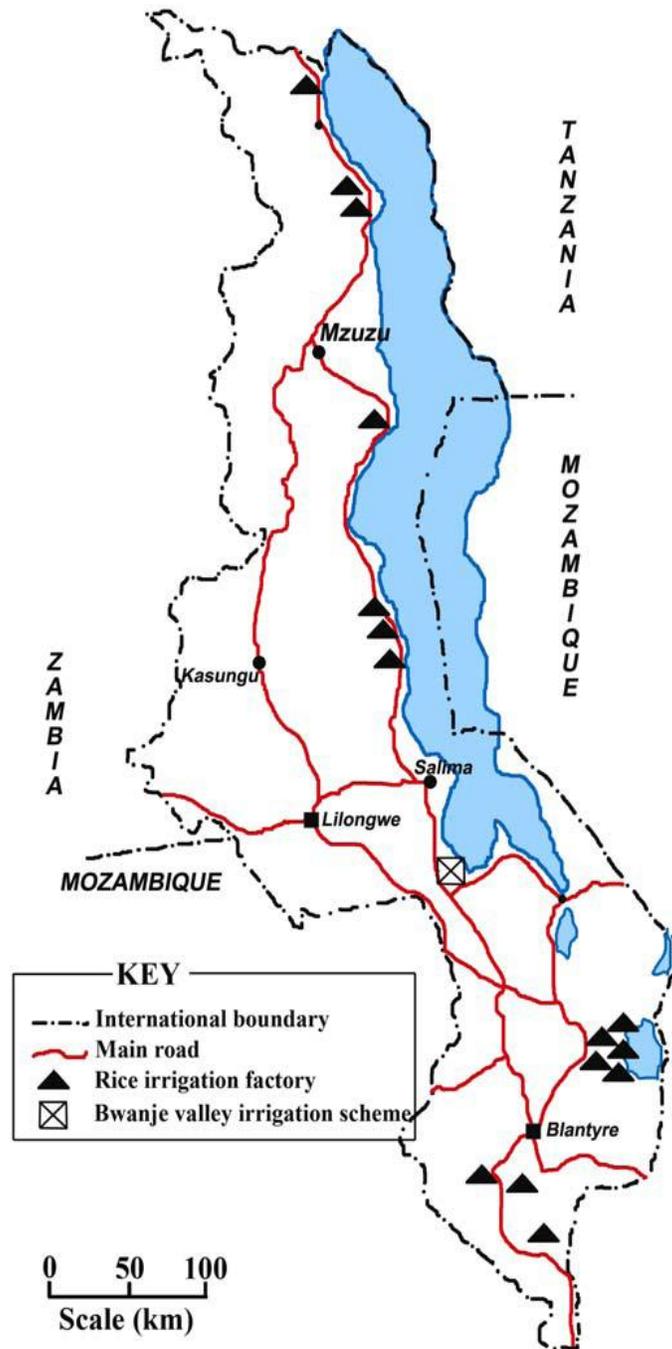
56. How many years of formal education did you get?

- None
- Less than 5 years
- Up to 8 years 10 years
- `More than 8 Years

57. **Gender:** Male / Female

Thank you for your time and cooperation in this survey

APPENDIX B
MAP OF MALAWI SHOWING THE STUDY AREA



Source: Sand in The Engine: Travails Of An Irrigated Rice Scheme In Bwanje Valley, Malawi

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BIOGRAPHICAL SKETCH

Lucy Chamdimba Nyirenda was born on November 28, 1978 in Mangochi, Malawi. She grew up mostly in the city of Lilongwe, Malawi where she also attained her secondary education at Bwaila Secondary School up to 1995. She earned her BSc in Agriculture (Agricultural Economics) from the University of Malawi, Bunda College of Agriculture in 2000.

After graduating, Lucy worked in various fields which include Microfinance before joining the Civil Service in the Ministry of Agriculture and Food Security where she has worked as an Economist as well as an Agribusiness Development Officer.

Upon completion of her master's degree, Lucy shall return to her country Malawi where she will continue working in the civil service on various assignments to assist in the development of the warm heart of Africa, Malawi. Lucy is married to Lincoln and they have two children: Chawezi age 12 and Nancy age 7.