ROLE OF INFORMAL AGRICULTURAL INFORMATION DISSEMINATION NETWORKS IN POVERTY ALLEVIATION IN NJOMBE DISTRICT, TANZANIA

BY

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ABSTRACT

Informal agricultural information dissemination networks are essentially an extension system, which involves informal mechanisms of information diffusion among farmers often from primary source of information to another. This study examined the interaction between extension agents, farmers within the framework of farmer-to-farmer sharing informal information and in turn of information exchange, contributes to increase awareness and income to receivers. The study was carried out in five divisions of Njombe district whereby, a cross-sectional design was adopted and structured questionnaires were administered to a 100 representative sample selected randomly. The Statistical Package for Social Sciences (SPSS) software was used for data coding and analysis. Informal agricultural information dissemination networks have an influence on farmer's household income hence alleviate poverty. Some well-interacted farmers applied the information obtained from their fellow hence adopted agricultural technologies to get more yield. About (94%) respondents' skills, farm production, livestock production, secured revenue ranged from 10 000 – 10000 000Tshs. Some (19%) informal information beneficiaries have expanded there farming areas to more than six acres, shops and others entrepreneurship activities including owning valuable assets like milling machines. Informal information adopters have brought impact on neighbouring farmers and 41 % from them applied improved techniques sourced from their fellow farmers. Unlike (5%) non-interacted farmers were found to lag behind in yield and income. However (72%) of farmers sold their crops to middlemen and businessmen at their fields or homes due to lack of markets. It was concluded that informal information has significant economic contribution to household income derived from agricultural crops and livestock to well interacted people. This draws attention to the government to improve extension delivery services, raising farmers morale through adequate input subsidies, acquire enough

extension workers and improve their work morale. While district authorities should improve infrastructures including market centers and rural roads for effective business operation.

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DECLARATION

I, MESHACK FANUEL SUNZU BILONKWANAMAGARA, do hereby declare to Senate of Sokoine University of Agriculture that this dissertation is my own original work and that it has neither been submitted nor concurrently being submitted for a higher degree award in any other University.

Meshack Fanuel Sunzu Bilonkwanamagara
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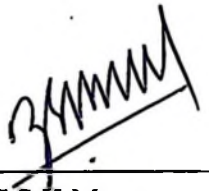
10.11.2008
Date

The above declaration is confirmed



Prof. Z.S.K.Mvena
(Supervisor)

10.11.2008
Date

DEDICATION

To my late mother Sophia Fanuel who laid the foundation for my education.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVATIONS AND ACRONYMS

BOT - Bank of Tanzania

CAN - Calcium Ammonium Nitrate

DAP - Di Ammonium Phosphate

FAM - AFRICA Farmer's Agriculture and Modernization in Africa

ICT - Information Communication Technology

ILRI - International Livestock Research Institute

ILO - International Labor Organization

IMF - International Monetary Fund

IMR - Infant Mortality Rate

HDI - Human Development Index

HIMA - Hifadhi ya Mazingira

HIPC - Highly Indebted Poor Countries

MAC - Ministry of Agriculture and Cooperatives

MVIWATA - Mtandao Wa Vikundi Vya Wakulima Tanzania

NBS - National Bureau of Statistics

NESP - National Economic Survival Program

NGDO - Non-Governmental Development Organization

NGO - Non-Governmental Organization

NPES - National Poverty Eradiation Strategy

NSGPR - National Strategy for Growth and Poverty Reduction

OXFARM - Oxford Committee for Famine Relief

PRSP - Poverty Reduction Strategy Paper

SAP - Structural Adjustment Program

SACCOS - Saving and Credit Cooperatives Societies

SNAL - Sokoine National Agricultural Library

SPSS - Statistical Package for Social Sciences

SUA - Sokoine University of Agriculture

TANWAT - Tanganyika Wattle Company

UNDP - United Nations Development Program

URT - United Republic Of Tanzania

USD - United States Dollar

WB - World Bank

CHAPTER ONE

INTRODUCTION

1.1 Back ground

All indicators suggest that, forty-six years after independence agriculture in Tanzania is, still underdeveloped. According to the 1994/95 National Sample Census of Agriculture, out of every ten holders, only few of them use improved agricultural inputs, advanced farm implements, receive advice from extension agents, get agricultural credit, and irrigation is carried out only by three holders mainly in only three regions (URT, 1996).

About 3.9 million households in the rural community are engaged in small-scale Agriculture (World Bank, 1994). More than 60 % of the rural population lives in absolute poverty. Land and labor productivity in agriculture are well below what they should be. Increasing land productivity and increased use of labor saving technologies are necessary components of efforts to alleviate poverty in developing countries including Tanzania where agriculture is a lead sector. An assumption is often made that there are adequate profitable technologies on which farmers can use to increase productivity, and incomes and hence reduce the level of poverty. But since agricultural research has not been organized for decades, and economic assessment of these technologies has not been sufficiently integrated with the process of agricultural technology development therefore farmers has been relying on their indigenous technologies in production.

Economic viability of technologies has in reality not been a concern of agricultural researchers, but it remains a very important attribute that a farmer continuously assesses in deciding whether or not to use a particular technology. It is also the case that some of the technologies are not clearly defined. The problem facing farmers and extension

services is low adoption of agricultural technology. Many of the problems with the extension systems are inefficient performance, inputs unavailability or too costly, and farmers lacked information or had a set point of satisfaction and would not make an effort to produce more. The economic benefit of agricultural technologies is one factor that influences adoption of the technologies developed. In adoption of these technologies may have been difficult, either because the technologies proposed were not sufficiently adapted to local environments / conditions or because they presented economic risks, contradicted local culture, or were constrained by inadequate economic policies.

Agriculture remains the main source of income and employment for the rural population, for up to 78% of Njombe residents (URT, 2002). It also has large forward linkages to agro-processing and consumption and hence to the rest of the economy. Indications are that traditional export crops may have larger employment and multiplier effects than non-traditional crops, though the latter may be profitable niche activities. As indicated in the National Poverty Eradication Strategy, Vision 2025 and the Poverty Reduction Strategy Paper, a growing agriculture sector is essential to reduce poverty (URT, 2004).

A crisis in the marketing system for both crops and livestock has been documented by in-depth studies by the Rural Food Security Policy and Development Group in Njombe (Chachage and Nyoni, 2001). Farmers realized maize prices had fallen drastically in Njombe causing maize growers to consider alternative crops. This crisis in incomes and marketing among agricultural producers contributed to their shift into non-farm activities, and /or into alternative food crops with brighter market prospects. In which they rely on formal information obtained from extension workers and informal information from their fellow smallholder producers who have experienced certain advantages in return of production of many crops, though there is disagreement as to the causes.

Therefore a major task for alleviating poverty in Tanzania is to build development strategies particularly in rural areas. Attention is drawn to the role of rural and voluntary organization formed and managed by rural people as an effective instrument to transform rural areas and their role in alleviating rural poverty (Banturaki, 2000). This research therefore attempts to look into the role played by informal agricultural information dissemination networks to farmers in alleviation poverty with a view of identifying problems and recommending possible solutions to poverty alleviation in Njombe district.

1.2 Problem statement

Literature on the problems and research on formal agriculture extension service in Tanzania is plenty. The extension service in Tanzania is plagued with problems such as funding, transportation and the low farmer /extension officer ratio. For this reason farmers have largely relied upon their indigenous technical knowledge in agricultural production. Where modern technological knowledge is used, it is sourced mainly through sharing within farmer networks. The formal dissemination of agricultural information does not rule out the possibility that farmers may bank on informal sharing of information they source from the mass media, from their own travels, or other sources. This informal sharing of agricultural information has little been studied. This study will thus focus on how farmers in Njombe district share informally this information. The study will then link this aspect to how the mechanisms of informal sharing of agricultural information can be mainstreamed into the formal agricultural extension system and poverty alleviation.

1.3 Justification

If these informal networks are identified and formalized, it is possible to enhance technology transfer and agricultural production and hence improve the living conditions of the farmers. It also accelerates diffusion of innovations, adequate knowledge

information dissemination on its contribution to food security and increase household income in rural areas. These facts call for recognition of low farmer /extension officer ratio on which plays a vital role in sharing production technologies. Therefore it is worth to undertake this study because first it is in line with the Millennium Development Goal number 1 on alleviation of extreme poverty. It is also reflected in the National Strategy for Growth and Poverty Reduction (NSGPR) goal number two and four cluster strategies 1.2.3 and 2.4.8. Which emphasize on increase on public investment to influence the pattern of employment creation towards poverty alleviation, and promote private sectors investment in lead sectors including agriculture tourism, mining and manufacturing. And improve and increase access to support services with particular focus on research and extension and meeting the needs of farmers, fishermen, foresters, livestock keepers and increase communication and collaboration in delivery of extension services (URT, 2004). The study also is in line with Agricultural and Livestock policy (URT, 1997), Tanzania Development Vision 2025 (URT, 2000) and Rural Development Strategy (URT, 2001). It is therefore worth to undertake this study because first it will generate knowledge and information which will be useful to development planners, policy makers and practitioners in relevant ministries, NGOs and other bodies interested in promoting different technologies related to this. Secondly the findings will be useful in finding solutions to problems affecting rural people and thirdly the findings of the study will contribute to redesigning the new national strategy for poverty alleviation in Tanzania.

1.4 Objectives

1.4.1 General objective

The main objective of this study is to determine the contribution of informal agricultural information dissemination networks towards poverty alleviation in Njombe district.

1.4.2 Specific objectives

i. To identify type of informal information dissemination networks in the district.

ii. To assess degree to which information from informal networks has been used in poverty alleviation

iii. To identify factors influencing the effectiveness of informal networks.

1.5 Hypothesis

1.5.1 Null hypothesis

Informal agricultural information networks have no role in poverty alleviation among farmers in Njombe district.

1.5.2 Operational hypothesis

Informal agricultural information networks have a role in poverty alleviation among farmers in Njombe district.

1.6 Conceptual framework

The conceptual framework proposed by this study is depicted in Figure1. The framework shows a set of independent variables, which influences informal information dissemination networks in the process of alleviating poverty at a household level. In this study education status of farmers, income generating activities, business, market, prices of crops and livestock, cropping pattern, land ownership and communication mechanism are the indicators which will be used to measure the informal agricultural information dissemination network as an variables while the dependent variable is poverty alleviation.

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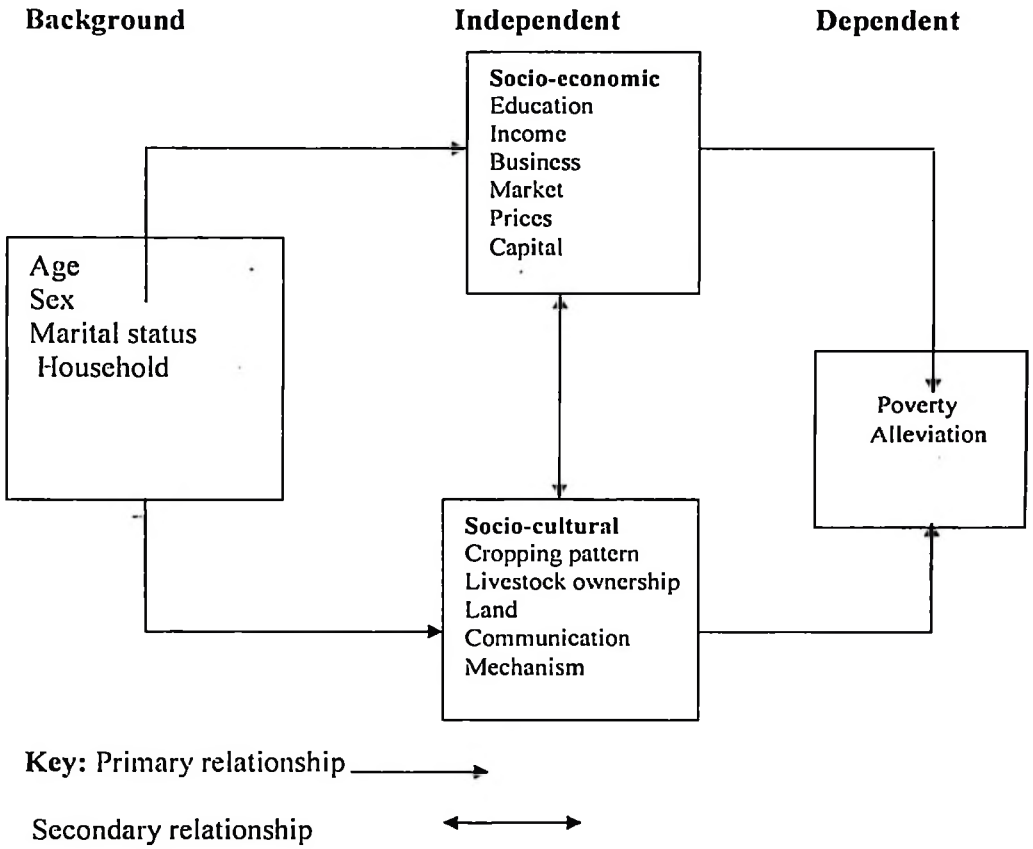

Figure 1: The conceptual framework for the study of the role of informal agricultural information dissemination network in Njombe district.

Operation definition of variables

Variable	Definition
Informal	Undocumented.
Informal agricultural ideas	Undocumented agricultural ideas
Poverty	Low monetary value to sustain household requirement.
Poverty alleviation	Income increases in monetary value to sustain household requirements
Income	Money generated
Age	Number of years since one was born.
Household	The number of members in households
Business	Earn income by selling agricultural and non-agricultural commodities
Crops	Plants planted to raise food /income
Land	Areas of land cultivated
Crop yield	Amount of crop products harvested per acre.
Sex	Being male or female.
Marital status	Having a spouse or being married
Education	Level of school
Livestock	Domesticated animal
Market	Place of selling crops and livestock
Price	Amount of money offered to buy item or commodity.
Communication mechanism	Means of transmitting information

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This chapter describes literature related to this study. If has two sections, the first section presents overview of the situation of poverty in Tanzania and the efforts towards its alleviation. The second section explains the role of informal information networks among the communities and its impacts on poverty alleviation.

2.2 Definition of poverty

Poverty has many faces; there is poverty that comes from lack of voice in matters that affect ones life, and their income poverty, among other manifestations of poverty. Mukaruka (1997) reported that poverty in the Tanzanian context entails many variables. Apart from income they also include access to transport and communication facilities and markets. Poverty is also manifested in low technological utilization, high dependency ratio, chronic unemployment and underemployment. These conditions are more so in the rural areas when compared to the urban areas.

Poverty has been defined using monetary and non-monetary measures of welfare because it is such a broad a phenomenon. Monetary measures of poverty concentrate in income expenditure and consumption levels. The non-monetary measures of poverty have two broad categories namely, basic need and social services. The basic needs comprise food, shelter or housing and clothing, while the social category of poverty includes access to health, education water, sanitation and employment. That being the case it makes it difficult to have generally accepted definition of poverty.

Mukaruka (1997) defined poverty, as being a situation where a person cannot afford the minimum basic needs necessary for decent human life. Another definition by (Rutasitara, 2002) defined poverty as situation of lack of sufficient means or income for minimum level of living food, shelter, clothing job, piece of land to till vulnerability to changing economic and cultural conditions etc. In the social context poverty also means the lack of a wider array of human non-material needs such as right of or access to community or state provided goods, freedom and respect. Thus poverty goes beyond lack of material requirements. The commonly used measures are household income consumption, expenditure levels; the assumption is that other non-material needs vary directly with income under normal circumstances. Kayunze (1998) defined poverty as a deficiency in various spheres of human life, including nutrition, education, housing, clothing, health, water, sanitation, employment, expenditure, income and consumption. In this study poverty is defined as inability to have a decent life due to several factors, among them are insufficient levels of income and consumption, food security, education and lack of physical assets because the characteristics of the respondents in the study area resemble these factors.

2.3 Poverty in Tanzania

In Tanzania poverty remains among the top national problems in spite of its efforts to eliminate it since 1961 after gaining its political independence. The Vice President's Office document the National Poverty Eradication Strategy (NEPAS) paper (URT, 1998), stipulated that 50% of all Tanzanians are poor and that 36% of the rural poor live in very poor conditions. Almost 60% of the rural population based on her income per capita of USD 120 per year. Tanzania was the third poorest country in the world 1997 (Lowassa,2000).

In the ranking of the world's poorest countries the position of Tanzania changed dramatically in the 1980's. It dropped from the 14th poorest country in 1982, with a GNP per capita of USD 280, to the second poorest in the 1990,with a GNP per capita of USD110 (Messkoub, 2003). Based on the Human Development Index (HDI), the country is not so poor since she was 150th out of 174 countries in the world in 1997 (UNDP, 1998). With the problem of poverty being so critical the government has planned a comprehensive strategy to reduce absolute poverty by 50% by 2010 and eliminate it completely by 2025 (URT, 1998).

The trend of poverty in Tanzania is worse, and like other developing countries, Tanzania is facing a major problem of rapidly increasing number of poor people despite her attempts and strategies in fighting poverty since independence (WB, 1993; Cooksey, 1994). The World Bank reported that about half of all Tanzanians are basically poor and one third are living in abject poverty, of which between 15 million and 18 million live below a poverty line of USD 0.65 per day of these nearly 12.5 million live in abject poverty, spending less than USD 0.50 on consumption a day.

Furthermore, the absolute number of people living in poverty has increased because of population growth. Several studies compared the poverty situation with other developing countries. For instance, health statistics show that the life expectancy of Tanzanians was 50 years compared to 77 years and 62 in developed and developing countries respectively (URT, 1988). Infant Mortality Rate (IMR) was higher (96 per 1000 compared to 7 in developed countries and were higher than the average of developing countries (64 per 1000). About 200 and 400 per 1000 pregnant women die out of maternal complications compared to 95 deaths out of 100 000 in other developing countries (WB, 1996; URT, 1999; Kisusu, 2003). It also reported that approximately 12% of the children born die

before reaching the age of 5 years compared to 0.95 in developed countries (URT, 1998, 1999, 2000b).

2.4 Measuring Poverty

In principle there are two major methods of measuring poverty. They are measured by means of basic and social needs and monetary defined poverty lines (Hemmers, 1987). Using non-monetary indicators minimum values of indicators of social welfare are identified, and people getting less of the needs than the minimum amount are considered to be poor. However this method is very subjective as it relies heavily on income poverty line while poverty has many other aspects as well.

The main requirement for any quantitative poverty analysis apart from data on household income, expenditures or other measures of welfare is a predetermined poverty line (NBS, 2000). The importance of poverty line defined on monetary basis is in avoiding the difficulties of poverty measurement by social indicators. Tanzania does not as yet have an official poverty line and numbers of different values have been proposed in the past. Poverty lines proposed so far for Tanzania are absolute lines defining poverty in terms of some exogenous measurement of income or expenditure required to provide a defined level of living. The food poverty line for example, reflects the cost of a basic food basket, while the basic need poverty line provides for other, non-food expenditures (NBS, 2000; Semboja, 1994). UNDP (1997) explained how to develop a poverty line giving the example of Tanzania where the poor spend about 71% of their income on food, a factor of 100/71 that is 1.0 is obtained. This approach is called cost-of-basic needs method (UNDP, 1997).

According to (UNDP, 1997) other poverty line can also be determined by calculating the cost needed to obtain a basic diet and for other necessities. There is also food energy method and share method. The former sets the poverty line at the consumption expenditure level at which a person's dietary energy intake exactly meet average diet requirement and the latter sets the poverty line at the cost of consumption plan to acquire just sufficient nutrients.

2.5 Absolute and Relative Poverty lines

Several poverty lines have been developed in the past based on relative (upper) and absolute (lower) poverty lines. Citing an example of 1991 the upper and lower lines per adult equivalent in Tanzania were Tshs 46 173 and Tshs 31 000 different prices of the year. In the same year rural Tanzanians whose incomes were below the upper and lower poverty lines were 59.1% and 44.1% respectively (WB, 1993a). A poverty line of Tshs 49 600 per adult equivalent per year in 1995 prices was computed in 1982 by an International Labor Organization (ILO) study. Yet, other poverty lines upper and lower of Tshs 73 877 and Tshs 49 600 per adult equivalent per year. These adjustments are obtained by using consumer price indices for Tanzania mainland as given by the Bank of Tanzania (BoT). The same method was used to adjust the upper and lower poverty lines to Tshs 147 052 and Tshs 98 728 respectively for the year 2002, which enabled to determine the percent of the poor and non-poor in the study area.

2.6 Poverty alleviation in Tanzania

Since independence in 1961, the government of Tanzania has been pre-occupied with three development problems: ignorance, disease and poverty. Poverty is a menace in Tanzania and the proportion of the poor compared to total population has been growing in spite of the measures being undertaken to alleviate it (Makombe, *et al.*, 1999). Poverty as

it is characterized has a lot of things, which have to be involved. According to Chambers (1985), the prevalence of sickness due to ill health, and indebtedness, inadequate supply of food, lack of wealth or assets and lack of flow of cash and food are some of the characteristics of poverty. With regard to this category, people with access to high quality and quantity of these needs are said to be non-poor. In addition, Chambers (1985) also added physical weakness, vulnerability, deprivation and powerlessness in his definition of poverty, all of which are common among low-income women in Tanzania (Makombe *et al.*, 1999).

Kayunze (unpublished) refers poverty alleviation as lifting the poor out of poverty. Poverty alleviation is also known as attacking poverty. The theme is neither new to the world nor to Tanzania. It has been under different names including poverty alleviation, combating poverty and fighting poverty.

National efforts to tackle poverty related problems were initially channeled thorough centrally directed medium term, and long term development plans, and in significant improvement in per capita income and access to education, health and other social services in the 1970s (URT, 2000). Unfortunately, these gains could not be sustained as it has been reported by Mtatifikolo that during the period of 1961 to 1967 there were no specific actions against poverty (Mtatifikolo, 1994). However poverty is not simply a matter of lack of physical and material deprivation, but a much more complex social phenomenon with economic cultural and social phenomenon with economic, cultural social and political dimension (Mascarenhas, 2000). Therefore with regard to different aspects of poverty then it is largely associated with deficiency symptoms in various spheres of human life, including nutrition, housing, clothing, water, health, education and sanitation.

The government of Tanzania has applied two approaches toward poverty alleviation, the first approach is through growth and the second is through redistribution (Mtatifikolo, 1994). In the former approach the assumption was that, the government would concentrate on policies and results will trickle down to the poor through primary and secondary incomes hence alleviating poverty. Henceforth, in the redistribution approach, poverty is alleviated through special programs and donor projects.

The government, through improvement of the national economy in the early 1980s strengthened the efforts of poverty alleviation. Such programs included the National Economic and Survival Program (NESP) in 1981 and the Structural Adjustment Program (SAP) in 1983 (Bagachwa, 1994). Both approaches of poverty alleviation have been used in Tanzanian. However, in addition to the reforms they have failed to deliver the expected outcomes because it was a top down approach. Therefore, it failed to put into consideration the initiatives of the expected beneficiaries of the reforms (Sakafu, 2002).

The Tanzania Government after all efforts failed, started negotiations with the International Monetary Fund (IMF) and the World Bank (WB) leading to the approval of the Highly Indebted Poor Countries (HIPC) completion point. The Board of the IMF and the World Bank approved dept relief for Tanzania in November 2001. Under those conditions savings from debt relief under the HIPC facility will be directed towards priority areas identified in the poverty reduction strategy.

Recent efforts by the government to reduce poverty are evident in the various initiatives taken towards poverty reduction and attainment of social and economic development. Founded within a broad policy framework, the Vision 2025, stipulates the vision, mission, goals and targets to be achieved with respect to economic growth and poverty eradication

by the year 2025 (URT, 2000a). The Poverty Reduction Strategy Paper (PRSP) was then formulated as a medium term strategy in the context of the enhanced HIPC initiatives. Another indication of the seriousness that the government of Tanzania is committed to poverty alleviation is the formulation of a unit within the Vice Presidents Office, which coordinates poverty reduction issues at the national level (URT, 1997). The country, is now preparing the PRSP phase II that is expected to be more comprehensive.

2.7 Rural poverty and access to the market

Rural poverty is intimately linked to market access. The less rural households are able to benefit from market transactions, the less they can protect themselves from poverty, for several reasons. First, farmers benefit from exchanging produce with each other. Second, the market is the most important medium of information exchange in rural areas. Farmers with exposure to market learn about best agricultural techniques inputs and prices. They can also seek technical assistance from either public or private organizations or even their fellow farmers who are well informed. Thirdly, the rural market is an exchange place of agricultural produce or labor.

Closeness to rural markets also implies access to information, which helps farmers to use their assets both land and labor more productively. Information includes informal exchange with other farmers and access to the formal technical assistance services provided by private, non-profit organizations or public agencies. Isolated farming household that cannot exchange produce or animals in the local market tend to be poorer than more integrated farming households. The cost of bringing products to the market are very high in remote rural areas where it can take a day or more by foot or riding a bicycle to reach the nearest market. Very few farmers can afford to hire a vehicle to bring their

agricultural products to the market due to poor condition of rural infrastructure such as roads and feeder roads being seasonal (WB, 1993d).

2.8 Overview of informal network

In today's hyper-competitive environment generation and indulgence of knowledge can no longer be understood from within the boundaries of formal organization mechanisms. Previous, researches have studied knowledge management based on formal mechanism; however, few have examined the role played by informal information mechanisms (Nonaka and Takeuchi, 1995). Informal communication has been found to facilitate the process of socialization positively, contributing to knowledge creation and sharing or exchange (Desouza, 2003a, b).

Informal information networks are composed of social and personal relationships between individuals. Players within these networks act out different roles such as central connector, boundary spanner, bridge, expert etc (Cross *et al.* 2002., Cross *et al.* 2001). Personal communications in people to people are significant especially within people who discover, collect and utilize knowledge that resides in individuals and scatter across the community.

Grant (1996) proposed the integration of individuals' specialized knowledge as a salient organizational capability to create and sustain competitive advantage. This literature discuss how players in formal networks contribute to competitive advantage through knowledge integration aimed at drawing attention from both researchers and practitioners to human roles in knowledge management (Glaser and Strauss, 1967).

2.9 Roles of players in informal networks

Researchers have long been aware of the impacts of informal networks in knowledge management (Granovetter, 1985, Nonaka and Takauchi, 1995; Davenport *et al.*, 1998. Ruggles, 1998, Borgatti and Cross, 2003) informal networks can be defined as networks where individuals are connected based on their social or personal relationships rather than work or task formally related relationship. Informal networks are not explicitly calibrated in organizational chair; however, they can be seen in almost all organizations (Krackhard and Hanson, 1993).

By nature informal networks are highly dynamic and are difficult to identify. Players in informal networks are identified as nodes that keep networks alive by their links with other nodes. Their links are defined by their social or personal relationships with others. Past literature has found that these players play especially important roles in knowledge creations and transfer (Davenport and Prusak, 1998; Desouza, 2006b). From past literature five informal network player roles are applicable to this study based on their relation to knowledge management activities. These are central connectors, boundary-spanners; grate keeper, bridges and experts (Cross and Prusak, 2002; Kleiner, 2002), and they are detailed explained here below:

2.9.1 Central connector

Central connectors can be identified as people who are frequently contacted by others within a local setting. They have superior knowledge identification capabilities; know a great deal about their local workplace. Central connectors can identify what knowledge seekers are looking for as well as important people who can provide such knowledge. They are similar to search or matching agents who can understand nuances that knowledge seekers may imply but do not directly state. Once these connectors identify

what knowledge seekers are looking for, they either connect them with people who can provide such knowledge to save time by providing short cuts through a formal system (Cross and Prusak, 2002).

The role of the central connector thus emerges. Such individual can match knowledge seeker with knowledge by either providing a human contact or retrieves such knowledge from a database. Central connectors help people to save time to search for knowledge. These contribute more to efficient knowledge integration. Besides localized knowledge, individuals will often need to seek out knowledge in areas they are not familiar with. For example to solve an accounting issue one might need marketing or operations related knowledge for a product. Localized knowledge in heterogeneous context is more cumbersome than searching in localized areas due to the fact that one has less frequent interactions with such knowledge or agents working in other areas. When this searching must be done on global level, the problem becomes more complex as one has to traverse geographical boundaries to make the necessary constructions.

2.9.2 Boundary spanners

Boundary spanners (Tushman, 1977, Allen, 1977) connect a local network to other networks outside its boundaries. They constantly seek new know how and have a variety of knowledge not restricted to their functional expertise and local environment. They frequently show up at multi-company research programs or conferences to bring in and put into practice new ideas (Davenport *et al.*, 2003). Their knowledge of their area of expertise helps them communicate with other networks. Boundary spanners may also speak more than one language (Cross and Prusak, 2002) to help them communicate relatively easily with people working at international offices. They are good in speaking different native languages in different expertise language. Boundary spanner is important

for organizations since the knowledge they collect from different sources affect the rate of adoption of innovations and type of innovations. Boundary spanners are good at collecting knowledge outside of their local networks (Hargadon, 1998). The role of boundary spanner emerges to help agents seeking out and making contact with the needed knowledge. They help people to save their time and lead knowledge seekers to the right direction. Therefore boundary spanners have superior global and heterogeneous knowledge gathering capabilities hence contribute competitive advantage by increasing the efficiency of integration.

2.9.3 Gatekeepers

Gatekeepers as their name implies, control knowledge that enters into or leaves a network by controlling the flow of information from members and other companies (Kleiners, 2002). They protect local network from threats and rumors from the outside by filtering and screening unnecessary information. Their job includes monitoring of knowledge management processes and tools that people use. They systematize the process of managing knowledge by scandalizing tools and procedures.

Raider *et al.* (2003) studied how intellectual assets are used in a professional service company and found that in one sector there was one appointed person who served as gatekeeper to assure the quality of the knowledge circulating between employees. The main role of gatekeepers is to monitor the usage of knowledge management systems. They are responsible for updating knowledge, examination and screening management system (Davenport *et al.*, 2003).

2.9.4 Bridges

A bridge is a device that connects network segments; it operates by accepting signals and making decision to pass the signal to other networks. An organizational bridge, like in

networks system must have ability to detect signal and transfer them in a correct manner. Bridges are trustable translators who can speak variety of languages and can comprehend knowledge in disparate context. Their importance is particularly emphasized when they connect people who have opposite opinions (Kleiners, 2002).

2.9.5 Experts

Experts are very knowledgeable about certain type of products, subjects or processes and they tend to have very focused and concentrated, experienced, and the expert is usually a person who has a long tenure in a particular organization. Their knowledge is valuable to organizations, since it is unlikely to be captured by any knowledge management tools (Prietula and Simon, 1989). Expert excels at learning from experience as well as identifying, extracting and providing important knowledge to others in an easy to understand manner. The pattern recognition and application capability of experts is important for knowledge seekers to save money and time on their search costs.

2.10 Knowledge Integration Capabilities

Grant (1996) projected that integrating individuals' focused information is a managerial means that allows organizations to establish and sustain their spirited benefit since knowledge can be found in individuals and organization needs to integrate such as knowledge. Examples of knowledge integration capabilities are combining a variety of individual skills to create revenues and pooling various functional and personal expertises to various strategic moves. Information can be integrated through two inter-correlated mechanisms direction and association routine (Grant, 1996).

Direction is the attitude way of information exchange or sharing between experts and others. Grant (1996) stated that the more composite an activity the greater the number of

locations in which that activity must be simulated and the more demanding the presentation requirement for the outcome of that activity, the greater is the dependence on information integration through direction (Grant, 1996). Two capabilities are particularly related to direction mechanism. The capability of collective information calls for join up of knowledge in one place from a wide variety of sources. This procedure includes contacting someone who has the requisite knowledge or searching it in an electronic, or hard copy based repository, the capability or transferring knowledge calls for the movement of knowledge from one location to another. There are three types of knowledge transfer; transfer across individuals, transfer across units and transfer over time (Desouza *et al.*, 2003). Transferring knowledge across time period is particularly important since it enhances knowledge exploitation by utilizing past experience for current problem solving.

An organizational routine is a mechanism that supports knowledge integrated through efficient and effective communication of knowledge among individuals (Grant, 1996). This mechanism heavily depends on informal communication procedure. Through daily interactions, individuals are assigned implicit roles to foster more smooth communication, which cannot be fully covered by a conversation. Sense making capability is especially related to organizational routine mechanism. It refers to the comprehension of retrieved knowledge (Katzy *et al.*, 2001; Desouza *et al.*, 2003). It also refers to the process of recognizing the contest around knowledge and is either conducted through the use of schemas and metaphors or is based on habitual interpretations and behavioral episodes (Ford, 1996). Sense making is important capability for organizations, since it integrates people through and generates new knowledge (Ford, 1996). Sense making can be of two types. An exploration capability is the ability to discover new knowledge from external network and identify the value of the knowledge. It involves experimental activities that

are associated with risks. An exploration capability is an ability to reconfigure existent knowledge to solve current problems. It involves with more reutilization and risk avoiding behaviors.

The agricultural sector in sub Sahara Africa is faced with many challenges including food insecurity, inefficient use of available agricultural innovation, very high cost of agricultural inputs slow, take–off of knowledge, intensive farming system, low cost of agricultural produce degradation of the environment due to pressure on the land and rapidly growing of population. This need for transformation places incredible responsibilities on the agricultural extension institution, both within the public and other private sector / organizations.

Agricultural extension have emerged as the main organization dealing with human resources development in imparting knowledge and technology transfer to farmers in developing countries around the world. There is general agreement that agricultural extension must be bolstered to enable it continuing playing this critical role in agriculture and rural development in sub Sahara Africa. However numerous studies have pointed out that extension organizations are not able to cope with the emerging challenges they face owing to poorly trained, poorly equipped and inadequate numbers of extension staff who are currently working in these organizations (Crowder *et al.*, 1998; FAO, 1998; Kwarteng, *et al.*, 1998; Rogers, 1996.). Due to inadequate number of extension staffs farmers have to rely on their fellows to share information among themselves in which it has helped to solve their problems. These problems are exacerbated by other critical factors including the following:

- Lack of up to date data on human resource development needs in many African countries.

- Lack of awareness or absence of credible mission statement well developed strategy and sound management in agricultural colleges and universities.
- Poor network mechanisms that could speed up the exchange of ideas innovative educational practices, lesson and model to create responsive institutional change.
- Lack of a consensus about the appropriate model of extension that should be used resulting in continuous shift from one model to next without their human resource implications.

According to Allo and Schwas (1982), people learn only what they want to learn, so anything taught to farmers must be seen to them to satisfy a real need. Adults reason and argue and are impatient for results and remain relatively set and conservative in their way. Extension personnel must present their information on new technology very persuasively and convincingly. They must also remember that every rural community has its internal relationships of power, clan loyalties and patronage obligation. Since informal communication medium is of factual instruction, it is a very effective extension method, which requires no expenditure; it is a powerful media for reorientation of the listener's attitude. Therefore the amount of information disseminated should not be so technical to avoid wrong interpretation and poor understanding of the message.

2.11 Informal roles and knowledge integration

Knowledge flow in informal mechanisms is highly dynamic compared to formal mechanisms, since links and connections are not formally defined. The strength of informal relationships can easily vanish or persistently survive in this kind of network. Human nodes are important to keep the network functioning because each human node can be highly capable search agent repository. Cross *et al.,* (2002) suggested to "build better networks focus on who knows what" informal information contributes knowledge

integration capability might affect competitive advantage by influencing the type of knowledge integration. Grant (1996) introduces three dimensions of knowledge integration efficiency scope and flexibility. The efficiency of integration is the level of the accessibility of expertise knowledge that resides across the organization. The scope of integration matters since it makes more non-replicable and non substitutable. The flexibility of integration has two directions: extending existing capabilities to include new knowledge or reconfiguring existing knowledge which new pattern of integration (Grant, 1996; Henderson and Clark, 1991). Information networks appear to be formed around social geographical proximity. Networks builds on around friendships are the most common channels of information. Local association is an additional mechanism of information exchange for rural people.

It is useful to note that some networks serve to block access to information thereby excluding new entrants and facilitating collusion. Networks can be sources of welfare losses as well as gains (Flora, 1998). While interdependence for information is the rule, conglomerates engaged in production and marketing at several levels of agro food systems on several areas have substantial internal capacity. Network stability is a relative concept dependent on temporal scale of analysis. Maintain competition and support cooperation are most likely to yield greatest benefits and least negative affects.

High quality infrastructure is a prerequisite for effective network activities. Investments in communication services (telephone, Internet, postal) and transportation systems (roads, airports) lower the cost and enhance the frequency, duration, and intensity of communication in networks.

Efforts to compile and circulate up-to-date directories of expertise can have great value in recruitment into the network. Such resources also facilitate exchange within the network. People must be encouraged to think creatively as to where and how to find expertise as part of they're professional training. Locating and bringing relevant information to bear on a problem is a skill of great value and one that must be cultivated. By encouraging users of information and intermediaries to be actively searching for information rather than passively awaiting information, costs of dissemination are reduced and the number of people served increases thereby increasing the value of the information Zilberman and Heiman (1995).

Networks are increasingly effective as actors develop a common vocabulary, a shared set of objectives, mutual understanding of (technical, economic, and cultural) constraints to innovation, patterns of interdependence, and alignment of incentives. Increasing levels of trust among actors is a powerful mechanism to enhance the effectiveness of information production and dissemination networks. Assurance that in the information network is not subject to purposeful manipulation increases incentives for participation as costs of monitoring and validation of what information others contribute to the network decrease in proportion to trust. The trick, of course, is how initially to overcome the collective action problem and institute a convention of honesty and disclosure (Lazeric and Lorenz, 1998; Aoki, 1998).

Each of the strategies to promote effective networks discussed here serves to enhance trust by reducing incentives and raising risks for introducing biased information into the network. As social ties increase, harmonization of incentives is achieved, and recognition of common objectives grows, subterfuge becomes less attractive than cooperation. Knowledge that the network is a source of value creates an incentive to be well positioned

in the network. A direct path to privileged position in the network is recognition by other well-placed participants as an actor who has provided useful information in the past. The reputation effect serves to motivate honest dealing. These same developments also serve to increase disincentives to introduce biased information as risk of doing so increases as networks are enhanced. Risks associated with dishonesty increases in one dimension because ability of others to identify bogus information increases as they come into closer contact with one another (more information against which to compare and thus identify a dishonest report). Second, risk to misinformation increases as the ability of the network to create and enforce meaningful sanctions increases. Strong networks imply long institutional memory suggesting a bad reputation is not easily denied or forgotten.

2.12 Informal contacts and performance

Informal contacts between members of an organization have frequently been a subject of research. Such research tends to be on the effects of the context on the dynamics of the contact (Salzinger, 1982; Field, 1981; Van de Bunt, 1999). On the influence of characteristics of members of different types of contact (Lincoln and Miller, 1979), or on particular applications, for example, examinations of the availability of career opportunities within a field (Granovetter, 1974; Wright, 1993). However most studies of relationships between organizational members tend to focus strictly on work related contacts (Devlin and Bleakly, 1988; Eccles and Nohria, 1992; Tushman, 1978). Relatively little research has been in the area of informal contacts and their consequences on the functioning of organizations or teams, although there is strong empirical support that informal contact affects processes in organizations (Krackhardt, 1990; Ibarra and Andrew, 1993). Not only has this type of research inadequate, it has provided contradictory results regarding the benefit and detriments of informal contacts on the functioning of organizations or teams (Jehn and Shah, 1997).

Some of the research findings revealed that close informal contacts are an impediment to team performance (Flache, 1996). The main arguments include the view that informal contacts prevent the critical evaluation of ideas and that informal tie between team members are already so rewarding by themselves that they dramatically reduce any motivation for team members to perform well.

In contrast other research findings indicate that informal contacts increase team performance. This view is often expressed in the cohesiveness – compliance hypothesis (Homans, 1974), which states that close informal contacts create groups in which members reward one another with expressions of approval that concerned members understanding in the group. It is further argued that it motivates them to put more effort into the completion of tasks and this should improve the performance of the team as whole.

2.13 Information networks in extension

Information networking has been used as a tool for communication in extension. This arises due to the fact that conventional assumptions of extension communication achieved little impact. In this section therefore types and definitions of networks, how networks evolve, role of networks in information dissemination and importance of networks have reviewed.

2.13.1 Type and definition of networks

According to Alders *et al.*, (1993) they defined networks as any group of individuals and/or organizations that, on voluntary basis, exchange information or goods or implement joint activities and organize themselves for that purpose in such a way that individual autonomy remains intact. Farrington and Nelson (1994) define networks as the

motor of the work of groups with organizational structure in addition to providing information and inciting groups to act.

There are several types of networks according to different perspectives. Haverkort *et al.*, (1991) classified networks according to the pattern of flow of information. For example in a hierarchy type of network information flow information flows directly between members. They also classified network according to membership composition and activities involved. In this case networks can be workers, with a variety of activities (e.g. information exchange, training, awareness raising etc). Pluknet *et al.*, (1993) give a classification based on operation styles. Other network classifications are based on scope of geographical coverage and subject matter focus.

Analyzing the different forms and types of networks that have evolved or have been chosen by members reveals certain patterns. Alders *et al.*, (1993) gave advantages and disadvantages of network types as shown below: -

Table 1: Advantages and disadvantages of networks

Type	Advantages	Disadvantages
Local level	Allows face to face Contact, Eco-specific, informal	Limited scope and means
National level	Represent large number of people. Allows stronger policy voice, Acquire more resources for large tasks	Require formalization and core funding, limited interaction between members
Specialized	Well focused	Too narrow a focus
Horizontal membership	Deep contact	
Vertical Membership	Allows contact between levels	
Centralized Organization	Executive contact between levels	
Centralized organization	Executive power easy for donors to deal with	Alienation from grassroots
Decentralized organization	Democratic commitment	Difficult to maintain

Source: Alders *et al.*, (1993)

2.13.2 How networks evolve

Every individual and organization builds relationships with others in networking. Most of these activities remain informal and rather incidental. Some however become so relevant to life and/or work of these individuals and organizations that they decide to institutionalize them in order to guarantee a more permanent facility. According to Engel (1990b), claiming that networks should always remain informal is like saying that people should eat, but never build a kitchen.

There seems to be a common denominator with which all networks start. All seem to begin with a phase of planned activism (Manrique *et al.*, 1993). This is a phase in which the first exchange the recognition of the value of sharing and support, one or a small group of enthusiastic prime movers (Padron, 1991 as cited in Alders *et al.*, 1993) promotes the idea of networking members is prepared. A lot is done during this phase, but often in a rather unplanned fashion. The result is generally a workshop or a meeting where the idea of forming a network is discussed and evaluated, together with other more immediate interests (Korten, 1990).

A number of recurrent issues emerge during the phase of planned activism. The first to emerge is the importance of communication and participatory methods. These must be allowed to play a major role in the formulation of its objectives, approach and organization in order for the network to be carried by a wide group of Non-Governmental Development Organizations (NGDOs) and their staffs. This is easier said than done, for those working in often isolated rural areas, it is not automatic to take time and develop a custom for sharing ideas and experiences with others from elsewhere, as enriching as it may be. Also, the time and energy required for doing this often competes with already overloaded agendas.

However, the more difficult yet essential tasks seem to be the development of shared conceptual framework that facilitates the exchange of ideas, skills, experiences and knowledge. Kolman (1993) describes the experience, and notes the unrealistic goal setting and the extensive theoretical discussions during the first year of preparations. But he also indicates why they were necessary to overcome ignorance and the lack of information on the topic of interest amongst prospective members; to integrate social ways of thinking

with insight into technical processes; and last but not least, to explain to donors and other supporters the actual need of rural people.

Kolman (1993) seems to be referring to a process of making sense out of the ideas of setting up a network to stimulate sustainable development, checking the actual need for it; and defining its potential in supporting its members in doing their work better. It takes a lot of time, yet it seems to be an essential ingredient in networking. In a way it helps to transform a diverse set of people and organizations with an "ill-defined" sense of purpose, into a "like minded" group with many interlocking relationships and a shared perspective, thus enabling them to effectively learn from each other.

This process of achieving a common understanding and shared purpose is in all cases linked closely to concrete activities that the members of the network are already performing in their respective areas. The immediate needs arising from the fieldwork of each of the institutions are the basis and reason for being a network (Manrique *et al.*, 1993).

2.13.3 The Role of networks in Extension

A network is an activity in which people positively indulge in dialogue, encourage exchanging ideas and experiences, urged to take the time to listen to each other and to work towards a new way of understanding old problems. This actually provides opportunity for reflection, for breaking down barriers and stimulating creativity (Engel, 1990a). In agricultural development, farmer's networks play the following roles in the adoption and diffusion of innovations: -

(i) Risk sharing

A basic function of farmers' networking is to build confidence among member farmers and provide support and encouragement. Compton and Joseffson 1993 as cited in Alders *et al.*, (1993) contend that new farmers can learn from older farmers and inexperienced farmers can learn from experienced ones and so avoid unnecessary repetition of mistakes.

(ii) Experimentation and demonstration

Experiments conducted by farmers' networks can effectively and efficiently serve to develop farming practices and enables farmers to investigate a proposed new practice more completely and more quickly. Networks allow participating farmers to discuss and analyze each other's observations and experiences. This process results in valuable research questions. When forwarded to agricultural research organizations, these questions and requests, presumably, carry more weight. Due to the fact that they are put forward by a network rather than individual farmers (Compton and Joseffson, 1993 cited in Alders *et al.*, 1993).

(iii) Empowerment

Farmer's networking can focus around many areas of common interests and needs. As farmers join together and begin to support and learn from each other, a network develops strength. It becomes increasingly able to promote the common interest of its members and of the larger community. Practical outcomes can be cooperative, purchasing suppliers, cooperative selling and marketing of produce. Well established networks can become effective advocates of policy change, claim improved access to public services for their member, and help to enlist services

for or at least interest in the issues of environment and development which affects farmers' lives (Alders *et al.*, 1993).

During a workshop on networking for low-external-input agriculture held in the Philippines in 1992, it was generally agreed that the most essential ingredient for the promotion of low external input and sustainable agriculture is the existence of strong farmer based networks in the rural community (Alders *et al.*, 1993). Development support networks such as those of NGO's or of research institutions, should, as those of NGO's or of research institutions, therefore aim to cooperate with and/or support the needs of farmer-based networks. Recent research has provided important insights in this area, which is one that is frequently overlooked by development organizations (Alders *et al.*, 1993).

(iv) Extension and communication

Farmers' networking can obtain and disseminate agricultural information from outside the network. Networks have often emerged in response to absence of such networks can facilitate the work of extension workers and researchers provide (Compton and Joseffson, as cited in Alders *et al.*, 1993).

2.13.4 Importance of networks

Non-Governmental organizations (NGOs) networks seem to surge from a situation where the NGOs themselves, or members of their staff, perceive a critical lack of access to relevant knowledge and experiences from others. Yet, at the same time, this lack is not looked upon as absolute or irrevocable. On the contrary it is perceived as being surmountable among relevant parties, in other words, if information sharing and learning among relevant NGOs is improved. In India NGOs and farmers agreed that there is many

sound traditional practices that need to be brought to light and are worth disseminating (Quintal, 1993).

Another case in point is CAME-Peru, where severe drought and inundations convinced NGOs of their inability to adequately respond to the Andean peasant's needs. They attributed their failure to a lack of inter-Institutional coordination (Manrique *et al.*, 1993). Another example is the recognition of the participants at the OXFARM continue workshop of the isolated conditions in which local project staff had to work, which gave rise into the formation of the ALIN network (Graham, 1993). In India, the ecological breakdown due to modern agricultural techniques, the ensuring crisis, and the lack of appropriate and sustainable alternative raised awareness that a local network would enhance the adoption and diffusion of innovations and motivated others who were interested (Quintal, 1993).

Another case of farmers network is MVIWATA in Tanzania. Which stands for farmers group network in Tanzania. Innovative farmers from Morogoro, Iringa, Kilimanjaro, Tanga, Mbeya and Dodoma regions found it with the aim of farmer-to-farmer information exchange forum. The Sokoine University of Agriculture (SUA) guided the idea and succeeded in registering the organization. It is non-strong hierarchical levels, which are individual members, local farmers, local network and the national network.

The following principles guide it's functioning.

(i) The networks enroll members on their own free will.

(ii) A member is free and he or she is entitled to protect this freedom.

(iii) A network cannot force another organization to do something and cannot be forced by another organization to do something.

According to Mattee and Lasalle (1995) the network limits its role to the transfer of knowledge and information. International ties have also been created with the Pan African network, Farmer Agriculture and Modernization Africa (FAM-Africa). Twice the Tanzanian network has been represented in FAM- African meeting.

2.14 Summary of literature review

The literature review of this study covers definitions of poverty according to different researchers and World Bank. It identifies poverty menace and the government of Tanzania strategy to fight it since her independence. Poverty alleviation in Tanzania has been preoccupied with three enemies, which are Ignorance, diseases and poverty despite being undertaking measures to alleviate it. National efforts to tackle the problem initially were channeled through centrally medium and long-term development plan and significant improvement of per capita income, access to education, health and other social services. However poverty is not only confined to these contexts but has been largely associated with various sphere of human life such as nutrition, housing, clothing, health, education and sanitation.

The government of Tanzania has applied two approaches towards poverty alleviation. The first approach was through growth and second through redistribution. The former approach was that the government would concentrate on policies and results trickle down to the poor through primary and secondary income hence poverty alleviation. And redistribution approach whereby poverty alleviation was projected through special programs and donor projects.

Such approaches included National Economic and survival Program (NESP) in 1981, Structural Adjustment Program (SAP) in 1983 and recent efforts by the government to

reduce poverty and attainment of social and economic development founded within the framework of Tanzania development Vision 2025. Poverty Reduction Strategy Paper (PRSP), National Strategy For Growth and Reduction of Poverty (NSGRP) was then formulated as a medium term strategy in the context of the enhanced Highly Indebted Poor Counties initiatives. The government of Tanzania demonstrated its seriousness by formulating unit within the Vice Presidents Office, which coordinates poverty alleviation issues at the national level.

Rural poverty is intimately linked to market access. It is obvious that farmers with high exposure to market learn best agricultural techniques, inputs and labour, which in turn benefit more from exchanging produce and marketing information than their fellow living in remote areas which are plunged with poor and seasonal infrastructures.

Based on such circumstances, generation and indulgence of knowledge can no longer been understood within the boundaries of formal organization mechanisms. Informal communication arises which facilitate socialization, contributing to knowledge creation and sharing that later establishes informal information network based on personal relationships between individuals.

It is evident from the proceeding summary that extension communication is complex process, which requires a well-established system. Since the system require extension personnel as vehicle to transmit information, due to their inadequate number, informal communication medium perform the factual instruction and seem to be very effective method in information transfer in most rural population. Knowledge flow in informal mechanisms is very dynamic and efficient in contributing to better knowledge networks integration which provide information and inciting groups to act. Generally networks are

classified according to pattern of flow of information, which is usually directly between members and involved activities. It was from these circumstances whereby farmers' group network of Tanzania (MVIWATA) was found.

From this literature it was evident that it looked how informal information networking can have impact on practical reward through their ability in integrating agricultural knowledge. The work should be viewed as preliminary and has added scant knowledge in this area. However much work still needs to be conducted to further the knowledge in this area. For researchers this topic is an interesting avenue for further research. Informal roles networking and their effects on the knowledge management, and outcomes such as profit and productivity could also be investigated to make significant contributions in understanding the roles of informal networks in integrating knowledge that have practical reward.

CHAPTER THREE

METHODOLOGY

3.1 Description of the study area

This study was conducted in Njombe district. Njombe is one of the districts in Iringa region in the Southern highlands of mainland Tanzania. It is located between 7°5'-36°32' South and 33°44'-36°32 east. The region is divided into six districts namely Iringa, Kilolo, Mufindi, Makete, Njombe and Ludewa. Njombe district has an area of about 10 668 Sq. km. with a population of 419 115 people. Administratively the district has two district councils namely, Njombe District Council and Njombe Town Council as well as seven divisions, of which Njombe Town and Igominyi are in Njombe Town Council, while Makambako, Imalinyi, Wanging'ombe, Lupembe and Mdandu are in Njombe District Council in which there are 25 wards (URT, 2002).

The majority of the population lives in rural area and few of them live in Njombe and Makambako towns where Njombe has 42 180 and Makambako 50 843 and 326 092 reside outside these towns (URT, 2002). The remaining part of rural population deals in agriculture, engaged in production of food and cash crops. Some food crops such as maize, beans, wheat and Irish potatoes are also used as cash crops. Other crops produced are tree fruits and non-tree crops such as avocado, pears, peaches, apples and pineapples respectively. Livestock kept are cattle, goats, sheep, pigs, rabbits, guinea pigs, chicken and ducks. Cash crops, which are produced with the exception of tea, which is processed in Lupembe, Kibena and Luponde tea factories other food crops are sold at low market prices some in their households and others in town markets. Few businessmen are selling maize, beans and irish potatoes in Dar es Salaam markets and others.

3.2 Research design

The cross sectional survey was used in the study. This study is favored because of its accessibility of easy data collection at a single point in time; it is economical and can be used for a descriptive study as well as for determination of relationship between variables (Bailey, 1998).

3.4 Sampling

3.4.1 Study population

The study population included a representative sample of Njombe, which is comprised of 25 wards where its people are dealing with agriculture, livestock production and business.

3.4.2 Sampling procedures

Purposive sampling technique was used to determine selection of divisions and wards, while simple random sampling was used in choosing villages and respondents in households where information was gathered. Purposive sampling was used in selecting divisions due to diverse climatic conditions and economic activities that could form comprehensive data for the survey.

3.4.3 The sample size

The sampling unit comprised a total of 100 households selected in five wards in five divisions. Purposive sampling was being employed in selecting divisions and wards while simple random sampling was used to select villages and respondents.

3.5 Instrument of data collection

Structured questionnaire whereby closed ended questions and open-ended questions and interview schedules were used to gather primary data. Questions were designed to capture all production activities carried in the year 2006/07.

3.6 Data collection exercise

3.6.1 Primary data

Primary data was collected in this study through survey whereby formal survey by interviewing respondents was done using questionnaires. Then formal survey was complemented with data obtained by way of observation and key informant interviews.

3.6.2 Secondary data

Secondary data was obtained by consulting different publications in the libraries such as the SNAL, National Library Services, Internet and unpublished reports.

3.7 Data analysis

Computer Statistical Package for Social Sciences (SPSS) computer program was used for data coding and analysis. Descriptive statistics such as frequency distribution percentages and Chi Square were run against the responses and cross tabulation was used to make comparison between respondents of the study area.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Overview

This chapter presents the results and discussion of the study conducted in Njombe district. It is divided into four main sections; demographic characteristics, type of informal information dissemination networks, extent to which information from informal networks has been used in poverty alleviation and factors influencing effectiveness of informal information networks.

4.2 Sample profile and demographic characteristics

4.2.1 Sample profile

The study covered five divisions of Njombe district, namely, Lupembe, Imalinyi, Makambako, Njombe urban and Igominyi, one ward from each division and one village from each ward were picked as shown in the Table 2. Out of the total respondents 66% were male and 34%were female. The smaller percentage of female was due to the fact that respondents were selected randomly so each one has an equal chance of being selected.

Table 2: Distribution of respondents by division, ward and village (n =100)

Division	Ward	Village	Frequency	Percent
Njombe urban	Njombe urban	Itulike	20	20
Imalinyi	Imalinyi	Kidugala	20	20
Mamabako	Ikuna	Ikuna	20	20
Lupembe	Lupembe	Isoliwaya	20	20
Igominyi	Uwemba	Njoomlole	20	20
Total			**100**	**100**

4.2.2 Demographic characteristics

4.2.2.1 Age group of respondents

The mean age of respondents was 39 years, 20% of the respondents had the age range of between 17 and 30 years, 41% between the age of 31 and 40 years, 28%between 41 and 50years, 8% between 51and 60 years and 3%were above 60 years (Table 3). The survey indicates that age between 18 and 60 years are in a group of economically active and the remaining is economically inactive due to be in a group of children since their age are below 18years and above 60years are old hence less active in interacting with others in sharing informal information. According to Basnayake and Gunaratne (2002) the age of a person usually is a factor that can explain the level of production and efficiency. Age influences experience, wealth and decision making, all of which have an effect on the capability of an individual and therefore, individuals' productivity and information dissemination.

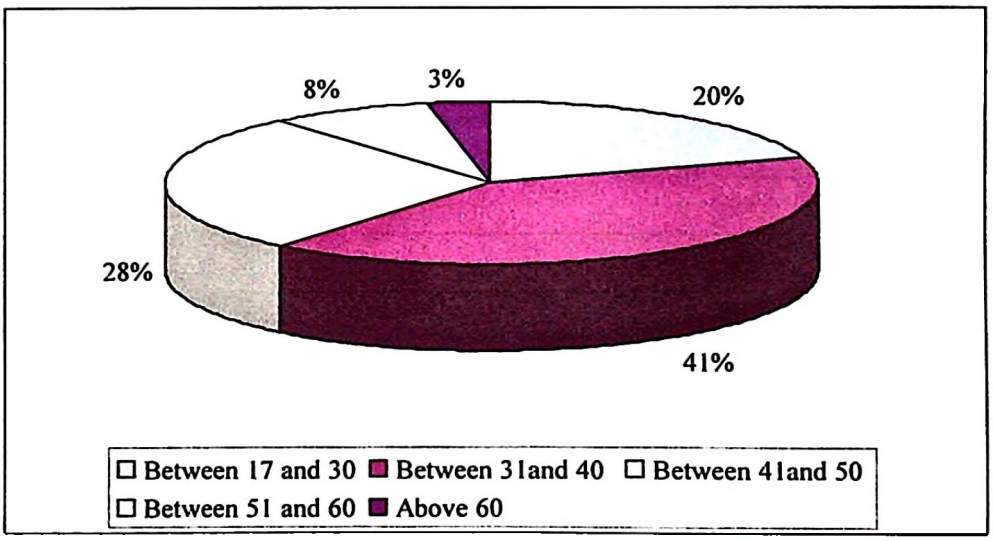

Figure 2: Distribution of respondents by age group in information network

4.2.2.2 Sex of respondents

The survey indicated that 66% were male and 34% were female. This proves that men are key players in informal information dissemination networks. Males are generally more cosmopolitan in doing long distance businesses and own assets like land, houses, radio, cell phones and are able to take risk in adoption of certain innovations compared to females. Also the study illustrates the fact that males and females have different resource endowments when pursuing livelihood strategies, which could have far reaching implications on information exchange.

4.2.2.3 Marital status

Table 4 shows the marital status of respondents. About 74 % were married indicating that majority of people are married and the family is the most important institution in the rural and urban areas. Divorce rate in rural areas is about 3% and widows accounted for 6%, which signifies that the rate of male's death is higher compared to 2% females and this confirms that men have lower life expectancy than women (URT, 1999). About 15% are single due to various reasons some being separated, or do not have experience in life marriage hence contributed to increase of single household families. The study also found that more married couples participated fully in informal information dissemination than the unmarried as the former appear to interact more with residents. The unmarried are generally more mobile with dismal time spent within the village.

This is in line with the concept that the more educated the more he or she facilitates exchange of information.

Table 4: Distribution of respondents by education level (n=100)

Education level	Frequency	Percent
None formal school	5	5.0
Primary	85	85.0
Secondary	6	6.0
Tertiary	4	4.0
Total	**100**	**100.0**

4.3 Type of informal information dissemination network

4.3.1 Farmer production group network

The study found that 50% of respondents are agricultural crop producers and other business in which they have their network to facilitate business operation. These groups are key players in informal information dissemination. They provide a detailed accounting of the structure and function of agricultural informal information networks. They understand who is providing what types of information services to whom, analyze information inputs at the level of end users and diverse collection of decision making in agricultural businesses using economic information to guide resource allocation.

4.3.2 Source of informal information

Formal information is typically written and may be divided into data (numbers and other raw information) and processed information that is based on interpretation and analysis of the raw data. Informal information consists of information obtained through conversation and business transactions. Gossip is an important source of informal information. Major production activities in rural areas depend on integrating

several information sources. Among them are informal sources, which integrate different aspects.

In the survey it was depicted that 50% of the respondents acquired agricultural information through integrating various sources. Table 6 reveals 28 % used SACCOs meetings to secure information, which in turn are used in disseminating information to their peers. SACCOS related activities are currently prevailing in rural areas as financial institution as well as information disseminator among its members. 26% of the respondents are farmer-organized groups, 18% businessmen, 14% extension services, 3% religious leaders and neighbors. 1% use service of religious leaders and extension services to share knowledge and experience to boost income and hence alleviate poverty.

Table 5: Distribution of respondents by source of informal information (n=100)

Source	Frequency	Percent	df	Chi-square
Businessman	9	18.0	6	0.010
Extension officer	7	14.0		
Saccos member meeting	14	28.0		
Religious leader	3	6.0		
Organized farmer production group	13	26.0		
Neighbours	3	6.0		
Extension officers and religious leaders	1	2.0		
Total	**50**	**100.0**		

Chi –square statistical significant at (P< 0.05)

According to Krackhardt and Stern (1988) informal contacts are multifaceted and it tends to be casually covering a wide range of contacts. It tends to run the whole gamut from surface contact towards increasing emotional investment (Lavinger and Snoek, 1972) and is thought to range from unacquainted to intimate.

Based on chi square statistical test at 0.010 ($P < 0.05$) source of informal information received was not significant. This show that farmers may not necessary rely on informal information. It shows that other group of farmers receives information from other sources including formal.

4.3.3 Source of production information

Farming is the major activity done by many people in the rural areas and non-employed in the formal sector in urban areas of Njombe. These farmers exchange ideas, skills and experience about innovations in different occasions. In my study it was revealed that friendship relations (49.1%), seem to be consistently beneficial in information dissemination and stimulates friendly communication. According to Leenders *et al.,* (2002) there are many ways to stimulate atmosphere for friendly communication, proximity among members may be increased, more face to face communication and informal meeting may create new friendly communication to the extent that members discuss non- work related issues and at work and similar actions can be used to reduce such non work related communication. Van de Bunt (1999) suggests that people who have known each other over a period of time are more likely to become more friends, and Davenport *et al.,* (2003) they aggregate and transfer knowledge through sense making. This literature is in line with the findings farmers have capability to understand different kinds of knowledge as shown in the survey that 18.9% communicated information from extension officers and 17% meeting and individual creativity.

Agricultural extension workers do not reach every farmer and every farmer cannot attend agricultural extension activities. Hence there is limited flow of information about the latest agricultural technologies. However, there are multiple channels

available for the transfer of knowledge from the research to farmers. With the availability of multi-disciplinary information for integrated agricultural development and availability of technology-based multi-media information systems, opportunities are available for easy transfer of knowledge from the information generators to the information users, farmers production group facilitate easy dissemination of information as it contributed 11.3%. Currently emergency of electronic information transfer using mobile phones facilitates friendly communication even in remote areas where extension services are inadequate.

Table 6: Distribution of respondents by sources of agricultural information (n =100)

Source of information	Frequency	Percent
Asking friends, and other people	26	49.1
Extension officer and meeting	10	18.9
Mobile phone communication	2	3.8
Individual initiative and try and error in production	9	17.0
Farmers production group	6	11.3
Total	**53**	**100.0**

4.3.4 Routine agricultural information sources

Table 7 depicts that 25% of the farmers integrated knowledge of extension officers and experience from their fellow and use in production, 23% of the respondents used to ask friends, fellow farmers and neighbours. Fifteen percent from sub village and village leaderships, talking with people during festivals 10%, talking with people during funerals 6%, daily interaction with people 7%, businessmen and production group 5%, as well as middlemen and SACCOS leaders. In rural areas farmers apply

different technologies of production obtained from wide-range of sources sources. It is the routine mechanism that supports knowledge integration through efficient and effective communication of knowledge among individuals (Grant, 1996). This mechanism depends on informal communication procedures.

Table 7: Distribution of respondents by routine production information sources (n =100)

Routine information source	Frequency	Percent
Talking with people at festivals	10	10.0
Talking with people, discussion at funerals	6	6.0
Daily interaction with people	7	7.0
Asking friends, fellow farmers and neighbours	23	23.0
Extension officers and asking fellow farmers	25	25.0
Production group	5	5.0
Middlemen	5	5.0
SACCOS leaders	3	3.0
Village and sub village leadership	15	15.0
Mobile phone and radio	1	1.0
Total	**100**	**100.0**

Through daily interactions, farmer share information during festivals and funerals, individuals are assigned implicit roles to foster more smooth communication, which cannot be covered by conversation. Sense making capability is especially relate to the routine mechanism. It refers to the process of recognizing the context around knowledge and is either conducted through the use of schemas and metaphors or is based on habitual interpretations and behavioral episodes (Ford, 1996).

Transferring knowledge across time period is particularly important since it enhances knowledge exploitation by utilizing past experiences for current problem solving, an exploitation capability is an ability to reconfigure existent knowledge to solve current problems. It involves more reutilization and risk avoiding behaviors. Chambers (1983) observed that, small farmers are after all professionals, they cannot afford to be and as professional they have much to teach. From this survey data we can conclude that farmers rely on integrating different skills, knowledge and experience and sometimes they experiment certain technologies and transmit the results to their fellow farmers informally.

4.3.5 Extension services in villages and wards

Table 8 reveals that 86% of respondents are aware of the services provided by extension officers at the village level as well as 82 % at the ward level. Farmers response on the number of extension workers visit to their farms shows that 29% of them said had no extension visit, 3% one visit, 51% two visit, 13% three times, 3% four visits per month and five to seven days 1%. This shows that extension workers performs their roles and their visit is embarked by extension contents that is information related to specific farmers activities but low in villages without extension workers.

In consideration of effective extension services they are thought that firstly there is high awareness among farmers, extension services provided by extension workers in their areas. Secondly extension workers are struggling to reach all farmers but failure to cover their working areas due to poor working tools like bicycles, motorbikes and inadequate number of workers. Thirdly number of visit are sometimes obstructed by other intervening activities like attending meeting, attending emerging issues such as

livestock treatment however sometimes when such cases are too many they fail to attend critical cases partly due to lack of transport facilities.

Table 8: Distribution of respondents by extension services in villages and wards (n =100)

Number of extension workers in villages	Frequency	Percent
No extension worker	14	14
One Extension worker	84	84
Two Extension worker	2	2
Total	100	100
Number of extension workers in the ward		
I don't know	18	18
One extension worker	23	23
Two extension workers	21	21
Three extension workers	19	19
Four extension workers	19	19
Total	100	100
Number of days visited		
No visit	29	29
Once per month	3	3
Two days per month	13	13
Three days per month	51	51
Four days per month	13	13
Five to seven days per month	1	1
Total	**100**	**100**

Based on the survey, 51% of the respondents were visited by extension officers two times in a month. This is too low for effective information dissemination when agriculture is knowledge intensive. Among farmers about 14% responded by not being aware of extension services provided in their villages, 18% in the ward level, 29% of the respondents do not have direct contact with formal sources. This implies that they receive agricultural knowledge and access information from other sources, which are

informal sources. The packaging of extension information for the information center must be more visual; more complete, and should also indicate the source of information and further references for crosschecking and clarifications. This will create more direct communication between the farmers and researchers and will also improve the quality and language of research-extension packaging and feedback.

The lessons from the study area indicate that farmers seek information on seeds, fertilizers, pests and diseases control, marketing, and then they discuss the information informally. This implies that the information dissemination in the connected villages is likely to happen through the farmers' organizations, farmer interest groups, and other informal groups. Hence informal mechanisms are very important sources of information for farmers in the district.

4.3.6 Type of extension information disseminated

In conducting extension services contact farmers receive varieties of information or advices. During the survey farmers received varieties of advises as indicated in the table 9. Farmers are end users of extension packages disseminated by extension workers. They received minimum 1% on vegetable and coffee related information, 12% on maize production, 18% on animal husbandry and management and others that range from 2% and 7% of which farmers shared the information through informal channels. However in the survey it was observed that 31% of the respondents didn't get any information from agricultural extension officers.

From these findings we can conclude that agricultural extension workers are actively involved in producing and supplying information on production. An in formal source dominates as supplier of information on changing quality expectation especially in villages where there are extension workers. The level of extension activity in the

village is used as a measure of formal instutional factors in individual's production environment. This variable is computed as the average number of contact with the extension agent within villages. In most rural areas role of formal information institution is not clear when formal information providers are less accessible as in most developing economies, the cost of acquiring information from them becomes higher. This cost of information acquisition implies that formal mechanisms will be substituted with informal mechanisms. However informal information institutions may imply that the rate at which information flows into the community is low.

Without new information the community may remain in equilibrium with common knowledge as existing knowledge. Since there is no incentive for individuals to search for common knowledge, information exchange will be minimal. The characteristic of production information such as risk factors, also determine the source of information (Just et al., 2002). A more risk production environment is likely to favor consumption of information from other farmers who may have experienced similar situations.

Table 9: Distribution of respondents by type of extension information disseminated (n=100)

Extension information	Frequency	Percent
No information disseminated	31	31
Increase fruit production	4	4
Animal husbandry and management	18	18
Maize production	12	12
Fungicide application	2	2
Advice on potato spacing	7	7
Vegetable production	1	1
Introduction of new coffee verities	1	1
Management of seedlings	5	5
Tea plucking and management	4	4
SACCOS issues including loan	5	5
Treatment, advice, vaccination management of other emerging issues	10	10
Total	**100**	**100**

4.3.7 Type of agricultural information received last production season

The study found that 41% of the respondents received information related to crops productions was pursued to represent a broad cross section of agricultural economic information received last production season (Table 10). This is due to the fact that agricultural crops are used as major source of income and are sold in the market centers and sometimes at their homes as cash crops hence mean income to producers. Marketing 16%, of agricultural commodities is another aspect that influences farmers to exchange their skills experience and knowledge. When prices are high farmers tend to sell their produces at the extent that may hamper food security for the following season. However the cost of bringing farm products to the market are very high in rural remote areas where it can take a day or more by foot or riding bicycle to reach the nearest market. Very few farmers can afford to hire vehicles to bring their

agricultural products to the market due to poor condition of rural infrastructure such as roads and feeder roads being seasonal, as a result farmers are forced to sell their commodities to middlemen at their homes or at the field at a very low price.

Table 10: Distribution of respondents by type of information received from fellow last production season (n=100).

Variable	Frequency	Percent
Related to crops production	41	41
Related to livestock production	14	14
Marketing	16	16
Entrepreneurship	4	4
Crops production and marketing	6	6
No any information received	6	6
Primary school building and rehabilitation	12	12
Loan	1	1
Total	**100**	**100**

About 14% of the respondents received livestock related information, in rural areas livestock is a living bank, most them are keeping pig, and few keep cattle, rabbits, guinea pig and chicken. According to other studies (Abdullahi, 1990; Mdoe, *et al.*, 1998) keeping livestock was a banking strategy and play the role of capital accumulation (wealth). According to livestock keepers themselves, keeping livestock falls under three reasons; first they argue that it is difficult to keep money in home or bank, second, there is no enough financial institutions in the rural areas, as a result they opt to keep livestock and forced to sell them where there is a major financial constrain. Third farmer do not have enough knowledge that enable them to use banks effectively, further more banks offer less interest to money deposited per annum.

Primary school building and rehabilitation related information 12% was among non agricultural information disseminated, however investments in education and professional systems enhance human capital and ability of actors to communicate and

coordinate effectively. Building "competencies" and "conventions," the capacity for actors to share a definition of the situation and a set of expectations as to what will be their respective responses to the specific conditions Storper (1999), is an overarching project within the network perspective. Cross training of network participants -- investments in multi-disciplinary, multi-professional, multi-cultural exchanges fosters an environment in which robust and durable conventions can be constructed across more diverse terrain.

From these findings therefore we can say that market centers in rural areas are very potential infrastructure to maximize gross margins earned from livestock, crops or entrepreneurships. Farmers in rural areas have the right incentives to embark in market-oriented agricultural innovation processes, but they lack the capacity to fully respond to that favorable context, either because their assets are too limited, the productivity of such assets is low, or because the transaction costs they face are too high. Developing the full potential of these small farmers and their communities requires pro-active public policies that are market-oriented.

4.3.8 Importance of information networking

Information is a product of formal and informal interaction. Dissemination of agricultural technologies in Njombe district was traditionally the role of the government extension officers, NGO's such as environment conservation programs project like HIMA, Tanzania Tea Research Institute and religious organizations. Although the scope of formal sources may be wide the rate of contact with extension officers within the district is less than one day in a month is too low to be effective in situation when agricultural knowledge is demanding as a result they depend on informal sources in getting information.

Among crop producers 29% do not have direct contact with formal sources, 5% do not get any kind of information, in general total of 71% access information from their fellow farmers that is sharing information and interaction 23%, creating awareness 15%, business facilitation and operation 12%, enhances income through increased production 17% and combination of sharing information and creating awareness 28%. From these findings we see that informal mechanism are the important sources of information for farmers in Njombe district. An important aspect of informal mechanism of information diffusion is with whom information is exchanged. The nature of social relationships that characterize the interaction between the individuals exchanging information is presented in (Table 11).

Table 11: Distribution of respondents by importance of information networking (n=100)

Information networking	Frequency	Percent	df	Chi -square
Sharing information and interaction	23	23.0	20	0.117
Creating awareness	15	15.0		
Facilitating business operation and communication	12	12.0		
It enhances income through increased production	17	17.0		
Answer 1,2, and enable members to get loans	28	28.0		
no any information received	5	5.0		
Total	**100**	**100.0**		

Chi –square statistical significant at (P< 0.05)

4.3.9 Marketing network on selling agricultural commodities

Selling agricultural commodities need marketing network in order to secure lucrative price. The study found that informal communication of people facilitates knowledge exchange on marketing information. Since the policy of liberalization of crop market had been enforced has enabled producers to sell their produce freely to buyers. In this

way several farmers have claimed to be exploited by middlemen who had emerged to benefit from business opportunity. Mostly affected are the producers who are obsolete on prevailing market price in distant or nearby markets.

The study revealed that 54% of the crops producers in Njombe does not use market network on selling their agricultural commodities, which accelerates middlemen to procure crops on low prices as well as large volume. Another 46% use the advantages of marketing network to secure rewarding price both in district as well as distant markets. Wholesalers and Retailers of maize, irish potatoes and other perishable crops use formal and informal sources of market information established when there is constant and continuous demand for certain commodity information that is provided informally through radio, mobile phones and newspapers. For example, when a newspaper assessing a certain type of information or providing market news is established. Large farmers may hire adequate funds to purchase bulk commodities and enter the market and gain from existing sources of market information network.

Table 12: Mean distribution of marketing network on selling agricultural commodities (n=100).

Category	N	Minimum	Maximum	Mean	Std. Deviation
If there is source of price information	46	1	6	3.00	1.229
If no source of price information	54	1	6	3.39	1.535

4.3.10 Education level and information dissemination

Investments in education and professional systems enhance human capital and ability of actors to communicate and coordinate effectively. In the study we found four groups of people residing in rural areas engaged in agricultural related activities and information transfer mechanisms. There are none educated group, which sometimes

are referred as late adopters, they have accumulated knowledge, expertise and experience to their respective environment. Members of the group may be able to read and write since they have attained non-formal school program through adult education literacy programs. It comprises people who have attended adult education in the previous years campaign of illiteracy eradication program. They sometimes shy away to share information with their friends and neighbors used to isolate from groups interactions. This group forms 5 % of the respondents. In the study it was revealed to be inactive in sharing with others their expertise they portray.

Large group of people with primary school education 53% is the dominating in information dissemination. They occupy different position in many village leadership positions. They are decision makers as a result they control knowledge that enters into or leave a network. In this study they assume the responsibilities of gatekeepers. They protect local networks from threats and rumors from the outside by filtering and screening unnecessary information. To some extent their job includes monitoring of knowledge management processes and tools that people use Davenport *et al.*, (2003).

Secondary school levels accounting for 31% are the second largest group of people living in the rural areas. They are responsible to transmit information to their fellow and as human being they have tendency to take the fastest way to find answers to problems affecting their fellow and communicate to others. Typically this group acts as central connectors as have broad knowledge and experience in their local areas.

Farmers are professionals, they have accumulated a lot of skills, experience and knowledge to teach others. They constantly seek know-how and have a variety of knowledge not restricted to their functional expertise and local environments. They are

not only good at speaking different native languages, but are also expert at speaking expertise languages.

In my study this typically applied to farmers with tertiary education, which comprises 11%. This is due to the fact that the knowledge they have accumulated assists them to do so. This group has attained education after completing primary and secondary education cycles. It includes trade schools, teachers colleges, social welfare schools, specialized colleges and universities. They are very important for farmers' organizations since the knowledge they collect from different sources affect the rate of innovations and type of innovations. Generally since they are farmers and residing in the same community they are good at collecting knowledge and information outside their local networks for the benefit of their fellow. The level of education and knowledge of the respondents is not significant to the information they disseminate based on chi square test ($P < 0.05$).

Table 13: Distribution of respondents by education level and information dissemination (n=100)

Education level	Frequency	Percent	df	Chi -square
None	5	5.0	16	0.087
Primary	85	85.0		
Secondary	6	6.0		
Tertiary	4	4.0		
Total	100	100.0		

Chi –square statistical significant at ($P< 0.05$)

4.3.11 Reasons for educated people to disseminate information.

Pooling of information or observing the behaviour of others and imitating it characterize the process of information gathering and dissemination. Education level of an individual has an influence to induce certain behaviors including association and

interaction (social capital). Social capital is increasingly recognized as intervening factors in the process of social learning and information exchange.

The survey conducted in Njombe district revealed education level of people as a medium to accelerate easily interacting with others 14%. Other respondents viewed education level of people to be knowledgeable than none educated 25% hence easily interacting with others in the process of information transfer and exchange. It further Identified those who are educated to be many than other groups and they occupy leadership positions 16%, educated are said to be most important in assisting others through advices and wishes their success 23%, In marketing, education level play major role in searching lucrative markets which offers good prices15%. From the survey we can conclude that education level of an individual play a major role in increasing a social capital of a person. Table 15 shows different reasons outlined by respondents as to why they observe educated people participate in information dissemination

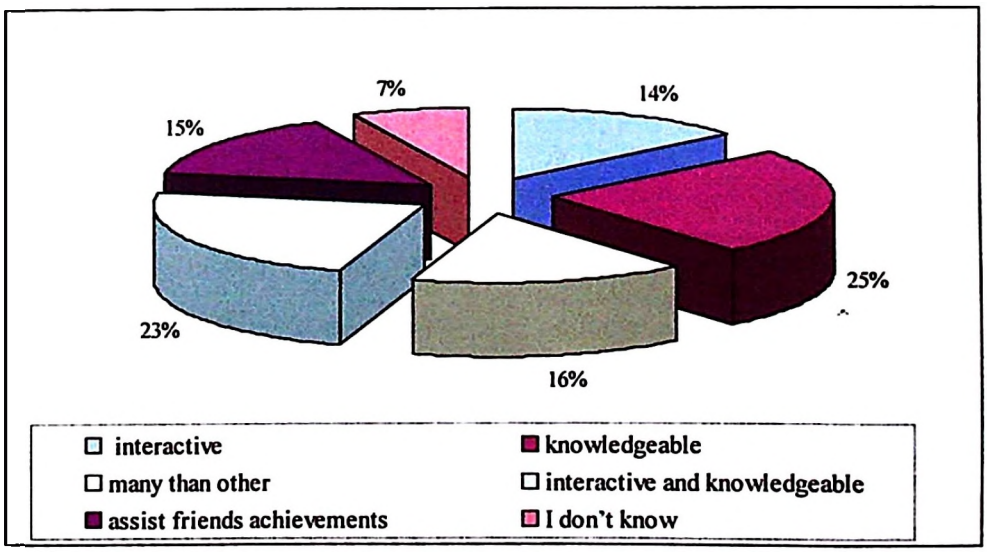

Figure 3: Distribution of reasons for group of education level to disseminate information

As social capital (social interaction) increases features of social organization, such as social institutions, networks or associations, less institutionalized networks of friends, relatives and acquaintances or (private social networks) and civic engagement, that enable knowledge gathering and information exchange also increases. This is supported by YliRenko *et al.*, (2002) who said, "social capital may influence social learning and information diffusion in a number of ways. First, social capital reduces the cost of information acquisition since it can be acquired passively during social interactions or actively from people who already know each other. Second, social capital reduces the uncertainty about the reliability of information. Information is likely to be given a higher value if it comes from trusted people. Third, social capital facilitates the willingness and cooperation to share information, thereby revealing the tacit information that would be difficult to exchange otherwise."

4.4 Informal information networks in poverty alleviation

4.4.1 Sources of income

Agriculture is the major economic activity of people in Njombe district. In all agricultural crops produced, maize is the most important grain food for Njombe people. It is not only staple crop in surplus areas; it is also a cash crop. Irish potato production is another cash crop, which has emerged after maize prices dropped following changes of fertilizers subsidy policy implementation in 1980s. It used to secure lucrative price in distant and nearby markets especially off-season period of harvesting. Crisis of marketing of maize and drastically fall of prices caused farmers to consider other sources of income from agricultural crops and non-agricultural including tree planting (woodlots).

Beans is important source of vegetable protein and cash crop for small holders in both divisions of Njombe. It accounts for about 80% of the total amount produced in the district. Thus being strategic in ensuring food security and alleviating malnutrition and poverty in the district.

Tea, which is grown in high amount of rainfall especially in Igominyi and Lupembe divisions in Njombe district, is another major income generation crop in the district. Despite the fact that the study was not dedicated for crops research, the findings on contribution of income from various crops can't be underscored. The findings from the study area found rural areas people to integrate different sources of income especially from crops, livestock, woodlots, and business so as to generate more income. Income from selling agricultural crops and livestock was 39% of total earning. Agriculture constituting selling crops only 30%, selling livestock, crops and woodlots as well as business 9%, agricultural crops and woodlot and tapping of /selling local brew 7%, and less than 2% from salary and livestock. From these findings we can conclude that production of crops and keeping livestock can significantly contribute to alleviation of poverty. It creates both income and employment and provides food security. This can be supported by the study conducted by MAC *et al.*, (1998) that profitability of exotic crossed can contribute to bring about USD 760 per cow than the national poverty line of USD 211 per year (Table 14).

Table 14: **Distribution of respondents by all sources of income (n =100)**

All sources of income	Frequency	Percent	df	Chi-square
Selling of agricultural crops and livestock	39	39.0	32	.949
Selling woodlots and agricultural crops	7	7.0		
Selling livestock and byproducts	2	2.0		
Business	9	9.0		
Selling agricultural crops only	22	22.0		
Selling crops and tapping local brew (ulanzi)	7	7.0		
Selling agricultural crops, livestock and woodlots	9	9.0		
Business and selling agricultural crops	4	4.0		
Salary, crops and livestock production	1	1.0		
Total	**100**	**100.0**		

Chi square statistical significant ($P < 0.05$)

Based on chi - square test there was no statistical significant between marital status of the respondents and all sources of income at 0.949 ($P > 0.05$) being married or not does not affect income earned by rural women. This may be attributed to the fact that majority of women in rural areas lack access to, and control of productive resources. In some cases male households may be even poorer than female households due female being access to productive resources and having entrepreneurship skills. Especially where male do not have land due to be born in families without enough land as a result plunged by deficiency of income from sells of crops. From these findings we reject the null hypotheses since source of production information and marketing involves interacting with others and the income generated is not significant to alleviate poverty.

4.4.2 Source of agricultural information

This study findings depict informal contact arises from the people's needs for related ness. People who support that farming is professionals, both educated and non-educated integrate information and knowledge form different sources. Further more farming as entrepreneurship need to use different opportunities as well as strengths and weakness so as to earn more. It needs corroboration with others, social network and communication from production in the field, harvesting and marketing the products to earn income is obligatory.

The survey revealed various sources of information, which were used in production. Influence of friendship and neighborhood was 24%, indicating that people who are closely related do share different information and innovations in order to increase production and income. Innovations from individual creativity whether in production, introduction of new crop varieties or price 23%, extension officers, fellow farmers and neighbors contributed 16% in information transmission. Businessmen and extension officers 11%, middlemen 12%, and mobile communication. SACCOS leadership as well as organized group of farmers in total 10%, however 11% didn't get information from any place. In production we need information exchange.

These findings are supported by other literature as outlined below. By Information exchange, we mean any form of information sharing among rural household, whether recipient or provider or both. Unlike formal sources where information is transferred from provider to consumer in a unidirectional manner, information diffusion through informal mechanisms is multidirectional. In other words, individuals simultaneously receive and provide information to each other. Although information exchange through informal means, generally tend to be less costly compared to that from formal

sources. It is not cost free. We attach a cost to information acquisition and provision to account for the time effort it takes to exchange information.

Information and knowledge about new technology and markets have been found to diffuse through social networks of friends, relatives and acquaintances (Barr, 2002; Collier, 1998; Conley and Udry 2001). For person to engage in gainful information exchange, degree of interpersonal connection is required (Granoveter 1998; Colman 1998). Each individual do decide whether to participate in information exchange with others, and if so whether to provide or acquire information or both social interaction and social capital accumulation in the previous periods plays an important role in those decisions by facilitating the flow of resources between agents of an economy (Putnam, 1993).

Table 15: Distribution of response by source of production information activities done last season (n=100)

Source of production information	Frequency	Percent
Friends and neighbours	24	24.0
Individual creativity	23	23.0
Extension officers and fellow and neighbours	16	16.0
Mobile phone communication	4	4.0
Businessmen and extension officers	11	11.0
Middlemen	12	12.0
None	2	2.0
SACCOS leadership	2	2.0
SACCOS leadership and businessmen	5	5.0
Organized group of farmers	1	1.0
Total	**100**	**100.0**

4.4.3 Revenue from agricultural information in maize production

Respondents of this study identified types of revenues raise from the information received. The survey identified 21% of respondents who were not involved in maize production but they were been involved in producing different types of crops. About 71% were involved in maize production as source of income and food security. It was further observed that 35% of the respondents produced an income between 10 000 to 100 000 Tshs per annum. This execrable income might be caused by high prices of inputs such as fertilizers, use of unsuitable seeds varieties, moisture stress, pests and diseases, poor soil status due to inherent low soil fertility and inadequate supply of fertilizers.

Table 16: Distribution of respondents by revenue received from agricultural information maize production (n=100)

Income from maize	Frequency	Percent	df	Chi-square
N/A	21	21.0	24	0.506
10 000 - 50 000 Tshs	16	16.0		
50 000 - 100 000 Tshs	19	19.0		
100 000 - 500 000 Tshs	22	22.0		
500 000 - 1000 000Tshs	8	8.0		
1000 000 – 2000 000Tshs	5	5.0		
Adequate for food only	9	9.0		
Total	**100**	**100**		

Chi square statistical significant ($P < 0.05$)

At certain circumstances I observed more than 250 farmers being allocated 125 bags of Di Ammonium Phosphate (DAP) basal fertilizer in Itulike village in Njombe town. Person took 25 kgs of DAP to use it for planting purpose, this was very meager. Inadequate supply of inputs especially fertilizers in Njombe means forcing farmers to reduce acreage which eventually affect yield, income and food security. Twenty two percent of farmers with medium income, who were able to purchase fertilizers

between 3 and 6 bags of DAP and Urea or Calcium Ammonium Nitrate (CAN) both for basal and top dressing were able to raise income from 100 000 to 500 000 Tshs, and 8% of farmers produced revenue between 500 000 and 1000 000 Tshs, and highest revenue from maize production range between 1000 000 and 2000 000 Tshs.

According to the statistical test based on chi – square at 0.506 ($P< 0.05$) it was not significant between marital status of respondents and income generated from maize. This is due to the fact that input price are very high as a result some farmers (21%) have abandon the business while 16% are earning income less than 50 000 Tshs per annum. Also 19% generated income between 50 000 – 100 000 Tshs, which is insufficient to sustain other domestic requirements.

This research also observed that 9% of the respondents do not sell anything due to inadequate yield hence the stock being used for food security purpose. From these results we can conclude that: Farmers who are able to buy enough fertilizers, with enough area to cultivate, who are able to store maize grain for a longtime, are in a position to secure lucrative prices from middlemen and businessmen. Especially when there are food shortages within the district, region and the neighboring countries of Malawi, Zambia and other regions of Tanzania.

4.4.3 Revenue from agricultural information in beans production

Beans account 34% of its producers in the district, most growers of the crop are females. Mostly the beans are grown as food crop thus being strategic in ensuring food security at the level of household as well of the district and a country at large. Beans are normally grown in association (intercropped) with maize when planted in lower valleys (Vinyungu) from September and being harvested at December, and upland

from September up to February or March during long rains. Yield raised from these farms are usually low ranging from 200 to 750 kg per acre. Which influence low income depending on the size of the farm crop management and verities used. Statistical analysis based on chi square income from beans production was not significant at ($P < 0.001$). Due to large group 66% of the respondents not being involved in the production of the crop.

According to the research findings 20% of the growers produced revenue ranging from 10 000 and 100 000 Tshs. This meager income subsidizes the income generated from other crops such as maize, Irish potatoes, wheat fruits and tea. 11% of the beans producers generated income ranging from 500 000 and 1000 000 and 1% income of 1000 001 and 2500 000 Tshs. From these findings we note that those who interact with others during gossiping and other informal gathering do benefit a lot. Issues related to varieties, seeds, marketing and agronomics practices may be shared informally hence put into practice to improve income of the producer. According to Mashamba (1998), women consistently contribute relatively more to production of beans than maize in Tanzania, hence shares more informal information in this context than men.

Table 17: Distribution of respondents by revenue received from agricultural information beans (n=100)

Income from beans	Frequency	Percent	df	Chi-square
N/A	66	66.0	20	0.001
10 000 - 50 000 Tshs	10	10.0		
50 000 - 100 000 Tshs	10	10.0		
100 000 – 500 000 Tshs	11	11.0		
500 000 - 1 000 000Tshs	2	2.0		
Total	**100**	**100.0**		

Chi square statistical significant ($P < 0.05$)

4.4.4 Revenue from agricultural information Irish potato production

Irish potatoes are among major food and cash crop in Njombe district. The crop is grown economically in three divisions among the six in the district. Irish potatoes are the short-term crop, which take up to three months to reach maturity. It is a higher yielding crop compared to cereals and legumes crops, these crops seem to be perishable after harvesting however it can take more than four months after maturity in the ground without losing it quality.

According to farmers experience lucrative prices are being offered at the beginning of the season where most farmers sell their crops in the field in low prices and sometimes-large volumes (lumbesa) to an extent that one bag can produce almost one and half bags. They use large volume to minimizes transport cost and maximizes markets prices when sold to distant markets especially Dar es salaam. In the survey it was revealed that 64% of residents of Njombe district do not produce Irish potato. There number of reasons among of them being unfavorable environment as the district has diverse ecological zones. Second the crop is heavily demanding high amount of fertilizers application from planting and second application during weeding and earthen up or construction of ridges around the stem during weeding to facilitate adequate fertilizer utilization by the plant. Also higher prices of inputs such as fertilizers, pesticides and sprayers limit even farmers in the favorable ecological zones to shy away from producing the crop. Among the producers 2% generated revenue ranging between 10 000 and 49 999 Tshs. This is very low type of income to be generated by the farmer.

However the above-mentioned reasons of higher prices of inputs as well as seed might be obligatory factors. About 1% of the crop producers obtained an income

ranging from 50 0000, and 99 000 Tshs. Again the above-mentioned reasons apply to them, 12% of the crop producers earned an income ranging between 500 000 and 999 999 Tshs, out of the percentage 5% of the number were female. This signifies the role played by women in their effort to increase the level of their income. From this group also it was found that 12% of them were married, 1% widower and 2% single. In the study it was further observed that 4% both male and female generating revenue ranging between 1000 000 and 2 999 999 Tshs, but their number declined to income ranging from 3 000 000, and 10 000 000 Tshs where 2% of the respondents were men. Despite the income generated from this crop however it was not significant at Chi square ($P < 0.117$).

Again there are a number of reasons which support these findings among of them being. First the men are owners of the major production resources like land and other assets, which can assist them to secure loans from banks. Second men are active in doing business than women so their number signifies the role played by men in business. Also the men are active players in seeking information of different kinds and being able to take risk than women.

Table 18: Distribution of respondents by revenue from agricultural information Irish potato production and sex of respondent (n=100)

Revenue from Irish potato production	Sex of respondent		Percent	Chi -square
	Male	Female		
Not producing the crop	38	26	64	.117
10 000 – 49 999 Tshs	1	1	2	
50 000 – 99 999 Tshs	1	0	1	
100 000 – 499 999 Tshs	7	5	12	
500 000 - 999 999 Tshs	15	0	15	
1 000 000 – 2 999 999 Tshs	2	2	4	
3 000 000 – 6 999 999 Tshs	1	0	1	
7 000 000 – 10 000 000 Tshs	1	0	1	
Total	**66**	**34**	**100**	

Chi square statistical significant ($P < 0.05$)

4.4.5 Income from tea production

shows that tea is another crop, which is grown in southwestern and eastern part of Njombe district. In the south western is produced in Igominyi Division and Northeastern part of Njombe in Lupembe division. Both two divisions the crop is grown by small-scale farmers, which is a major economic activity to the producers. Similarly the crop is grown in large-scale farms, in a form of companies' organization; these are Kibena Tea Company, Luponde Tea Company, Mviulu Tea estate, and Mlangali Tea estate. Individual producers receive income generated through the crop each month.

According to the survey results 80 % of the respondents do not produce tea, due to unfavorable environmental conditions. The crop is not suitable to be grown in other ecological zones. About 20% of the respondents who produce tea, generated revenue

According to the survey results 80 % of the respondents do not produce tea, due to unfavorable environmental conditions. The crop is not suitable to be grown in other ecological zones. About 20% of the respondents who produce tea, generated revenue ranges from 100000 to 10 000 0000Tshs. Out of them 1% generated income between 100 000 and 500 000, 6% between 500 000 and 1000 000 Tshs. 11% between 1 000 000 and 3 000 000Tshs and 2 % between 7 000 000 and 10 000 000 Tshs. These findings reveal the crop to be most income generator than any other crop due to its nature of production to generate income throughout the year. Demographically the crop is grown by 19 % of the married couples due to the fact that the crop is labor intensive and they are access to land than singles that are none married. On the side of sex 6% of female generated income between 500 000 and 1 000 000 Tshs, and 5% generated income between 1 000 000 and 3 000 000 Tshs, which is above average of per capital income of USD 242 (Table 19).

Table 19: Distribution of respondents by income from agricultural information tea production and sex of respondent (n=100)

Revenue from information tea production	Sex of respondent		Percent	Chi square
	Male	Female		
N/A	57	23	80	0.005
100 000 –500 000 Tshs	1	0	1	
500 000 -1 000 000Tshs	0	6	6	
1000 000-3 000 000 Tshs	6	5	11	
7 000 000-10 000 000Tshs	2	0	2	
Total	**66**	**34**	**100**	

Chi square statistical significant ($P < 0.05$)

Because few farmers in the district produce the crop, also the income generated assist few farmers while large fraction of the population earn less than their fellow.

Production of this type of crops signifies a lot for poverty alleviation for women and men in rural areas, which their income depends on agriculture majors in crops production. However the realized income contributed a lot by different agricultural information disseminated by extension officers to farmers and farmers sharing these technologies informally. The increase of the income might be exacerbated by number of reasons first, in last six years there was an introduction of new tea varieties which yields higher than the previous varieties, second farmers have expanded their farming areas which influence yield and income as well. Liberalization of the crop purchasers do compete on increasing prices of the crop hence been great motivation to producers on increasing quality of the crop as well as demand of the crop to processing factories of Kibena, Luponde and Lupembe to offer attractive prices and honest payments of money on time to farmers encourages farmers to maintain their farms.

Increased prices of the processed tea in the auction market of Mombasa and demand of the crop in the world market also influence the outcome of price to trickle down to producers. The impact of tea research institute to introduce tea production technologies and introduction of cloned tea influence farmers to expand their fields hence being source of income. According to other studies found that where infrastructure was available, small farmers exhibit a remarkable tendency to catch up to a large farmers in the adoption of high yield varieties (Chadha, 1979; Vyas, 1979) and small farms even became economically viable (Dantwala, 1973). Marginal farmers, with an average of less than 0.4 ha, who accounted for 58% of landholdings

(Government of India, 1996), were less fortunate. The regional disparities were reduced in terms of average yield (Srivastavsa, 1997; Bhalla and Taygi, 1989).

4.4.6 Income contribution from other agricultural crops

Farmers in Njombe integrate different economic activities to boost their incomes. In the survey it was observed that 1% of farmers being involved in wheat production so as to boost their income. Less number of producers is due to the sample being selected randomly. The income secured was very low signifies poor management of field, yield and inability to use inputs and information which could raise their income, which was very far below poverty line i.e. 10 000 - 50 000 Tshs an equivalent to one bag of wheat.

Vegetable production also subsidizes family income. In the survey 4% of the respondents produced income between 10 000 and 500 000 Tshs. Vegetables produced in these categories include cabbages, tomato, sweet peppers and leafy vegetable like Chinese cabbage. About 2% raised income below 50 000 Tshs, while the same percentage raised income between 100 000 and 500 000 Tshs. This signifies less informal information sharing among farmers themselves, farmers be unable to take risk in investing to it. Inputs being sold in higher price, big share of production being used as a source of food for domestic consumption and the imposition bylaws to prohibit uses cultivating in lower valleys (vinyungu) during dry season.

Fruits production involved 14% out of them 13% raised income below 50 000 Tshs and only one percent raise income between 100 000 and 500 000Tshs.These findings reveal low significance of the crop contribution to the income of the respondents hence being less important to the economy of families.

Coffee, despite the fact the crop is very important to the national economy as well as household income but its production in the district has being dropped to the extent that only 1% produce the crop and depend it as source of income. From the research findings the crop as it was for tea is the highest income generator as it generated income between 1 000 000 and 4 000 000 Tshs. Producers of coffee are living above poverty line as compared to producers of other crops. There are reasons which have influenced less number of farmers to participate in producing coffee among of them are previous trend of coffee prices dropped in the world market where producers generated less amount of money, higher production costs. The crop being affected by pests and diseases. Lack of production technologies of the farmer, however the attractive price of the coffee has been linked with formation of coffee production group network and marketing. Also various technologies were communicated to farmers hence improving the quality of the crop that enabled to secure higher prices in the world market.

4.4.7 Income contribution from livestock

Livestock kept in Njombe district are cattle both local and exotic for meat and milk, pig, goat. About 12% of the respondents were involved in keeping cattle, 37% keeping pigs, and 5% keeping goat. An income generated from these animals differs accordingly, for example cow keepers. Only one percent generated income between 50 000 and 100 000 Tshs, such type of income are still below poverty line, 9% their income were between 100 000 and 500 000 Tshs, 2% get their income between 500 000 and 2 000 000 Tshs. Out of the livestock keepers 1% are women, whereby their income range between 500 000 and 1 000 000 Tshs.

From these findings we can conclude that women and men who keep cattle are richer than their fellow farmers who do not keep cattle as keeping livestock is said to be a living bank to livestock keepers. Keeping improved cattle can significantly contribute to alleviate poverty in the district and country as well. It can create both income and employment, and provide food to household involved in dairying thus contributing to enhancing household food security. Dairy kept under zero grazing management also contribute to manure for improving soil fertility, and the production of biogas fuel source thus contributing to halting deforestation. Dairy cattle profitability is said to be US D 760 per animal per year, which is more than three times higher than the national poverty line of USD 211. Even traditional cattle Zebu brings the farmer above poverty line MAC *et al.*, (1998).

About 6% of dairy cattle owners produce milk in the district. Out of them 4% generated income between 10 000 and 100 000 Tshs, which is still below poverty line. About 2% obtained income between 500 000 and 1 000 000 Tshs income as well is above poverty line. According to other studies 70 percent of milk produced are from traditional small producers in rural areas in the country (MAC, 1997: Kurwijila *et al.* 1998). Based on these findings most of the cattle kept are cross between zebu and exotic cattle. Thus inadequate management, such as feeding pasture especially during dry season, may associate low productivity of milk, poor pasture establishment, higher prices of concentrates, diseases and pests and high costs of drugs and treatment and low milk production breeds. Despite of these factors milk has been used as a source of nutrition to livestock owners and source of income.

Pigs are kept by 37% of the respondents, out of them 23% raised revenue between 10 000 and 100 000 Tshs. Income from pig from this group is below poverty line of USD

211, only 14% of pig keepers generated revenue between 100 000 and 500 000 Tshs. To some extent the income from pig contributes less significantly to the households income. However insignificant poor management practices, poor feeding, housing associate contribution of pig, treatment of disease and worms control and use of local breeds which has low productivity compared to improved breeds.

Goats are kept by 5% of the respondents and only 1% generated income between 100 000 and 500 000 Tshs. The rest percentage generated income below 50 000 Tshs, which is very low from poverty line hence inability to alleviate it. However the income contributed by these small stock animals subsidizes household income.

4.4.8 Income contribution from chicken production

Keeping chicken is almost popular family activity in most rural people. According to findings of this research chicken are kept by 36% of the respondents. Despite the fact that chicken are being kept by rural people, however its contribution to household income has been very minimal since 27% generated income below 50 000Tshs per year, 8% generated income below 100 000 Tshs and 1% income below 500 000 Tshs. Most people keep chick just for leisure; they don't mean to be source of income. Chicken is kept for immediate cheap meat for guests with high respect, family meat when in need and different ceremonial functions. Analysis of chi-square total income generated from keeping chicken is ($p < 0.001$) this signifies that contribution of chicken on the household income is very low and negligible. This finding also rejects the hypothesis that income from informal information have role in poverty alleviation. These results are attributed to the fact that less number of chickens kept and amount of chicken sold per year cannot contribute at large to the household income. Chickens are usually sold at a very low price after a very long interval (Table 20)

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Table 20: Distribution of respondents by Marital status and revenue from chicken production (n = 100)

	Revenue from livestock production				Percent
Marital status	None income	10,000 - 50,000 Tshs	50,000 - 100,000 Tshs	100,000 - 500,000 Tshs	
Married	45	23	6	0	74
Divorced	2	0	0	1	3
Widow	5	1	0	0	6
Widower	2	0	0	0	2
Single	10	3	2	0	15
Total	**64**	**27**	**8**	**1**	**100**

4.4.8 Type of business rose from agricultural information.

Agriculture is the major activity of rural people in Njombe district and Tanzania. It is the major source of food, which influences food security to households and country as a whole. As it has been observed in this research, most farmer produce crops which in turn supply income respectively to people. Agriculture enhances income generation, employment and a major source of capital from selling agricultural commodities and livestock related products and byproducts. The end products of selling agricultural and livestock is revenue or income which most farmers used interchangeably as a source of capital to start new business or used to reinforce the established business.

of types of business established were agricultural related. This signifies the importance of agriculture to farmers and the communicated information, which in turn generated ideas of initiation of business copied from their fellow or being self-creativeness. Maize and livestock production 12% as shown in this research implies to be a major economic activity of farmers in the district in which farmer expects to generate more income. Maize the major grain food used as food security base is also used to generate huge amount of money during food scarcity.

Livestock keeping especially dairy cattle has become important source of income due to recent establishment of milk processing industry in Njombe town where milk is corrected from different places and being processed, milk has acquired high value than it was before. For this reason prices of dairy cattle has been raised and become major people business and information on the importance of manure to increase soil fertility for improving crops production including maize. Table 21 illustrates different business established from agricultural information.

Table 21: Distribution of respondents by type of business rose from agricultural information (n =100)

Type of business	Frequency	Percent
Pig production	6	6.0
Selling maize, eggs and chicken production	6	6.0
Increase acreage of maize production	1	1.0
Establish of bar	2	2.0
Establishment of kiosk and shop	4	4.0
None	53	53.0
Fruit production	1	1.0
Carpentry and masonry	3	3.0
Selling local brew	2	2.0
Maize and livestock keeping	12	12.0
Establish meat shop	2	2.0
Milling machine and shop	4	4.0
Establish café	1	1.0
Transportation of timber and other commodities	1	1.0
Charcoal	2	2.0
Total	**100**	**100.0**

information enabled knowledge gathering and information exchange that reduces uncertainty about the reliability of the information. The information given by the trusted people were given a high value, which in turn generated an idea to start business. These findings identified 12% establishing business with less than 100 000 Tshs, which is not significant to raise reasonable income and benefit. And 18% raised initial capital between 500 000 and 2 500 000 Tshs, which is above per capital income and above poverty line. Table 22 below shows different capital used to run business.

Table 22: Distribution of respondents by initial capital rose from agricultural information and sex of respondent (n=100)

Initial capital	Sex of respondent		Percent	chi -square
	Male	Female		
Less 50 000 Tshs	4	3	7	0.096
50 000 –100 000 Tshs	4	1	5	
100 000 –500 000 Tshs	11	6	17	
500 000-1 000 000 Tshs	4	0	4	
1 000 000 –2 500 000Tshs	13	1	14	
None	30	23	53	
Total	**66**	**34**	**100**	

Chi-square significant at ($P < 0.05$)

Basing on chi square test there was no statistical significant at 0.096 ($P > 0.05$) between the sex of respondents and income related to informal information received. These findings reject the hypothesis that being male or female does not affect level of income. These results attributed to several reasons such, as the income raised from

informal information is very low to farmers to initiate significant capital to run business. Contrary to this crops and livestock products are sold at higher prices and few people participated in informal information on livestock and crops production. Thus contributing income among people who manage to interact and sharing information informally.

4.4.9 Type of business generated before being access to informal information

Table 23 shows the frequency distribution of business generated by people before being access to any kind of information; it shows 50% of the respondents were not receiving information of any kind hence no business generated. The findings show that the income of these people are very low due to not selling any commodity to subsidize income from agriculture, petty business and mostly rely on crops harvested once in the year as sole source of income. About 50% of the rest respondents represent a population, which subsidizes their income by doing different types of business to raise their income. While 20% of this group were dealing with selling tea leaves, maize, beans and timber which is very worthwhile business in income generation. Also 17% were involved with agriculture and livestock keeping which according to the findings of this research people involved in this type of business were economically better than others.

Table 23: **Distribution of respondents by type of business generated before being access to any informal information (n=100)**

Type of business	Frequency	Percent
Working in the mission	3	3.0
Selling maize, eggs and chicken	3	3.0
None	50	50.0
Selling local brew	2	2.0
Increase acreage	4	4.0
Agriculture and livestock keeping	17	17.0
Selling kiosk	1	1.0
Selling tea leaves, maize, beans, piglet and timber	20	20.0
Total	**100**	**100.0**

4.4.10 Land and farming area

According to the findings of the research most households own a land less than two acres they represent 41%, there are some farmers who do not own any piece of land and they are 4%. Most of landless farmers are in villages surrounded or boarded by Tanganyika Wattle Company (Tanwat). Other landless people are those born many in the poor families and being poor, unable to buy land and internal migrants associated with insufficient income they rely on doing casual labor hence inability to access to piece of land (Table 24).

Table 24: Distribution of respondents by frequency indicating area of farm (n=100)

Area of farm	Frequency	Percent
< 1 acre	9	9.0
1-2 acres	32	32.0
3-5 acres	36	36.0
>6acres	19	19.0
None	4	4.0
Total	**100**	**100.0**

Thirty six percent of the sample survey own farms between 3 and 5 acres equal to 1. 25 - 1.6 ha. Nineteen percent own more than two ha. From the finding farmers which generated more income from crops production and their per capita income above USD 211 were farmers with farming area above 6 acres or more than 3 hectares. Landless farmers rely on hiring land for farming from their fellow, neighbors or doing casual labor in order to get their daily bread. From this survey we can conclude that majority of the farmers in Njombe are small and marginal farmers. Small farmers are defined as owning one to two ha. While holdings of marginal farmers are smaller than 1 ha (Government of India, 1987). Farmers who represent 19% of rural houschold face much lower incidences of poverty thus poverty strongly related to land ownership. Yet marginal and small farmers command 41% of the farmed area, this is insignificant land resource and its mobilization for agricultural development may be challenging.

4.4.11 Type of crops planted in farming areas

Table 25 shows different types of crops grown by farmers in Njombe. Maize, Irish potatoes, wheat, beans tea and coffee are grown as major food and cash crops too. They are grown interchangeably as source of income with except of tea and coffee solely grown as cash crops. Fruit tree crops such as avocado has being increasingly adopted by farmers. This arises after the introduction of grafting technology from extension officers. Grafting reduce time from planting to harvesting while adoption of food processing technology such as juice making and demand of the crop in urban markets has enlarged adoption.

According to the research findings 30% of crop producers grow maize as main grain food, which is highly reliant as food security and cash crop, though production gross margin are very low due to high production costs 29% of crop producers intercrop

maize and irish potatoes or sometimes they grow it separately. They are grown, as a main source of income especially if they are planted separately yields tend to increase due to maintenance of proper spacing. Irish potatoes business has increasingly done by small and medium middlemen and businessmen due to demand of the cheap and fast processed food popularly known as chips in urban areas. This has influenced increase of the crop prices in markets, which in turn facilitate high rate of informal information exchange motivation to producers and business operators.

Twenty percent of crop producers grow tea and other food crops such as maize, beans however these crops is not grown in association with tea. According to this research findings tea, is the most income-generating crop than other crops grown in the district and the crop producers are richer than others. Coffee could be another cash crop with high incentive to producers if could be revived and given high attention as the crops gross margin are being reduced after introduction of coffee curing factory in Makambako.

Table 25: Distribution of respondents by type of crops planted (n=100)

Type of crops	Frequency	Percent
Maize	30	30.0
Irish potatoes	5	5.0
Maize and Irish potatoes	29	29.0
Maize, beans and Irish potatoes	4	4.0
None	4	4.0
Beans	1	1.0
Maize, vegetables, tree seedlings and timber	4	4.0
Coffee	1	1.0
Tea, beans and maize	14	14.0
Tea, maize, woodlots and avocado planting	6	6.0
Maize, wheat and Irish potatoes	2	2.0
Total	**100**	**100.0**

4.4.12 Yields obtained

Table 26 shows amount harvested from different crops. According to the yield record most crops which yields higher are Irish potatoes and tea. Others such as maize and beans do not yield higher as compared to others. A frequency of yield shows that 22% of farmers harvested 3-8 bags of either maize or Irish potatoes. This is very low yield that signifies low food security and no surplus to sell for the food crops produced interchangeably as cash crop. Ability to purchase inputs of these farmers is very low due to high prices of inputs especially fertilizers and Irish potato seeds. Twenty percent of the farmers harvested between 31-59 bags of either maize, beans, and Irish potatoes and 15% harvested tea between 10 000 - 23 000 kg, while 10% harvested 21-30 bags of maize and or Irish potatoes, 9% got between 60-100 bags and another group 21-30 bags. And the rest group harvested 100-150 was 3%, while another group of Irish potato and maize producers harvested 300-500 bags represent 1%.

From these harvested records we can conclude that most rich farmers are the ones who harvested their crops in bulk, due to the fact that they were able to invest in the project, they were able to buy fertilizers, insecticides and have large farms that the poor or small marginal farmers cannot afford. There is a group of 4% who did not harvested anything due to fact that they have no money to hire a piece of land, they rely on casual labor and they are most poor in the village since poverty is associated with in access to land.

Table 26: **Distribution of respondents by yields obtained in bags and kgs (n=100)**

Yields in bags and kgs for tea	Frequency	Percent
3 - 8	22	22.0
9 - 15	9	9.0
16 - 20	2	2.0
21- 30	10	10.0
31- 59	20	20.0
60 - 100	9	9.0
100 -150	3	3.0
None	4	4.0
23 000 – 25 000 tea leaves	4	4.0
10 000 – 22 999 tea leaves	15	15.0
500 – 9999 tea leaves	1	1.0
300 - 550 bags	1	1.0
Total	**100**	**100.0**

4.4.13 Place to sell farm produce

Under normal circumstance farm produce are supposed to be sold in the market places. But the case is quite different in Njombe; according to the research findings 72% of farmers sold their crops in their home or fields or both home and fielded. Most purchasers of rural crops are middlemen. 16% of farmers or crop producers sold their crops in the market places while 12% of farmers they have nothing to sell. From these findings it shows middlemen buying crops without using any kind of scale hence exploiting farmers income for their own benefit. Sometimes they base on estimations, or using Hessians bag as a unit of measurement. This call an attention of district and other respective authorities to construct market centers in rural areas whereby middlemen and businessmen can be attracted to buy farmers crops so as to facilitate transaction in rural areas. On other hand rural infrastructures should be improved to

ensure effective communication and transportation of commodities throughout the year to facilitate business operations.

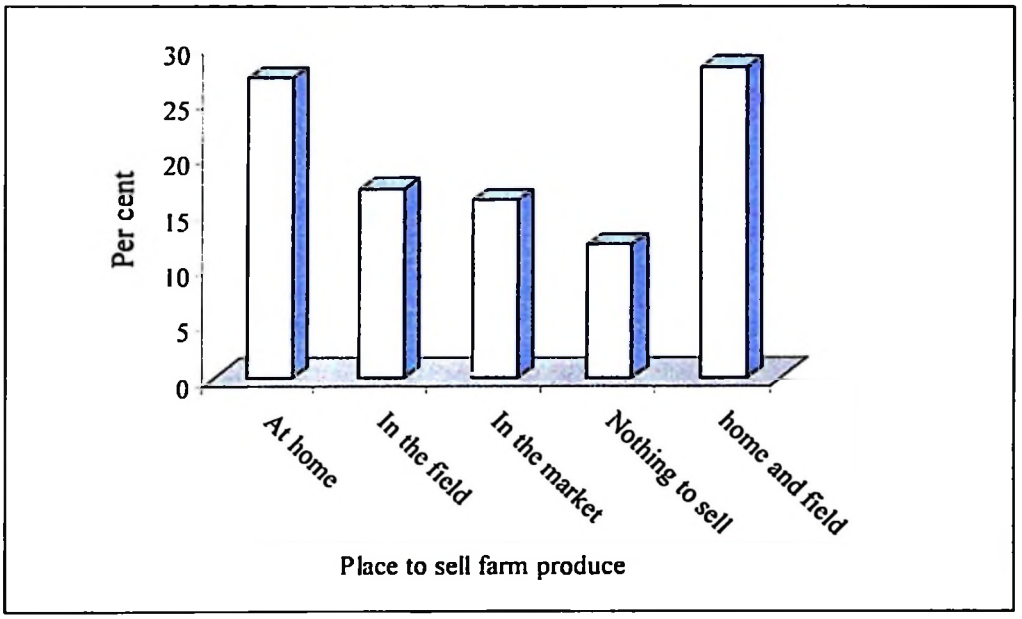

Figure 4: Distribution of respondents by place to sell farm produce

4.4.14 Opinion on price offered to farm produce

Table 27 shows comments of farmers on price offered by middlemen and businessmen in different place of Njombe. 31 percent of farmers acknowledge inputs being sold at higher prices than agricultural commodities when sold in home or field, 28% commented on low price and large volume sold to businessmen and middlemen, 19% price offered by middlemen are very low. 7% commented on very low price and transaction done without using standard weighing scale during selling agricultural crops, 9% didn't sell anything and 2% commented on the price of irish potatoes being reasonable in comparison with the maize, which was very low due to high production costs.

From these findings we find farmers being aware of the unsatisfactory price offered to their produce. However being unable to defend from trick of middlemen and their

exploitive style of business due to being isolated, not well informed on different prices offered in distant or nearby market in the district and other places within and outside the country. Sometimes perishability of the crops force farmers to sell on low prices to escape depreciation of quality of the crop hence resulting from businessmen to abandon from buying commodity, which eventually result into loss.

Lacking of storage facilities and processing technologies in rural areas also influence low price to their commodities or sell on low price. Poor communication infrastructures such as Internet, telephones, radio and use of news media affect availability of different information in rural areas and lack of market centers. Lack of farmers group network on production and marketing. Also farmers organization to defend their commodities quality create exploitive opportunity for businessmen to gain more from uninformed producers, hence choice of last alternative resort to farmers is to sell their commodities at any prevailing price in the field or at home.

Table 27: Distribution of respondents by opinion on price offered to farm produce (n=100)

Price comments	Frequency	Percent
Very low compared to large volume (lumbesa) per bag	28	28.0
Measuring units should relate to amount sold	1	1.0
Inputs are sold at higher prices than crops price	31	31.0
Prices offered by middlemen are very low	19	19.0
Government should arrange crops prices	3	3.0
Unable to sell due to low yield	9	9.0
Both answer 1and 2	7	7.0
Reasonable price of Irish potato and lower price of maize	2	2.0
Total	**100**	**100.0**

4.5 Effectiveness of informal information

4.5.1 Sources of getting information in the village.

The findings of the survey consider variety in patterns of information production, processing, and dissemination making summarization in table 28. Rural people in villages, on average, acknowledge receiving between 10% and 22% of their information through informal channels. People, on average, take delivery of 30% of their information from public sources and 18% private that is meeting, seminars, government and church leaders constitutes almost 3 % of the information delivered in rural areas. While other source of information were meeting and seminars 14 % of their information from private access, through interaction with others via radio, extension officers, cell phones and communication 18%. Mostly information through these variables is shared through visiting friends and neighbors constitutes a lot in sharing information in rural areas. Other means of sharing information is through use of drama, dance, folklore, group discussions, exhibitions, demonstrations, visits, farmers' field schools, agricultural shows, television, video, has been used to greater and lesser degrees, as source of information in rural areas.

Based on treatment of information production and distribution as network processes, we argue that development of interpersonal relations, systems of information quality control and other institutional development should support networks. These recommendations are presented with an understanding that networks can serve as vehicles of exclusion and collusion as well as socially beneficial coordination and innovation. Traditional and modern Information Communication Technologies (ICT) can be used concurrently to speed up the circulation of information. Although this research is not dealing with formal agricultural information dissemination, integrating

other sources of information in rural development is highly pivotal. Extension activities in the village are an important determinant of information exchange among rural households. This suggests that formal and informal sources of information exchange are complementary in the provision of different pieces of knowledge.

Generally households in villages with higher extension activities are more likely to engage in two ways information exchange compared to households with less extension activity. This is true for both male and female headed households, though the effects are much higher for female-headed households. Thus more frequent formal information diffuse mechanism may be stimulating informal mechanisms of information exchange in villages of Njombe. Information is essential for facilitating agricultural and rural development and bringing about social and economic change. Unfortunately, countries have not devoted adequate attention to providing their citizens with access to information, especially in rural areas, where 70 - 80% of the African population lives (Youdcowei *et al.*, 1996). As a result rural people have been relied upon local sources of information that to some extent has little contributed to fast diffusion of information. Cohesiveness of informal contact may be argued to have consistently positive effect on team performance by facilitating the communication, by creating trust and positive feelings, and generating a higher compliance group goal.

Table 28: **Distributions of respondents by sources of information in the village (n = 100)**

Sources of information	Frequency	Percent
Meeting and seminars	14	14.0
Friends and neighbors	10	10.0
Meeting, government and church leaders and asking friends	12	12.0
Government and church leaders	3	3.0
Leaders and cell phone communication	4	4.0
Cell phone, radio, meeting and neighbors	22	22.0
Meeting, extension officers and cell phone communication	18	18.0
I don't know	1	1.0
Radio, middlemen, mobile phones and extension officers	16	16.0
Total	**100**	**100.0**

4.5.2 Method used to disseminate information

Based on the information obtained through survey respondents identified different methods used to transmit information to others. In general 96% of the information disseminated through interaction with people. Out of it 29% used informal meeting, discussion during celebrations of marriage or funerals to share information with others. The information received during these occasions is shared, brainstormed and transmitted for social, economic and cultural benefit of producers, 26% used mobile phone communication and normal talking, and 41% used normal talking and asking others while only 2% used influence of meeting to transmit information to others.

From these findings we identified informal interaction sources dominate as a supplier of information during talking, discussion, drinking local beer, and evening gathering. Almost all villages have centers where youth, medium age and old people do attend and interact informally to discuss issues prevailing in their areas. This is supported by

Collier (1998) who says "information from other farmers diffuses through pooling and copying mechanisms". Pooling of information is a two-way mechanism where the individual involved in direct interpersonal interactions gives some information and or obtains some from others in return. Copying is a one-way mechanism that takes place by physical observation of others experiments without a direct interaction between agents.

By information exchange, we mean any form of information sharing among rural household, whether as recipient, provider or both. Unlike formal source where information is transferred from providers to the consumers in a unidirectional manner. Information diffuse through informal mechanisms is multidirectional. That is individual simultaneously receive and provide information to each other. Although information exchange tend to be less expensive it is not cost free it requires information acquisition and provision to account for the time and effort it takes to exchange information. This is contrary to mobile phone communication whereby costs are involved in one way or another in information transfer.

Table 29: **Distribution of respondents by method used to tell others (n=100)**

Methods used to tell others	Frequency	Percent
Informal meeting, discussion during cerebrations and funerals	29	29.0
Mobile phone communication and normal talking	26	55.0
Normal talking with friend and asking others	41	96.0
I don't have time to talk with others	2	98.0
Meeting	2	100.0
Total	**100**	**100.0**

4.5.3 Reasons influenced farmers to interact with others

According to the respondent's views, 28% used to interact with others in order to tape their fellow's experience. This arises where the innovation of neighbors seem to benefit the innovator hence facilitate interaction from each other to gain more, from there diffusion of innovation start to take place, crops stand, harvesting time, other framers invite their fellow to assist them during harvesting.

Farmers who sell their crops as group in a market income raised stimulates others to innovate certain technologies and share with others informally. About 21% wishing others success, rural people feel the need of contributing their ideas to fellows' achievement. Since village residential household arrangement are in clan clusters, relatives and kinfolk so they don't see the need to apprehends information which is popular experimented in other areas. Nineteen percent influenced to tell others when there is increase of market price, which is highly associated with their income due to high supply of commodities in the market. The more the goods supplied in the market the higher the income especially where the price are very high, hence producers tend to maximize benefit. Other reasons are as per table 30 below.

Table 30: Distribution of respondents by reasons influenced farmers to interact with others (n = 100)

Reasons	Frequency	Percent
Involve others in solving problems	16	16.0
Interact with others and tape their experience	28	28.0
I don't tell others because no new idea	2	2.0
Creates cooperation and improves relationship	9	9.0
Wishing others success	21	21.0
When there is market price increase	19	19.0
Creating awareness to current changes	5	5.0
Total	**100**	**100.0**

4.5.4 Reasons limiting farmers to receive different information

Table 31 shows various reasons limiting people in the community to receive different information. It identified 23% being illiteracy, ignorance, and inability to ask others as prevailing reasons, which inhibit people to get information. Despite the fact that most people in the district are able to read and write but their scope to interact with others are very poor to an extent that the current information passes without their awareness. About 22% responded to poor isolation from groups association. Different groups in villages form networks, which do receive or transfers information to others, in which outsiders can't get it easily.

Positive association of people enhances information exchange provides support to existing literature that social interaction enhances diffusion. Effects of associations are larger for women than for men. This could be attributed to the characteristics of associations to which women belong as compared to those of men. Qualitative information from the survey shows that female-headed households belong to association that are relatively homogeneous in terms of gender and religious beliefs compared to their male counterparts. Generally females are more likely to join social association that deal with burial, religious and cultural issues than male. Association increases the likelihood of interacting with other people holding different pieces of information and hence the incentive for information exchange. Men participation are higher in civic engagement and in social institutions also increases the probability of information exchange, with men being more likely to participate as both receivers and providers of information about agriculture than women.

Personal characteristics also influence information exchange. Older men are more likely to participate as information receivers only, but less engaged in simultaneous receiving and providing information, perhaps due to the low ability to communicate associated to old age. Lack of statistical significance of age among women may be associated with low variability in the sample since most of the women households were few likely to be older age. Relatively more educated men are less likely to obtain information from others, which could be related to the ability to acquire information from formal source among people with more formal education. While 15% responded to poor meeting attendance as a major reason that restrict others to receive information. In meeting people do receive various information from leaders and feedback from other people, it includes sharing experience and transmission of skills that can assist others. Radio 14% play a major role in information dissemination in rural areas as well as urban, information disseminated is shared by others during informal meeting, sometimes used as a source of knowledge to users, it may be used as reference in the individuals mind though is not document. Table below refers.

Table 31: Distributions of respondents by reasons limiting farmers to receive information (n = 100)

Reasons	Frequency	Percent
Poor meeting attendance	15	15.0
Jealous and bad behaviors of people	9	9.0
Illiteracy, ignorance and inability to ask others	23	23.0
Lack of assets like cell phone and radio	6	6.0
Isolation from groups association	22	22.0
Enmity, conflicts and jealous	4	4.0
Unable to keep secrets and untruthful behaviour	4	4.0
Not listening radio	14	14.0
Poor infrastructures during rain season	3	3.0
Total	**100**	100.0

4.4.5 Attitude ranking of effectiveness of informal networks

Table 32 refers ranking the attitude of respondents against the provided statement to strongly disagree, agree, undecided agree, and strongly agree, most respondents demonstrated their concern on the role played by radio in disseminating production technologies in which 97 agreed with the statement. This justify the importance of radio in disseminating varieties of information of both kind educational as well as entertainments in which information passes through the use of media.

Table 32: Attitude of people towards informal information dissemination networks

		Favorable	Neutral	Unfavorable
1	Radio play great role in disseminating production technologies	97	3	0
2	Neighbours and friends contribution in provision agricultural information	93	3	4
3	Market price influences information transfer	76	7	17
4.	Don't rely on anything in receiving information	13	15	72
5	Membership of SACCOS group influences information transfer	61	7	32
6	Demonstration performance and yielding ability of crop verities	61	16	23
7	Middlemen in the process of purchasing agricultural crops in rural areas	71	5	24
8	Meeting can't contribute in information transfer	13	7	80
9	Verbal communication is very unreliable in information in information transmission	26	8	66
10	Information received from cell phone communicated to friend	93	6	1
11	Effective extension officer in our village	90	5	5
12	School farm established in our area	65	16	19

On the side of neighbors and friends contribution in provision of agricultural information. Majority 93 people, out of one hundred responded to strongly agree to the statement due to fact that rural areas people share information to those who are close through social interaction and who has the common behaviour are used to be trusted by their fellow. According to this study most people interact during evening where they share information while drinking local brew or during evening gathering. Marketing prices when increases it influences information transmission on production technologies, management practices of crops and suitable varieties preferred in the market and place where crops fetch higher prices.

When negative statement was asked to measure their attitude whether they don't rely on anything in receiving information they responded positively to show how interactions of people being important in information transfer and exchange. However there was a slight increase of the undecided response due to the statement being tentative, not being straight or when a statement is controversial. On the question of demonstration performance and yielding ability of crop varieties to influence information dissemination respondents response was very high to agree on the importance of demonstration being part of experiment, where farmers participate in practicing, observe performance and evaluation at the end. The response also may be due to previous experience obtained through HIMA project and Uyole agricultural research centre, which was used to conduct demonstration of various crops in different villages of Njombe district.

Based on the side of membership of SACCOS to influence information response was slightly agree due to SACCOS information not being well known to many people

especially in rural areas where the rural financial program is not in its pilot area. Where members are aware on it, rate of understanding was higher as the beneficiaries were pioneers in disseminating information of SACCOS. When respondents were asked against the tentative statement that meeting can't contribute in information transfer the statement reaction was strongly disagree since meeting is the major source of information in rural areas, when people meet they interact, they share knowledge, they receive and transfers information to others who didn't attend hence meeting in rural areas is the cheapest way of disseminating information faster and is the place where problems can be solved easily since it comprises many people of different experience , knowledge and wisdom.

Question of unreliability of verbal communication when asked in a tentative statement response also was high, as usual some agreed on the statement because of lack of commitment in responding to researchers question or due to trick question. On the information received from cell phone communicated to friends response was strongly agree due to fact that cell phone communication is very popular even in rural areas where rate of people to communicate through cell phone are very higher and has got no restriction of time.

When respondents were asked on the effectiveness of extension services in information transfer they responded to strongly agree, due to importance of extension officers in disseminating different production technologies, linking farmers and researchers, and assist farmers in solving emergence issues like treatment of sick animals and being like technology source in the village. However the rating could be quite different especially when asked to people who has not being accessed to agricultural or livestock extension officers. On the question of school farm established

in there area influences crop production information. In response to the question majority agrees on the statement demonstrating the importance of the introduction of it to be useful in transmitting information related to specific technology be applied, however there was slight increase of people who was not clear on the roles played to school farm technology in imparting production practices to specific group of people who are expected in turn to assist their fellow. Where it was not been established farmers hesitated in responding to negative answers or undecided.

4.4.6 Summary of results and discussion

This chapter has presented the findings of the survey, conducted in five divisions; five wards and one village from each ward comprised a sample space of one hundred. The respondents have the age ranging between 17 and above 60 years. The age with highest frequency range between 31 and 40 years, which is the most economically active group. Majority of the respondents were married, signifies the family to be the most important institution in rural and urban areas. The study further revealed that majority of the population has attained primary school and above which is thought to be important in facilitating exchange of knowledge, information and technology.

Education level of an individual influences increasing social capital, social organization, networks of friends, diffusion of information and interaction with others. In which it was used in the process of agricultural income generating activities. Agricultural is a major source of income and capital to the majority farmers. Agricultural crops both food, cash crops and livestock simultaneously contributes to household income. Food crops are used for food security to alleviate malnutrition both at family level and national at large.

Main source of agricultural information is from both formal and informal. Formal information is commonly known to be source of information, however the survey revealed that informal sources of information whereby people integrates different ideas, individual creativity, knowledge, technology through interactions and gossip. Routine agricultural information according to the findings is obtained through social relationships networks of asking friends, neighbours, religious leaders, meeting, and farmers groups including SACCOs and results diffuse among the community members and influence exchange of information. Other sources of information in the village arise from government and non-government organizations, discussions, normal talking, mobile phones, radio and television. Sometimes events like funerals, marriage festivals, businessmen and daily interaction influences information exchange, which are exploited into agricultural production activities, income and capital generated, have been invested in the social and economic entrepreneurships.

Market to sell agricultural products in rural areas is questionable due to the fact that most crop producers rely on businessmen and middlemen to purchase their produce at there home or at the field with exception of tea which is collected at the centers and transported to the processing factories. Due to poor infrastructure especially during rain season communication in some villages are being blocked forcing farmers to sell their produce at very low incentive. Based from these findings we argue to the respective authorities to improve rural infrastructures including roads to be used throughout the year and market centers to be established for proper business mechanisms in purchasing farmers produce.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Overview

This chapter provides brief summary and recommendation derived from the findings of the study based on the objectives of the study. It provides information on informal agricultural information dissemination networks in poverty alleviation

5.2 Conclusions

The study has been confined on how informal information role has impact in disseminating agricultural information and integrating knowledge to enrich end users. It provides an insight into the linkages between social interaction and informal information exchange among rural household in Njombe district. Results of this findings support the initial premise that social interaction significantly influences information exchange among rural people with evidence of income contribution in the process. We observed farmers to integrate different sources of information that in turn facilitate in increasing income. However income rose from informal information does not significantly alleviate poverty.

The work done should be viewed as preliminary and has been grounded on small area that is district level. Even though this work is preliminary I hope has made a significant contribution in understanding the role of informal information network in integrating knowledge that affect competitive advantages. However much work still needs to be conducted to further the knowledge in this area.

The main objective of the study was to determine the contribution of informal agricultural information networks in poverty alleviation in Njombe district. The contribution of income from agricultural crops and livestock to total households is great and significant. Although crops contributes large portion of household income than livestock, however income contribution from livestock subsidizes household income and assist in poverty alleviation.

5.3 Recommendations

Based on the findings the following recommendations are made:

i. Government should increase capacity of information dissemination through acquiring more agricultural and livestock staff in rural areas so as to increase rate of information diffusion.

ii. Rural infrastructures should be harnessed with improvement of seasonal roads to be passable throughout the year to enhance farmers and businessmen to access district market and distant markets.

iii. Regulatory authorities should ensure proper mechanisms are used in purchasing agricultural commodities in rural areas and proper sanctions being imposed to offenders so as to defend farmers from the exploitive businessmen.

iv. Development centers should be established in rural areas preferably in every ward that will provide adequate extension services, marketing information and ICT information.

v. Farmers marketing groups network should be encouraged and strengthened to maximize profit for selling crops in distant markets and marketing centers should be established in rural areas preferably in every village to

facilitate farmers to sell their crops easily and discourage middlemen to buy crops at home or field.

vi. The government should establish marketing extension department that is devoted to carry production and market information to farmers. This is apparent that the activities of this department linked to improve economic analysis of farmers. This department could be very powerful institution for generating and disseminating extension and market news.

vii. Processing factories and electrification should be established in rural areas to increase value of agricultural crops and livestock products so as to enable farmers to secure high price and in turn increase storage period and marketing without being confined with time to sell their produce to escape loss due to its perishability.

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APPENDICES

Appendix 1: Questionnaire

SECTION A

1. Name of interviewer----------

2. Name of respondent----------

3. Date of interview----------

4. Name of village----------

5. Name of ward----------

6. Name of division----------

7. District.....

8. Sex 1.Male 2.Female

9. What is your age?

10. Marital status

    (a) Married

    (b) Divorced

    (c) Widow

    (d) Widower

    (e) Single

11. What is your highest level of education?

    (a) None

    (b) Primary school

    (c) Secondary school

    (d) Tertially

    (e) Others (Please specify----------)

12. Do you have production network in your village?

1. Yes 2.No

13. If your answer is yes what was the source of informal information?

(a) Businessmen

(b) Extension officers

(c) SACCOS member meeting

(d) Religious leaders

(e) Organized farmers production group

(f) Others please specify----------

14. If your answer is no how did you get production information?

15. In your routine production activities where do you get information?

16. Indicate number of extension officers and rate of visit last production season

Number of extension officers in your village	Number of extension workers in your ward	Number of days visited	Types of information disseminated

17. Please explain importance of information networking.

---

18. Show type of information you received from your fellow last production season, (tick) against the information you received.

(a) Information related to crops production

(b) Information related to livestock production

(c) Marketing information

(d) Entrepreneurship

(e) Others specify----------

19. Do you have marketing network on selling your commodities?

1. Yes

2. No

20. If your answer is yes how do you get price information?

(a) Obtained from my fellow living in town

(b) Through mobile phone communication

(c) Obtained from middlemen

(d) Others specify----------

21. If your answer is no explain----------

---

22. Which group of education level disseminates information easily?

(a) None educated

(b) Primary school leavers

(c) Secondary school leavers

(d) Tertially

(e) Others specify----------

23. What are reasons for them to disseminate information?

SECTION B

24. What are all sources of your income?

(a) Selling agricultural crops and livestock

(b) From selling woodlot and agricultural crops

(c) From selling livestock and its byproducts

(d) From salary

(e) Business

(f) From selling agricultural crops only.

(g) Others specify----------

25. In the table provided below indicate all types of activities you did last season

Activity	Source of income	Income raised

26. Indicate in the table below revenue raised from agricultural crops and livestock information you received.

Agricultural crops	Revenue	Livestock	Revenue
Maize		Cow	
Beans		Pig	
Irish potatoes		Goat	
Wheat		Milk	
Vegetables		Chicken	
Fruits		Eggs	
Tea		Ducks	
Coffee			

27. In the table provided below indicate type of business raised from agriculture and livestock revenues.

Type of business	Source of income	Initial capital

28. In the table provided below indicate revenue generated before being access to any kind of informal information

Type of business	Agriculture/livestock	Revenue generated

29. In the table provided below indicate: -

Area of your farm	Type of crops planted	Yield obtained in bags or Kgs	Price offered

30. Where do you sell your farm produce?

(a) At home

(b) In the field

(c) I the market

(d) In the factory

(f) Nothing to sell

31. Comment on the price offered to your farm produce

SECTION C

32. Mention important sources of getting information in your village?

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33. What method did you use to tell others about the information you get?

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34. What are the reasons influenced you to tell others?

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35. What are the reasons limiting others to receive different information?

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36. Respond to the following questions by saying

1. Completely disagree 2.Disagree 3.Undecided 4.Agree 5.Strongly agree. In order to rank the level of effectiveness of informal information networks.

No	Statement	Rank
1.	Radio play a great role in disseminating production technologies	
2	My neighbours and friends contributed a lot in providing agricultural information	
3.	Market prices offered in different places influences information transfer	
4	Don't rely on anything in receiving information	
5	Membership of Saccos group influences information transfer	
6	Demonstration performance and yielding ability of crop verities	
7	Middlemen in the process of purchasing agricultural crops in rural Areas	
8	Meeting can't contribute anything in information transfer concerning to information transfer	
9	Verbal communication is very unreliable in information transmission mechanisms	
10	Information received from cell phone communicated to friend	
11	Effective extension officer in our village	
12	School farm established in our area influenced us to receive information on crops management	

Thank you for your cooperation