ST. JOHN'S UNIVERSITY OF TANZANIA

MASTERS OF ARTS IN COMMUNITY DEVELOPMENT (MA CD)

EFFECTIVE INCLUSION OF SMALLHOLDER FARMERS IN HONEY VALUE CHAIN IN TANZANIA. A CASE OF IGULWA, BUNTUBILI AND MSONGA VILLAGES IN BUKOMBE DISTRICT

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A DISSERTATION IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF A MASTER DEGREE OF ARTS IN COMMUNITY DEVELOPMENT OF ST. JOHN'S UNIVERSITY OF TANZANIA

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CERTIFICATION

I, NURU MANJEKA the undersigned, certify that I have read and hereby recommend for acceptance by St. John's University of Tanzania a dissertation entitled "Effective inclusion of smallholder farmers in Tanzania." A Case of Igulwa, Buntubili and Msonga villages in Bukombe district, in fulfillment of the requirements for the degree of Master of Arts in Community Development Studies of the St. John's University of Tanzania.

…….....

(SUPERVISOR)

Date**.....**

DECLARATION

I, ……., declare that this dissertation is my own work and that it has not been presented and will not be presented for any other course of study. I confirm that the appropriate credit has been given where reference has been made to the work of others.

Signature……

Date ……..

DEDICATION

To my beloved ……, who encouraged and supported me to pursue this course, and my precious son …….. who inspires me to be an achiever.

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LIST OF ABBREVIATION

FAO	-	Food and Agriculture Organisation
HMF	-	Hydroxymethlfurfural
IICD	-	International Institute of Rural Reconstruction
IIRR	-	International Institute of Rural Reconstruction
MNRT	-	Ministry of Natural Resources and Tourism
NBP	-	National Beekeeping Policy
NBS	-	National Bureau of Statistics
PFM	-	Participatory Forest Management
SACCOs	-	Savings and Credit Cooperatives
SAP	-	Structural Adjustment Programme
SIDO	-	Small Industries Organisation
TASAF	-	Tanzania Social Action Fund
URT	-	United Republic Tanzania
VCA	-	Value Chain Analysis
VEO	-	Village Executive Officer

ABSTRACT

Bukombe district is among the areas in Tanzania with high potential of beekeeping due to its ecological suitability for miombo woodland and thus for beekeeping. The main actors in honey value chain in the district are smallholder farmers, traders, central and local governments and private money lenders. This study finds out that the regulating bodies in the district are less strict about applying beekeeping regulation to smallholder farmers. Majority of beekeeping farmers do not have access to processing facilities, lacking incentives, extension services are insufficient and also these farmers lack information on market and market price. Access to reliable honey market, bureaucracy on issuing permit to enter into game reserve, problem of quality and processing and packaging materials, are major challenges facing the smallholder farmers in the three selected villages of Bukombe district. The study also found out that the benefit of bees and honey for the majority of smallholder farmers are not fully realized because governance arrangement give power to other actors in honey value chain to set price for bee products; for example, beekeeping policy provide that the pricing of bee products and services from private and government will be based on free market value. The findings also discovered that beekeeping activities in the district are dominated by men where only few women keep bees.

Key words: smallholder farmers, beekeeping, value chain.

CHAPTER ONE

1.1 Chapter Overview

This chapter comprises of the background of the study, statement of the problem, research objectives, research questions, purpose and significance of the study, analytical framework and definition of terms used in this study.

1.2 Background of the problem

Bees and their products are well known in nearly all countries of the world due to their wide consumer preferences and provision of livelihoods to many small scale farmers both in the rural and urban setting. According to FAO (2012), bees offer large potentials with minimal investment as beekeeping does not require land ownership or rental. It can be started with equipments that are sourced locally and the skill and knowledge required for such enterprise are found in local traditions. Bee products also improve farm, family nutrition and can be used for traditional health remedies.

Beekeeping (apiculture) is the management of colonies of bees for the production of honey and other hive products and for the pollination of crops (Alfred & Roger, 2008*)*. It is an art and science of keeping honeybees and sting less bees (URT, 1998). At the beginning of the 21st century, the United States maintained an estimated 2.5 million colonies of honey bees, producing about 78 million kg of honey equivalent to 31 kg (68 lb) of honey per colony, and 9 to 18 kg (20 to 40 lb) of beeswax for every ton of honey harvested per year worth 171 million pounds (Williams, 2007). However, the top ten (10) honey producers in the world in 2010 (by volume and value)

were China, Turkey, United States, Ukraine, Argentina, Mexico, Russian Federation, Iran, Ethiopia, and Brazil. In Africa, Ethiopia is leading (Miklyaev, Jenkins & Barrichello, 2011).

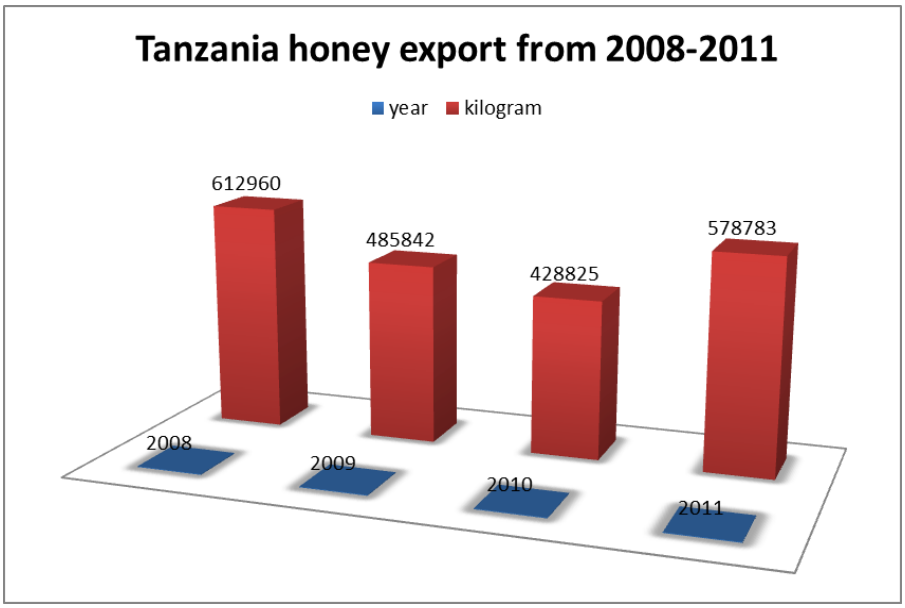
Tanzania is among countries in the world with high production of bee products especially honey and beeswax. Production has been increasing from 4,860 tonnes of honey in 2001 to 9,380 tonnes in 2012 with the value of TZS 49.76 billion (USD 30,160,000). Bee wax produce also increased from 324 tonnes (2001) to 625 tonnes (2012) with the value of TZS 6.08 billion(USD 3,687,500) MNRT, 2012). The sector employs about two million people and estimated to generate about USD 2 million (Mwakatobe & Mlingwa, 2007).This is due to presence of high population of bee colonies that is estimated to be 9.2 million and presence of high vegetation preferred by bees in many areas of the country (Kihwele, Massawe,Lwoga & Burton, 2001). According to Mwakatobe and Machumu, (2004), miombo vegetation also contributes significantly to the high production of bee products in the country. The country has about 33.5 million hectares of forests and woodlands that are scattered throughout the country and are ideal for developing beekeeping industry. Almost 20.5million hectares out of this area are unreserved forests and woodlands, while 13 million hectares of forest and woodland have been gazetted as forest reserves. More than 80,000 hectares of the gazetted forest reserves consist of forest plantations that are also suitable for beekeeping. The mangrove forests of mainland Tanzania that covers about 115,500 ha are also valuable as bee fodder. High potential for beekeeping is also found in agricultural land where substantial bee

products can be harvested from agricultural crops e.g. sunflower, green beans, coffee, coconut and sisal. The presence of both stinging and non-stinging honeybees coupled with existence of indigenous knowledge in beekeeping is also a great potential (Mbeiyererwa, 2014).

Tanzanian honey is known all over the world compared to honey from other countries due to its natural state and its organic nature (National Beekeeping Policy, 1998). Tanzanian honey is consumed locally and internationally where the high demands are from EU, Oman, UAE, Kenya, Rwanda, Uganda and Iran. Tanzania exported 156,012 kilograms of honey in 2007, 612,960 (2008), 485,842 (2009), 428,825 (2010) and 578,783 (2011); furthermore the country earned TZS 2,742,129,443 from January to December 2011(MNRT, 2012). Due to an increasing concern from consumers for no or little chemicals in food products, it is predicted that the demand for organically produced honey will even be more in the future.

Beekeeping in Tanzania is mainly rural based and practiced by local beekeepers who are small holder farmers. Honey is produced at house level by beekeepers that are often the poorest and most marginalized in society, and these people are highly disadvantaged in market place. Poor roads, remote locations, low knowledge of the final market, lack of containers and rare interaction with traders make the potential of the honey trade to bring income benefits to producers to remains unexploited (UNACTD, 2006).

Figure 1.1: Tanzania honey export trend



Source: MNRT, 2012

1.3 Statement of the Problem

This study intends to address a problem of poor governance model of honey industry in Tanzania. The study (Akyoo & Lazaro, 2007), conducted in Tanzania related to agricultural products have identified value chains dominated by the government bodies and larger private trading entities for cotton, coffee, tea, tobacco coves to mention few. The studies were mainly focused in agricultural marketing information, outlining crops grown in Tanzania and profiled actors involved, including smallholder farmers.

As research gap, those studies have less researched on the position of smallholder farmers (as primary producers) in the honey value chain and their relationships with other key actors are unknown. It is not understood to what extent other actors are willing to support the smallholder farmers. Thus

motivation of this study arose. Also, Akyoo and Lazaro 2007 found the governance structure of honey industry in Tanzania allow segmentation of market channels which mainly offer lower prices to farmers leading majority of them suffering from income poverty and poor living conditions. The honey and other bee products, however are of high value crops that can be value-added processed into other products (Temu & Temu, 2005) and they can give higher prices and provide significant income generation for the producers (Fernondez-Stark & Bomber,2012).

1.4 Justification

Most smallholder farmers are located in rural areas and mostly in the former homelands where they lack both physical and institutional infrastructure. Lack of access to proper roads; for example, limit the ability of farmers to transport inputs, produce and also access to market information. Infrastructure is very poor, markets for agricultural inputs and outputs are often missing and unreliable for smallholder farmers. This means that the acquisition of agricultural resources becomes different and the supply of market services also becomes limited. Lack of assets, information and access to services hinders smallholder participation in markets (Agriculture, forest and fisheries, 2012). Agricultural sector employs more than 70 percent of the Tanzanian population, majority of who live in rural areas. Moreover, the agricultural sector contributes about 95 percent of the food consumed in the country (URT, 2009) but small holder's farmers have remained poor despite of their contribution. This is supported by the Tanzania Human Development report (2014), which found that living standards in rural areas

are worse off compared to urban life. Rural dwellers where the majority is smallholder farmers have no access to piped water as the main source for drinking; and they rely on wood as cooking fuel.

According to Population and Housing Census (2012), the majority of household head in rural areas were literate with primary education. However, poverty is associated to level of education of the household head. For that case, those with secondary education level are less poor compare to those with low level of education(primary); so as to the food security (Housing Budget Survey, 2012).

1.5 Research Objectives

1.5.1 General objective

The general objective of this study was to explore how effects related to governance arrangements affect an effective inclusion of smallholder farmers in honey chain.

1.5.2 Specific objectives

Specifically this study was intended to:

(i) Investigate how key actors play role in governing honey value chain.

(ii) Explore strategies for effective inclusion of smallholder farmers in honey value chain governance.

(iii) Identify challenges in governing honey value chain.

1.6 Research Questions

The three specific objectives were guided by the following research questions respectively:

1. What roles different actors play in honey value chain?
2. In what ways smallholder farmers participate in honey value chain?
3. What are challenges in governing honey value chain?

1.7 Significance of the Study

The study highlighted the opportunities and viability of beekeeping sector in improving the livelihood of communities especially the rural dwellers. The results and recommendations of this study should also be the baseline for other researchers who will be interested in studying honey value chain. Furthermore, the study recommended the appropriate interventions for adoptions towards the improvement of the sector and its contribution to the livelihoods of those engaged to the sector.

1.8 Definition of terms

(i) Beewax a is substance that is secreted by bees by special glands on the underside of the abdomen, deposited as thin scales, and used after mastication and mixture with the secretion of the salivary glands for constructing the honeycomb. Beeswax melts at approximately 145°F (63°C) (- 2014). According to FAO 2012, beeswax is derived from glands in the workers bee's head that are used to build comb for brood rearing and honey storage. This study adopted the above definition while investigating the identified subject matter of inquiry.

(ii) Beekeeping means the raising or producing of bees, beeswax, honey, and by-products and the transporting of bees, colonies or items of bee equipment (- 2014). In the context of this study, beekeeping meant the management of bees.

(iii) Honey is the natural sweet substance produced by honeybees from the nectar of blossoms or from the secretion of living parts of plants or excretions of plant sucking insects on the living parts of plants, which honeybees collect, transform and combine with specific substances of their own, store and leave in the honey comb to ripen and mature (FAO, 2012). This study also looks at honey in the manner that FAO defines it. As such, honey in the context of this study meant the natural sweet substance produced by honey bees in Bukombe district.

(iv) Household is the total number of people living and depending on a given smallholder farmer.

Table 1.1: Analytical Frameworks

Research question	Sub-research question	Question variable
1) What roles different actors play in honey value chain?	i) Who are the key actors in honey value chain in the district? ii) What roles do they play? iii) How do these actors interact? iv) What do policy and regulation provide for the role and different responsibilities of different actors in the chain? v) What are the factors that govern the price of honey? vi) What are the authorities responsible for honey product price setting? vii) How do price affect consumption of honey product?	-Actors -Market -Livelihood asset -Networking -Affiliation Extension services -Policies -Price Governance

	viii) Are processing facilities/technologies available to smallholder farmers? ix) Are they available in retail shops? x) Who determine the quality? xi) What are the standards required for honey certification? xii) Why do smallholder farmers sell crude honey instead of value added honey? xiii) What are initiatives carried out by the beekeeping department to ensure that smallholder farmers are trained on modern beekeeping? xiv) Are extension services available for smallholder farmers?	

	xv) What are the regulations governing honey value chain? xvi) Who set the regulation? xvii) How do these regulations influence smallholder famers' access to credit services? xviii) Are there improved transport systems and communication for smallholder farmers to get their products to the market? xx) Do the responsible ministries provide any considerations to the issue of honey adulteration? xx) How big role does income from the chain play in farmers overall livelihood? xxi) What do they use the extra money for?	
2) In what ways	i) How do smallholder farmers participate in honey	- Levels of participation

smallholder farmers participate in honey value chain?	value chain? ii) What activities in the chain do the smallholder farmers do? iii) Who determines the conditions under which these activities are done? iv) How does the beekeeping linked to other sector in the country? v) Do smallholder farmers have access to credit, input and technology? vi) Do smallholder farmers involved in product price setting? vii) What is the effect of participating in value chain on the livelihood of smallholder farmers? viii) What factors influences producers interact in the value chain? ix) What are strategies	- Legal assistant - Governance - Capacity building - Price setting - Inclusion

	available to ensure effective participation of smallholder farmers in the value chain? x) How do smallholder farmers perform contractual arrangements? xi) How do responsible actors contribute to the improvement of contractual arrangements between producers and buyers? xii) How can smallholder farmers improve their position in the chain?	
3) What are challenges in governing honey value chain?	i) What are challenges facing the bee sector? ii) What effect do these challenges have to smallholder farmers? iii) How do they respond to these challenges? iv) How do government, NGO's and other stakeholders assist farmers	- Regulations - Market access - Technology - Communication - Extension services - Quality control - Governance - Laws - By-laws

	to cope with these challenges? v) What key constraint exists at various levels in the chain? vi) What are potential solutions to those constraints? vii) What are the formation process, composition and operation of smallholder farmer's cooperatives in the district and Tanzania in general? viii) How do governance factors influence smallholder farmer's cooperatives? ix) What challenges face these cooperatives? x) Are there deliberate efforts for the management of bee resources?	- Contract - Membership - Leadership - Sustainability

1.9 Chapter summary

The above chapter explains the background of the study, statement of the problem which clearly states the research gap and the reason why this study was conducted, objective and research questions as well as analytical framework which divide research questions into sub questions. The following chapter is about literature review.

CHAPTER TWO

LITERATURE REVIEW

2.1 Chapter Overview

This chapter presents literature materials on bee products especially honey, state of smallholder farmers in Tanzania and developing countries in general and the beekeeping sector in Tanzania. The section also explains the policies governing honey value chain and conflicting areas in these policies.

2.2 Introduction

Bees and their products are well known in the world and have wide consumer preferences. They provide sustainable development to many small-scale farmers and other rural and non rural dwellers. Bees activity offer a large potential with minimal investment, it can be started with equipment that can be allocated locally and with local traditions skills and knowledge (FAO, 2012).

2.3 Global honey production

Major producers of honey in the world are Russia, Argentina, Brazil, Mexico, China, USA, Canada, and Australia (FAO, 2014). The global demand for organic honey is increasing and become valuable and an expensive commodity. For example, it is reported that the price of honey in the USA is rising more than 6% annually, and the market globally is expected to hit $12 billion by 2015 (UNCTAD, 2012).The major exporters however are China, Mexico and Argentina. But again, the highest colony yields are recorded in Australia and Canada which have a favourable environment, as well as

highly developed colony management (FAO, 2014). Western Europe imported approximately 140,000 tonnes which where about 55% of the consumption. The major consumers and importers are, Germany, Japan, USA and UK (*ibid*) and this increase is the result of higher interest in natural and health products (Mbeiyererwa, 2014). However, the world's honey price has been affected by different factors such as weather conditions in the countries that take biggest share to export to the world market, bees diseases and imposed barriers to trade (Miklyaev et al.,2011).

In the U.S.A, beekeeping was first introduced around 1860, by John Harbison who brought the practice to West coast in an area called Harbison Canyon, California. He later expanded the trade to other parts of the country (Coldeira, 2007). Until the 1980s, farmers who lived in rural areas and their relatives who emulated them mainly practiced beekeeping in America as a hobby. It is estimated the U.S.A has 115,000-125,000 beekeepers who mostly engage in the practice as a hobby, with each farmer having less than 25 hives. Commercial beekeepers are graded as those who own over 300 hives (Bee culture magazine, 2013).

In the year 2014, honey production from U.S.A farmers with more than five colonies totaled to 178 million pounds up to 19 percent from 2013. There were 2.74 million colonies producing honey in 2014, up 4 percent from 2013. Yield per colony averaged 65.1 pounds, up 15 percent from the 56.6 pounds in 2013. These include the honey sold through cooperatives, private and retail channels (NASS, 2015). Almost half the honey produced in America is

sold through retail channels; the rest is sold in bulk for use in the food industry (NHB, 2013).

India has a long history in beekeeping. The country has some of the oldest records on apiculture in the form of paintings in prehistoric rock shelters. Beekeeping is practiced in forests with key areas being the sub-Himalayan tracts and Orissa and Pradesh (MOMSME, 2009). India produces around 70,000 tonnes of honey annually where, 25,000- 27,000 tonnes is exported to more than 42 countries. Honey exports are estimated around USD 3.2 mn in 2007-08. United States, EU and Middle East are key exports destination for Indian honey.

In the domestic market very little amount of honey is used for personal consumption, while the remaining is utilized by the pharmaceutical and confectionary industry (Aptico, 2009). Beekeeping in India is faced by unselective use of pesticide, bee diseases, as well as low price of bee's products such as honey, bee wax, royal jelly, propolis and venom (Bansal, Singh & Singh, 2013)

Vietnam produces 500-1000 tons of forest honey annually. Beekeeping in Vietnam gained its momentum during 1980s. It was a small and backward sector as it only exported ten tonnes per year back then. Vietnam ranks 6th in the world currently, and the second in Asia. In 2013, the country produced 48000 tonnes of honey in which 37000 tonnes, were for export. The country

exported 30000 tonnes to US and reached the revenue of US$75.66 million (Vietnam Trade Promotion Agency, 2014).

2.4 Beekeeping and honey production in Africa

Beekeeping in Africa has been practiced traditionally almost 5000 years ago. Honey produced first in ancient Egypt and it was used as delicious human delicacy as well as gift to gods during the burial processes (UNCTAD, 2012). Honey was also the food of the Pharaohs and nobles. Most honey producers regions in Egypt are Delta region which produces 60% of honey and Upper Egypt which produces 40% (Hussein-).

Ethiopia is leading in honey production in Africa where in 2010 it was among the world's honey top ten producers(FAO,2010) followed by countries in East Africa. Between the year 2007 to 2011, honey production in Ethiopia was 163,257.42 tonnes and exported 1,297,717 kilogrammes with a total value of USD 4, 066, 528 (Miklyaev et al, 2011).

Despite of this increase and being the lead in Africa, Ethiopia like many African countries is characterized by widespread use of traditional technology which results into low honey supply poor quality. Additional barriers include the disappearance of bee-foraging areas due to crop intensification and the growing use of agrochemicals; poor transportation infrastructure; weak knowledge of proper storage techniques (at the farm and local honey collectors'/traders' levels); problems with packaging, especially at the processors' level (e.g., difficulty obtaining a reliable supply of glass jars);

weak access to profitable export markets due to low productivity; limited knowledge of export-market requirements; and lack of or weak connections with processors (Miklyaev et al, 2011).

Botswana is traditionally a nation of honey hunters. Domestic beekeeping started more than 30 years ago. Groups manage many of the bee farming projects with a few being owned individually. The average bee farmer in Botswana usually has one colony of bees and he/she is mainly found in rural setting (TTA, 2005). Through government initiatives that have resulted in training of about 1000 individuals, honey production in Botswana has grown from 5 kilos per hive in 1980s to 15 kilos per hive in 2000 and 20 kilos per hive in 2004 (ibid).

This has however, come with its own share of challenges to the Botswana beekeeper. Notable constraints include low production efficiency, inadequate infrastructure, and lack of access to lucrative markets due to fragmented production units that make collection of inputs, acquisition, production, planning and output marketing difficult as well as absconding colonies. Value addition on the produce is also minimal as most honey is sold in raw form with minimal packaging. Packaging is done in food trays covered with clear plastic sheath (ibid).

The study conducted by SNV (2009) in Rwanda, shown the estimation of more than 45,000 active beekeepers managing about 90,000 hives, mainly traditional. According to a baseline survey carried out by SNV Rwanda in

2007, across 17 high potential honey production Districts in Rwanda showed that there were an estimated 30,293 beekeepers of whom 18,430 were men, 7,233 women and 4,630 were youth. The total number of hives was estimated to be 92,971 with 84,255 being traditional log, mud and other indigenous hives while the modern hives were estimated to be approximately 8,716.

Formerly, honey was produced for subsistence domestic purposes only but it has turn out to be commercial oriented production. The honey market in Rwanda carried out in three ways:

i. The local market (friends, neighbours and surrounding villages);
ii. Local and external bulking agents (middlemen, traditional liquor brewers, traders, nongovernmental organizations);
iii. Farmer based co-operative societies. This is the most popular direct market as it offers better prices as compared to the local and external bulking agents.

The main market for the bulked honey in Rwanda is the capital city. In Kigali honey is used by food processing, liquor and pharmaceutical companies. Honey is also refined further and packed into containers for sale to domestic consumers as table honey (Republic of Rwanda, 2009).

2.5 Honey Production in Tanzania

Tanzania is among countries in the world with high production of bee products especially honey and beeswax. This is due to presence of high population of bee colonies that is estimated to be 9.2 million and presence of

high vegetation preferred by bees in many areas of the country (Kihwele et al, 2001). According to Mwakatobe and Machumu (2004), miombo vegetation also contributes significantly to the high production of bee products in the country. The country has about 33.5 million hectares of forests and woodlands that are scattered throughout the country and are ideal for developing beekeeping industry. Almost 20.5million hectares out of this area are unreserved forests and woodlands, while 13 million hectares of forest and woodland have been gazetted as forest reserves. More than 80,000 hectares of the gazetted forest reserves consist of forest plantations that are also suitable for beekeeping. The mangrove forests of mainland Tanzania that covers about 115,500 ha are also valuable as bee fodder.

High potential for beekeeping is also found in agricultural land where substantial bee products can be harvested from agricultural crops e.g. sunflower, green beans, coffee, coconut and sisal. The presence of both stinging and non-stinging honeybees coupled with existence of indigenous knowledge in beekeeping is also a great potential (Mbeiyererwa, 2014)

Tanzanian honey is known all over the world compared to honey from other countries due to its natural state and its organic nature (NBP, 1998). Tanzanian honey is consumed locally and internationally where the high demand is from is from EU, Oman, UAE, Kenya, Rwanda, Uganda and Iran. Tanzania exported 156,012 kilograms of honey in 2007, 612,960(2008), 485,842(2009), 428,825(2010) and 578,783(2011); furthermore the country earned TZS 2,742,129,443 from January to December 2011(MNRT, 2012).

Due to an increasing concern from consumers for no or little chemicals in food products, it is predicted that the demand for organically produced honey will be even more in the future.

Understanding its importance, the government of Tanzania developed the National Beekeeping Policy (NBP) in 1998. The overall goal of the National Beekeeping Policy is to enhance the contribution of the beekeeping sector to the sustainable development of Tanzania and the conservation and management of its natural resources for the benefit of present and future generations. NBP encourages active participation of all stakeholders in establishment and sustainable management of bee reserves and apiaries, promoting beekeeping-based industries and products and promoting sustainable management of beekeeping in cross – sectoral areas for ecosystem conservation and management.

Though there have been so many efforts to support the beekeeping sector in the country, the beekeeping sector is still remaining dominant and have remained in the hands of small holders farmers and local beekeepers who consider beekeeping as hobby and not commercial activity.

Beekeeping in Tanzania is mainly rural based practiced by local beekeepers who are small holder farmers and this makes beekeeping contribution to GDP to be insignificant. The country has the capacity to produce 138,000 tonnes of honey and 9,200 tonnes of beeswax respectively (MNRT, 2012).

The use of modern beehives and protective gear has not been achieved and this has contributed to the sector to fail to reach its potential production (Mwakatobe & Machumu, 2004). According to FAO 2011, traditional way of hunting honey leads to low quality of honey and destruction of bee colony and honeybee diseases. Beekeepers have little access to financial products that would allow them to switch from traditional beehives to improved versions. Moving to transitional and modern beehives requires an initial investment of capital that most smallholder farmers do not have, so they continue to produce honey using traditional methods.

2.6 The state of smallholder farmers

According to FAO 2012, 80 percent of the farm land in sub- Saharan Africa and Asia are managed by smallholder farmers who work on one up to 10 hectares. Smallholder farmers are characterized by family focused motives such as favouring the stability of the farm household system using mainly family labour for production and using part of produce for family consumption. Out of the 2.5 billion people live in smallholder households, most of them are extremely poor. Most smallholders do not have access to affordable inputs and financial credit and do not participate in commercial markets for their produce. They practice subsistence farming of which yields are always low below global average (Africa Agricultural Status report, 2014)

In Tanzania about 80 percent of the population depends on agriculture. It is the main source of income for the poor, especially in rural areas. Most of the rural people in Tanzania especially who rely heavily on such income tend to

be extremely poor. What is produced by these farmers is subsistence and it is consumed by the households and sometimes may not be enough.

Smallholder farmers characterize Tanzanian agriculture. The average size of land cultivated varies from less than 1 ha to 3 ha of land. The majority of farmers cultivate the area under cultivation by hand hoe, while for the remaining area farmers' use ploughs and few farmers use tractors. The main food crops are maize, rice, wheat, sorghum/millet, cassava and beans and they represent nearly 85 percent of the area cultivated. Bananas are grown mainly in the Kagera and Kilimanjaro area, and like cassava have a low value-to-bulk ratio and are generally retained for home consumption (URT, 2006). From 1990's during Structural Adjustment Programme to present, there has been a continuous reduction of African states participation and control over marketing and input supply, for example the elimination of the subsidy on fertilizer and other farm inputs (Ezealaji & Adenegan, 2014).

There are several factors affecting the agriculture sector. First of all agriculture is rain-fed and therefore unfavourable weather results in poor agricultural performance. In addition, low labour and land productivity due to application of poor technology, and dependence on unreliable and irregular weather conditions are further concerns. Both crops and livestock are adversely affected by periodical droughts (URT, 2012).

2.7 Honey value chain in Tanzania

Beekeepers are the producers of honey in the country, after extraction of honey from the hives; it is sold to the traders who process it. These traders have varying methods of processing, packaging and handling their products. Others fabricate settling tanks themselves, whereas others import high quality stainless steel tanks. There are no regulations enforced to monitor processing of honey for quality control. Those designated for export are packed in drums of 210 litres capacity and 20 litre (30kg) buckets; however, honey that is sold locally is packed in 2.5 litre containers, 1 litre containers, 500ml and 350ml (460gms) bottles. At village level, bee keepers who process honey pack their product in 20 litre buckets ready for transporting or for buyers (Lalika & Machangu,2007).

2.8 The National Beekeeping Policy 1998

The Government of Tanzania developed the *National Beekeeping Policy* in 1998. The overall goal of the National Beekeeping Policy is to enhance the contribution of the beekeeping sector to the sustainable development of Tanzania and the conservation and management of its natural resources for the benefit of present and future generations. The key objective of this policy is to ensure sustainable existence of honeybees by maintaining and managing bee reserves, the Policy encourages the participation of the stakeholders (including the private sector) in the establishment and sustainable management bee reserves and apiaries. Another objective is to improve the quality and quantity of bee products and to improve the contribution of the honey sector to national development and especially

poverty alleviation. Finally, to improve the national capacity to manage and develop the beekeeping sector in collaboration with other stakeholders. In order to enable the implementation of NBP two instruments were established. These include *National Beekeeping Programme* of 2001, which emphasis on stakeholder's participation, improved biodiversity development and environmental conservation. Other instrument is the *Beekeeping Act* No. 15 of 2002, its main objective are to make provisions for orderly of beekeeping, improve the quality and quantity of bee products, prevent bee disease and bee pest and to improve revenue collection.

2.9 Implications of other associated policies

Associated policies that have implications with Tanzania beekeeping activities include the following:

(a) ***National Forestry Policy of 1998*** which provides for beekeepers to practice beekeeping in forest reserves. But during this study has evidently realized that the implied forestry policy conflicted with policies advocating for environmental and biodiversity conservation; by limiting free access of entering forests and cut trees. Also forest act restrict transportation of forest products during the night hours where the national bee regulation of 2005, provide for transportation of during the night to prevent honey from sun heat that can affect the quality of honey; unless if done during the day shall be transported by using refrigerated or insulated containers of which is very challenging to majority of farmers and honey buyers in Igulwa, Buntubili and Msonga villages of Bukombe district.

(b) ***Wildlife Policy of Tanzania of 1998*** which provide beekeepers with a special permission from the Director of Wildlife to carry out their activities in game reserves. But again, the wildlife act restricts entrance to the game reserves without permission. Almost all farmers covered by this study conduct beekeeping activities in Kigosi game reserve. Each person is required to pay 5000tsh as entrance fee together with 1000tsh to each casual labour and they all required having permit card provided by the office of wildlife management. It was reported to this study that in 2013 farmers were not allowed to enter into game reserve and they were forced to remove their hives to give chance to mining exploration. Most farmers lost their honey and others were highly disturbed by game reserve officers accused of not contributing taxes.

c) ***The Village Land Act 1999*** is one of the most important legislative texts that support community based natural resources management. It gives village power and recognize local community as the appropriate representative structure to implement natural resources management. Through village land use management system beekeepers can be allocated land for beekeeping development. However in Tanzania recently, private or public land has been scarce and fighting over land has been increasing. No free land any more as it has been observed by this study that most of farmers own land that has been bough and almost all of them practice beekeeping in Kigosi game reserve.

d) *The National Trade Policy of 2003*

It is agreed that this policy promotes the building of diversified competitive economy and encourages higher value-addition in primary exports to enhance the generation of foreign exchange. Also, it is mentioned that it promotes domestic production and technological change consistent with the required productivity increase. This is operationalised through lowering and removing tariffs such as export taxes on some products including bee products. Further, it is said that it facilitates development and enforcement of quality standard through the Tanzania Bureau of Standard (TBS). The trade policy is supported by the Sustainable Industrial Development Policy (SIDP) (1996 – 2020), the Small and Medium Enterprise Development Policy (SME, 2003) and the National Micro Finance Policy (2000). All policies emphasize the promotion of small and medium industries and enterprises through supporting existing and new promotion institutions, simplification of taxation, registration and licensing of Small and Medium Enterprises, as well as improvement of access to financial services. The overall attempt is to improve conditions of organic-farmers at the grassroots. But all these have not yet been achieved despite of having them on papers.

2. 10 Governance

The United Nations Development Programme (UNDP), in its 1997 policy defined governance as the exercise of economic, political and administrative authority to manage a country's affairs at all levels. It comprises the mechanisms, processes and institutions, through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and

mediate their differences. In 1993, the World Bank also defined governance as the method through which power is exercised in the management of a country's political, economic and social resources for development. Governance also used to indicate a government or administration in the specific ways in which system is ruled; the state of being governed (Ingram, 2014).

2.10.1 Beekeeping governance in Tanzania

According to *Beekeeping Regulations*, 2005 Part II, Section 4 (1) and Section 6, apiaries must be established at least 7 kilometres away from agricultural areas that make use of intensive chemicals, pesticides, and insecticides for example cotton farms, and away from industrial sites, in order to control chemical contaminations in honey. Also, must be away from tobacco farms. Beehives should be sited at an appropriate height to get honeybee colonies. Beehives should be baited using pure beeswax, bee propolis and or other locally available baiting materials before sitting. The comb foundation sheet shall be made from pure beeswax. The hives should be made from locally; well-seasoned and readily available, affordable raw materials accepted to the honeybees. Bee houses are recommended for areas without enough trees to provide protection and shade for bee colonies. The sites should be ensuring access to water and bee fodder plants that will meet nutritional needs of the honeybees (URT, 2005).

According to *Beekeeping Regulations*, 2005 Part III, Section 13 (a - j) directs, when processing bee products every caution and care in hygiene should be

taken to prevent contamination. Beekeepers and processors must use appropriate processing equipment in order to remove all impurities to attain quality products. Boiling or overheating of honey during processing should not be practiced at all. At industrial level honey warming should not exceed 350C to maintain low HMF content. Honey must be strained immediately after harvesting while viscous and before granulation occurs. Beekeeping equipment used in processing bee products should be of stainless steel, aluminium, enamel, food grade plastics to avoid rustling or reaction with products.

According to Beekeeping Regulations, 2005 Part III, Section 21(4) (a - i) provide for producers, retailers, whole sellers and exporters of honey to be aware of packaging and labeling regulations of Tanzania and of the country where the product will be marketed. Labeling and marking provides useful information on ingredient/content, quality grade, place of origin, and weight of the product. Honey for retail sale shall be packed in hygienically clean, plain, well-sealed jars or any other suitable containers which are food graded, acid resistant, non-reactive (stainless steel, plastic or glass) to the content and cannot cause the transfer of foreign odours to the honey.

The container must be moisture proof. Mouth of the containers must be wide enough to facilitate removal of crystallized honey. Containers which previously contained other commodities (e.g. kerosene, gasoline, oils, alcohol etc.) should not be used in packing honey. Transportation of honey shall be made during the night to avoid heat of the sun as it may affect the

quality of honey. So, any beekeeper or honey dealer who fails to adhere to these regulations commits offence and shall be preceded in accordance with the provision of act. According to *Beekeeping Act*,2002 part four, on offences and penalties provide that if any person will fail to comply with the provisions of this act is guilty of offence and shall be liable on conviction to a fine not exceeding one million shillings or imprisonment for a period of not exceeding one year or both fine and imprisonment.

2.10.2 The concept of Value chain

A value chain refers to the full range of activities that are required to transform a product or service from beginning to markets and consumers. This concept of the value chain was introduced by Michael Porter in the 1985 as a means to understand the links between producers and consumers, as well as the steps between them (Porter, 1980). This concept was used as the means to understand the links between the producers and the consumers as well as the step between them. This model is used by many ventures, whatever the position they are in the chain as strategic planning tool to improve their competition. So, this approach gives rise to what is now known as value chain analysis (FAO, 2010).

2.10.3 Theoretical framework

This study is based on Michael Porters theory of value chain. Value chain analysis (VCA) theory was originated by Michael Porter in 1985 aiming on improving competitive strategy in organization's management. Porter suggested that activities within an organization add value to the service and

products the organization produces; and all these activities should be run at optimal level if any organization is to gain any real competitive advantage. The value chain approach places particular emphasis on the co-ordination of different actors along the chain of activities involved in the production, processing and distribution of products. It highlights the linkages between enterprises, how their activities are co-ordinated, and the role of lead firms in determining what is to be produced, how and by whom (Humphrey, 2005).

Porter categorized the activities involved in honey value chain into two groups' namely primary activities and support activities. In primary activities Porter's theory suggested that goods are obtained from suppliers and are used to produce the end product, then manufactured into final product; value is added at this stage as it moves through the production level. For example Bee products with minimal processing can be made into value added products that may not be related to agriculture i.e. making candles from beeswax or using honey in baking bread and cakes (Krell, 1996). Other activity in primary category is outbound logistics. In this stage products after being manufactured are ready to be distributed to the distribution centres, wholesalers, retailers or customers. Marketing and sales are also in primary activities where Porter insisted on reaching the targeted customers.

Support activities include procurement, technology development as for example; in honey production farmers may adopt modern bee hives and the use of improved harvesting and post harvesting tools. Other includes human resource and firm infrastructure. VCA embraces a wide framework for

mapping and categorizing economic processes, understanding why, how and where states, institutions, organizations, households and individuals are positioned in processes and networks. VCA pays attention to situation-specific geographical scales, from households up to the global level (Ingram, 2010). VCA focuses on the actors and their relations at all levels and their often complex system.

However, the competitiveness of value chain nodes, within individual or several countries is also highly affected by the general business environment such as customs clearance for imports and exports also, external trade governance for example tariff levels, trade preferences, quality specifications and rules of origin requirements. Therefore a combination of these factors either makes or breaks nascent value chain nodes and actors (Mitchell, Keane and Coles,2009) so in this case, governance arrangements in value chains are very important so as to influence who control what along the value chain, determining the power between actors and institutions and affecting cost and benefit distribution (Ingram, 2014).

The analysis can be used to discover the bottlenecks in the system and thus opportunities for intervention, such as providing access to finance, markets, technology, improving institutional, policy frameworks or the business environment. VCA is well suited in understanding how poor people in rural areas of developing countries can engage, or improve their terms of commitment with, domestic, regional or international trade. The value chain analysis identifies the core charges and barriers to entry that determine who

in the value chain benefits from production for different final markets and recognize the lack of economic power of target beneficiaries compared with more powerful firms setting the rules of the game in the value chain, and how this hinder their choices. Also, value is added to every stage.

However, VCA gives only the snapshot that can help to discover the possible intervention. In this study the analysis will mainly focus on what effects related to governance arrangement affect an effective inclusion of smallholder farmers in the honey value chain.

2.10.4 Honey value chain in Tanzania

Beekeepers are the producers of honey in the country, after extraction of honey from the hives; it is sold to the traders who process it. These traders have varying methods of processing, packaging and handling their products. Others fabricate settling tanks themselves, whereas others import high quality stainless steel tanks. There are no regulations enforced to monitor processing of honey for quality control. Those designated for export are packed in drums of 210 litres capacity and 20 litre (30kg) buckets; however, honey that is sold locally is packed in 2.5 litre containers, 1 litre containers, 500ml and 350ml (460gms) bottles. At village level, bee keepers who process honey pack their product in 20 litre buckets ready for transporting or for buyers (Lalika et al 2007). Therefore there are beekeepers who sell their honey to traders, to the processors, retailers and exporters, finally to the consumers (domestic and foreign).

2.10.5 Inclusion of smallholder farmers in value chain

In this competitive world of changing market and technologies, agriculture is facing the new demands, making it difficult to remain sustainable. The buying practice of supermarkets and large processors, in terms of quality and safety standard, packaging and volume seriously challenge smallholder producers who are threatened by exclusion from the agriculture if they cannot take part in this new type of market (Gladys, 2013). The chain thus require assurance from suppliers to ensure that all safety and health standard are met and surpassed, and that small-scale farmers are not excluded from complying with these standards if they are to compete successful in agricultural value chain.

Smallholder farmers need to understand the value chain and their role and the role of other actors in the value chain. This can be done through workshops, presenting opportunities for inclusion in the value chain and explaining how things might change in long run. Also the inclusion of smallholder farmer in the value chain will need comprehensive support from both public and private institutions (Henriksen & Rota, 2014)

2.10.6 Empirical studies

Honey is produced at household level by beekeepers that are often the poorest and most marginalised in society, and these people are highly disadvantaged in the market place. Poor roads, remote locations, low knowledge of the final market, lack of containers and infrequent interaction

with traders mean the potential of the honey trade to bring income benefits to producers remains unexploited (Bees for Development, 2006).

The study on sunflower value chain by Ugulumu 2008 shows that, poor market linkages, inadequate information and poor infrastructure as the result of poor governance in the country lead to decision concerning prices of sunflower products to be decided by few players in the value chain. The middlemen, processor and the end user control the sunflower market. Also the study conducted by Gabagambi, 2013 *on barriers to trade for smallholder farmers in Tanzania and a review and analysis of agricultural related market policies in Tanzania* discovered that, smallholder producers are unable to meet the requirement market because they operate without appreciable support from the government and are in most cases stuck to production orientation.

In Cameroon, regulatory arrangements have weak influence on the chains, a corruption influences all chains and its influence varies by chain (Ingram, 2014).

In Ethiopia, the key players in honey value chain are producers (Beekeepers) who are engaged in honey production and taking advantage of the honey market's demand and low supply. In this level beekeepers seek the highest prices for honey. Another player is direct buyers of honey, these includes, honey collectors/traders, cooperatives, tej houses, and agribusinesses / processors that buy directly from beekeepers. Agribusiness companies also

market honey in domestic and export markets and honey wholesalers in Addis Ababa. The last key player is domestic retail honey sellers (supermarkets, retail stores) and honey exporters (agribusiness companies/processors). Many participants at this level compete with each other in terms of quantity, quality, and price of honey. Additionally, some agribusinesses/processors that supply honey for export markets are also engaged in sales within the domestic market, so they compete with the wholesalers, the agribusiness companies (ibid).Yet the honey market has not been full reached.

This has contributed by the factor that , Ethiopia's honey productivity is characterized by backward technology for honey production, which includes traditional beehives which results in low quantity and poor quality of honey produced, lack of financial resources (such as access to loans) for beekeepers to obtain modern beehives and other tools necessary to increase honey production, lack of proper training regarding efficient management of a modern-style apiary and other barriers include the disappearance of bee-foraging areas due to crop intensification and the growing use of agrochemicals, droughts in some parts of Ethiopia, poor transportation infrastructure, weak knowledge of proper storage techniques (at the farm and local honey collectors'/traders' levels); problems with packaging, especially at the processors' level (for example, difficulty obtaining a reliable supply of glass jars); weak access to profitable export markets due to low productivity; limited knowledge of export-market requirements; and lack of or weak connections with processors (Kassaye, 2008).

The study conducted by Agbenorheri, Akaangamkum, and Okudzeto, in Ghana 2010 on honey industry overview, revealed that beekeeping sector face many challenges like lack of enabling regulatory and policy framework, difficulties in acquiring suitable site for beekeeping, fragmentation of beekeeping activities, rampant occurrence of bushfires ,lack of technical expertise, lack of standards and poor quality of honey, beeswax and other products, difficulties in accessing financing, general absence of an entrepreneurial and business approach to beekeeping, honey production and marketing.

Also the study on honey value chain mapping in Siha and Njombe districts by Mbeyeirerwa (2014) shows that, the farmers in the two selected areas do not had adequate tools and right equipments for honey harvesting thus many beekeepers do not possess efficient machineries for potential and faster processing of honey. Another issue revealed by the study was unreliable market. The two districts according to the author had no potential market due to the facts that many buyers of the produce are the passer-by people who were not able to take all produced honey. Collection centers were lacking during this study as many farmers were selling their honey independently.

In this study it was also revealed that many farmers were using traditional hives which results into low yields. Finally, the study found that protective gears that are used for harvesting honey were sold very expensive for farmers to afford.

2.10.7 Gap of Knowledge

All these studies focused how best the value chain can be done especially in upgrading and market access. The current literature does not answer the question on how effective smallholder farmers can be engaged in value chains. Therefore this study will deal with this gap in literature and the major focus will be on identifying effective inclusion of smallholder farmers in honey value chain and the effects of governance arrangement towards the position of smallholder farmers in honey value chain.

2.11 Chapter Summary

This chapter review different literatures on honey production trend in the world and different countries practicing beekeeping, its success and challenges faced by the sector, beekeeping policy in Tanzania and associated policies governing honey value chain, value chain concept as well as related studies. The next chapter will be discussing different methodologies employed by this study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Chapter overview

This chapter discuss the research design adopted, the target population of bee farmers in the study area, the sample size and sampling techniques used in getting the sample size, the data collection instruments used as well as the way in which pilot testing of the instrument was done. This chapter also covers issues of validity and reliability in the research. Data collection procedure, data analysis techniques and ethical considerations are also well discussed. The data-gathering methods included semi-structured interviews, focus group discussions, key informants, reviewing policies and different documents on beekeeping activities.

3.2 Research Design

The research design of this study was a cross-sectional research design, as it allows data to be collected once at a single point in time without repetition from the representative sample (Kate, 2006). The reason for the choice of such a design is that, it is easier and economical to conduct especially where there are resource constraints like time, labour and money. Also, the outcome can be assessed and the sample is usually taken from the population.

However, in cross-sectional design study sometimes it is not easy to make underlying inference and it only gives snap short as different results may be obtained if another time frame has to be chosen.

3.3 Area of study

The study conducted at Bukombe district in Geita. Bukombe district is among five districts of Geita region, others includes Geita, Nyang'wale, Mbogwe and Chato districts. The three villages of Msonga, Buntubili and Igulwa of Bukombe were covered this study. These areas became the interest of this study because of their potential in beekeeping due to presence of Miombo woodland which is suitable for beekeeping (URT, 2005). The District is located at 3^0.00' latitude and 40^0.30' south of Equator, with 8,055.59km2 which is 20.6% of the 50,781km2 total region land coverage. It has a population of 224,542 with a family size of about six people (NBS, 2012).

The District is divided into three (3) divisions, 13 wards, 47 villages and 184 sub-villages. The district is experiencing tropical type of climate with the average of 220C annual range of temperature where rainfall ranges between 900mm – 1200mm. 84% of the district population depends much on agricultural activities. Other includes livestock keeping, beekeeping and mining activities. The crops grown in the district are maize, cassava, rice, sweet potatoes, groundnuts and beans. Also, vegetables and fruits are grown in the district. The major ethnic group is Sumbwa who were originally hunters and gatherer. However, they then became farmers growing maize, cassava, sweet potatoes, cotton and beekeeping. Other ethnic groups include Sukuma, Nyamwezi and Buha (Waha).

3.4 Research approach

The study comprised both qualitative and quantitative approaches. Two type sources of data such as primary and secondary data were used to gather information required by this study.

3.4.1 Primary data

Primary data were gathered through semi structured individual interviews, focus group discussions and observation. For each village five group discussions which made the total of 15 groups were held and each group comprises of five discussants. So, the total numbers of respondents through group discussions were 75 respondents. These groups were mainly occupied by men aged between 35 and 53 and few of age between 18 to 35, most of them were married and engaging themselves in agriculture and beekeeping. In Buntubili village one of the group had three women and two men, and in Igulwa village out of five groups met two groups had one woman representative.

3.4.2 Secondary data

The majority of secondary sources such as beekeeping regulations in Tanzania, the National Beekeeping Policy Beekeeping Act and different laws and policies associated to beekeeping were extracted from the Government of Tanzania website. Different type of information were obtained from these sources like the role of different stakeholders in beekeeping activities, the pricing of bees product as well as the regulations that govern honey value chain. Other sources were about the production of honey globally, where

information regarding the experience of other countries and places in beekeeping practicing, success and different challenges faced by other beekeepers in beekeeping activities. These information's were extracted from bees and development websites and other related website were those focusing on agricultural transformation.

3.4.3 Interviews

The semi-structured interviews were based on a set of core questions, but allowed for some deviation from these questions in order to explore relevant issues that arouse during the interview process. The benefit of interviews is that, in addition to a formal questionnaire, it gives more room for a researcher to explore more issues related to the subject matter without diverging to the core guiding questions. Also, they usually achieve high response rate and ambiguities can be clarified. However, interview can be time consuming and costly (Wyse, 2014). Interviews started with general introduction of informant thus age, education level and occupation and number of beehives owned and hectares of land owned and major crops grown by the household.

3.4.4 Focus group discussions (FGDs)

The total of 15 focus group discussions sessions were organized in all three villages. Each group comprises of five discussants, where most groups involved only men and only three groups out of 15 had both men and women. In Msonga village discussion held near Konde Bona SACCOS, where in Igulwa village the discussions held in the compound of one participant, to the village executive office and other discussion which held at

evening were participants were having porridge. In Buntubili village it was very easy to have people in discussion as there was a beekeepers groups meeting. They were asked if they would like to participate and they agreed.

Discussions with honey buyers held in one of the honey stores in Runzewe centre and other discussion at District Beekeeping office. The participants agreed to gather at District Beekeeping office because also the District beekeeping officer is beekeeper and honey buyer also, so they felt comfortable with her presence. The discussions were on the regulation governing honey value chain and their effects on smallholder beekeepers, the honey price setting, challenges governing honey value chain in the district, relationship between smallholder beekeepers and other actors in the chain and strategies to improve smallholder beekeepers position in honey value chain.

Focus group discussion were used in this study due to its advantage of saving time and money compared to individual interviews, also because they can provide wider range of information as well as offering an opportunity to make clarification on the issue of discussion. At the same time this methodology has its limitation such as the discussion being dominated by one or two and put others under pressure to agree with them. Also focus group discussion can be hard to manage and control and sometimes if not managed well, the discussion may lead to provision of irrelevant information which diverge from the focus of the topic (Leung & Savithiri, 2009).

3.4.5 Key informants Interview

Key informant interviews are qualitative in –depth interviews with people who know what is going on in the community. The purpose of using key informant is to collect information from different peoples such as professionals, community leaders or residents who have knowledge about the community. The key informants of this study included district beekeeping officer, forest officer and village executive officers. Understanding their position in the community, this study interested to find out how they enforce different laws and implement policies regarding honey value chain and how they solve different issues concerning smallholder farmers in their areas. The most information obtained from these interviews were regulations and laws associated to beekeeping activities in forest reserve and in village land, procedures to follow if one wishes to transport bees products outside the district, conflicting areas of different laws and policies governing beekeeping in Tanzania and how bee farmers are helped to cope with different challenges they faced in honey value chain.

3.4.6 Observation

Observation was used as one method of collecting data. Observation was mainly focused on processing facilities, packing materials and honey storage. During the study it was observed that processing and packing facilities used by beekeepers were not complying with beekeeping regulation which insisted on cleanness and hygiene. Most of packing containers were the one which has been already used to pack cooking oil especially the 20 litres containers.

The study also observed the processing room filled with shoes and dirt cloths.

3.5 Population, Sample and Sampling procedure

The population of this study was all smallholder farmers of Igulwa, Buntubili and Msonga villages in Bukombe district due to their experience in beekeeping activities. The three villages were purposely selected, and so the key informant because of their expertise and opinions on beekeeping. Simple random sampling was used to get the representative sample from the sample frame where any farmer in the selected villages had a chance to participate in the study. This was done by paying visit to the intended village, met with village executive officer; introduce myself and the reason of the visit. Also the researcher explained why this study was important to the community and finally the village executive officer provided someone to walk with in the village.

3.5.1 Sample size

A study population comprises a total of 59431 Beekeepers from Three Selected Villages. According to the data from Population and Housing census 2012, Msonga village has a total population of 5000 people, Buntubili has a total of 31003 and Igulwa village has a total of 23428 respectively. In order to develop the sample size of this study, the formula by Rwegoshora (2006) was adopted as follows:-

$$n = \frac{N}{[1 + N\,(e)^2]}$$

Whereas;

n……Sample Size

N……Total Population

e……Standard Error

Therefore;

$N = 59431$

$e = 10\% = 0.1$

$$\therefore n = \frac{59431}{[1 + 59431\,(0.1)^2]}$$

$$n = \frac{59431}{[1 + 59431\,(0.01)]}$$

$$n = \frac{59431}{[1 + 594.31]}$$

$$n = \frac{59431}{595.31} = 99.8 \approx 100$$

$$\underline{n = 100}$$

However, the study added more 50 respondents to the sample size obtained do to the fact that larger sample are representative of the population studied. This study also involved five key informants among them three village executive officers, District Beekeeping Officer and District Forest Officer.

Table 3.1: Distribution of Respondents

Category	Number
Small holder farmers	150
District beekeeping officer	1
District forest officer	1
Village executive officers	3
Total	**155**

3.6 Validity

Validity is the extent to which the instruments used during the study measure the issues they are intended to measure (Kothari, 2004). To ensure validity of data collection tools, the tools were developed under close guidance of the supervisor. The study tools were pre -tested to ensure their validity. This was made to 25 respondents of Igulwa village before the actual date of starting collecting data. This enabled the study to be corrected and modify questions to suit study objectives and reduce ambiguity.

3.7 Reliability

Reliability indicates the extent to which the data is free of bias and errors, thus ensuring consistent measurement across time and various item in the instrument (Sekaran, 2006). To ensure the reliability of data in this study, different methods and tools during data collection were used, such as interviews, focus group discussion, and review of different documents concerning the discussed issue.

3.8 Data Analysis

After data collection, quantitative data was analyzed by the use of computer software known as Statistical Package for Social Science (SPSS). The questionnaires were coded, captured and cleared for analysis (Kothari, 2004). Qualitative data, analysis was carried out by summing total scores on the variables of study and data presented statistically by use of frequency distribution tables using descriptive and statistics.

3.9 Ethical consideration

According to Driscoll and Brizee (2012), social science studies require obtaining informed consent from all respondents, protecting them from harm and discomfort and treating all information confidential. Farmers were encouraged to participate voluntarily, their privacy highly enhanced in the course of the study. Private information of the respondents was highly guarded from unauthorized access. . Time management was taken care by keeping appointment time and not taking too much time to interview participants.

3.10 Plan for dissemination of research report

The research result will be disseminated by providing copies to the university and to beekeeping department in Bukombe district where this study was conducted.

3.10.1 Limitation of the study

The rainy season was a major limiting factor to this study as the area experiences rainy season between October and April .The rains made group discussion and interview to be postponed till it has stopped or make it the next day, and this affected the data collection process. The study addressed this by providing umbrellas to research assistants, requesting accommodation from villagers. Also time allocated for this study was too short which compelled the use of research assistances.

3.11 Chapter summary

The main discussion in this chapter, based on research design selected for the study, explained study setting, study population, sample, sampling procedures and sample size. It also gave methods and tools for data collection. Furthermore, ethical consideration issues such as informed consent, confidentiality and risk-benefit analysis and plan for dissemination of research result and overall limitations during data collection activity. The following chapter will discuss the results and major findings of this study.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Chapter overview

The purpose of this study was to explore effective inclusion of smallholder farmers in honey value chain in three villages of Bukombe districts. This chapter presents the findings which have been discussed with respect three research objectives, which were to investigate how key actors play roles in governing honey value chain, to explore strategies for effective inclusion of smallholder farmers in honey value chain governance and to identify challenges governing honey value chain in Bukombe district on the following basis; demographic characteristics, type of houses owned by smallholder farmer, source of drinking water and energy used in the household, policy, laws and regulations that govern honey value chain in Bukombe district.

4.2 Social-demographic characteristics of respondents

Table 4.1: Small holder farmers' age

Age range of respondents	Frequency(f)	Percentage (%)
18- 35	53	35.3
36- 53	76	50.7
54- 71	19	12.7
72- 89	2	1.3
Total	**150**	**100**

Source: Survey findings, 2015

The survey revealed that 50.7% of the smallholder beekeepers were at the age range of 36 to 53 years followed by those of at the age range of 18 to 35years which is 35.3%. Also smallholder beekeepers those their age range between 54 and 71 made 12.7% and those at the age range of 72 to 89 who makes the total of 1.3% of all bee keepers as shown in table 4.1 above. This is significant due to the fact that in most countries in Africa, this group is usually productive; it is the working group that supports the older people and children in their families. So this indicates that agriculture and beekeeping activities are the source of income for youth and the middle aged dwellers of these three villages of Bukombe district. This age structure has implication for the level and redistribution of economic resources. From economic point of view, the working population is a factor of production and its capacity and skills level contributes to the productivity of the national economy (Agandwa, & Haidari, 2014).

Furthermore, the national population and housing census (2012) revealed that the working age in most rural areas range between 15 and 64 years of age. These findings implicate that beekeeping can be practiced by different age groups whose most are actively productive economically but also who has already started families and had to meet their financial obligations. However, in most cases beekeeping considered as hobby and an activity for aging people. So, by having large number of younger ages engaged in beekeeping implicates that the sector is regarded as a better occupation to the majority of rural population in these three villages.

Since beekeeping in the villages covered by this study is traditionally practiced, the younger age may be more likely to adopt modern practices and improve the honey value chain by adding more value to their products (honey). By upgrading their product and ensure quality they can be able to have power to negotiate better price and terms of trade, seeking new markets and controlling product quality.

4.2.1 Distribution by Gender

Table 4.2: Respondents by Gender

Sex of respondent	Frequency	Percentage (%)
Male	144	96
Female	6	4
Total	**150**	**100**

Source: Survey findings, 2015

It was discovered that 96% smallholder bee keepers were men where female counts only 4%. The results from table 4.2 imply that, beekeeping activities in Bukombe district is dominated by men. This is relevant due to the nature of beekeeping activities. Since most hives in the district are traditional, they are required to be sited in tall trees where it becomes difficult for women to climb. Also during the harvest, most women get feared of attacked by bees.

Furthermore gender responsibilities such as pregnancy and lactating, and fear of attacked by wild animals as hives are kept either in forest reserve or

game reserve, exclude women to participate fully in beekeeping. The study carried out by Namwata , Mdundo and Malila (2013) in Hanang district discovered that, beekeeping activities are conducted in thick forest where hives are traditionally sited in tall trees where woman cannot climb easily.. For the case of Bukombe district almost all the beekeepers kept their hives in Kigosi Game Reserve. So, women who involve themselves in beekeeping activities are either assisting their husbands or keep modern hives to their garden where beehives are placed in short trees or at stands which are easily to manage.

Bees can be kept by women and men of all ages due to the fact that the activity does not require daily care and it can be done in part time basis. In Ethiopia women engage themselves in beekeeping activities confidently but they seek assistance from men for colony transfer, queen catching and harvesting. Women are commonly use the produce of bee in making the secondary products, for example honey wine making in Ethiopia is done by women, women also play role in honey selling (Adgaba, Bekele & Ejugu, 2007).

There has been also little involvement of women in auto repair mechanics and in mining activities and almost in all works that considered being difficult, dangerous and dirt. This is because all these jobs require hard physical labour, also equipment and environment are sometimes dangerous. For example in a mine where one is being suspended 1000s of feet underground often this will be torturous to a woman. That’s why most women who work in

mining ended up being office attendant, security officers and other unskilled labour.

The study conducted by Magutu (2010), on *Women and Access to Employment in the Tanzanian Mining Industry* with a sample size of 30 found out that,94% of employees at Barrick North Mara gold mine were men and 6% were women of 34 years and under. The reason was because most women did not have the qualification for mining post, the study (ibid) revealed that in university of Dar es salaam sociology course is studied by most female students making 92% where mining engineering female students counts only 2%, geology and mineral process engineering female students were only 3% respectively. All these is because its considered as masculine works and working environment also become difficult for women to work in mining. For example in most pits there are no facilities (toilets and bathrooms).

However, the number of women working in mining and other works that are considered by the society to be men works is increasing due to improved technology and working environment. For the beekeeping activities, the use of modern hives and availability of protective gears can be easily to women as it does not require be sitting in tall trees and harvesting during the day. The hives can be put on a stand in the garden, or in short trees as shown in figure 1.4 below. So, apart from gender roles and culture, all works can be performed by both women and men.

Figure 4.1: Honey harvesting in modern hives using protective gears

Source: URT, 2012

Table 4.3: Respondents' level of education

level of education	Igulwa village		Buntubili village		Msonga village	
	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)
Primary education	37	74	49	98	38	76
Secondary education	2	4	-	-	6	12
University education	1	2	-	-	-	-
Never been to school	10	20	1	2	6	12
Total	**50**	**100**	**50**	**100**	**50**	**100**

Source: Survey findings, 2015

The results on the education level of respondents involved in honey value chain shows that 74% of the smallholder farmers' highest level of education in Igulwa village, 98% of Buntubili village and 76% in Msonga village is primary level education. Those with secondary education in Igulwa village were 4%, none in Buntubili village and 12% in Msonga village. Respondent with university education counts only 2% in Igulwa village where none were found in both Buntubili and Msonga villages. This implies that most of the household head are literate. These results are also supported by the result of 2012 census which revealed that about 72% of agricultural household heads are literate (National Bureau of Statistics, 2013).

However, exposure to education is important as it can help the farmers to adopt new technology so as to increase the productivity. Most of beekeepers in Msonga village have started adopting modern beekeeping. Also it was observed that one of the beekeepers in Msonga and Igulwa villages had moved to a stage of processing honey, packing, lebbling and branding. The brand name is "Kigosi Asali Halisi" (Kigosi Honey) and Bukombe Honey. Some respondents also has been participating in different national trade demonstration like "nanenane" and "sabasaba" and this has made them to learn how others in the same sector are doing and makes them to improve their production.

When smallholders has good knowledge of producing quality product and ability to look for the good market of their products(honey), it will give power to the smallholder beekeeper to decide when to sell, to whom and at what

price. Also education has helped the majority of beekeepers in these three villages to stop heating honey and increased the quality of honey as they sell row honey currently which considered better and organic.

The study by IFAD (2011) suggests that there is a need to make investments in the education and skills of rural people so that they themselves can make the most of new opportunities to engage in agricultural markets or work in non-farm industries. This also may help the farmers in managing the risks they face, learn new techniques for improving their productivity, and market their products. For those who has been attending training on modern beekeeping, processing and packing during this study revealed that their production has increased as they added number of hives but also the quality of the honey produced has improved as they wait until honey has reached its maturity, grading honey during the harvest and ensuring the use of bee smoker despite of fire.

If farmers will produce enough to meet the demand of the market, adding value to their product (honey) as a primary actor in honey value chain, they will be receiving better price and enjoy the fruit of their labour. This findings is supported by the findings of the study by Mmasa (2007), *on Economic Analysis of Honey Production and Marketing in Hai Kilimanjaro* with a sample size of 80 respondents, which discovered that when farmers has attained a certain level of literacy increases opportunities to adopt honey production and marketing techniques in terms of resource and time use as well as knowledge and skills.

However, this is possible if the government and other stakeholders in honey value chain will join efforts together to provide training to small holder beekeepers and link them with other sectors. Production of honey in Bukombe district is traditionally practiced, the equipment used for harvesting and storing honey leads to reduce the quality of honey produced; and this contribute much to the lower price. So farmers need more education on modern beekeeping which will result to best yields.

4.2.2 Marital status of respondents

Table 4.4: Respondent's marital status

Marital status	Frequency (f)	Percentage (%)
Single	3	2
Married	142	94.7
Separated	2	1.3
Widow/widower	3	2
Total	**150**	**100**

Source: Survey findings, 2015

The results from the table4.4 show that, the majority of respondents that is 94.7% are married. Single respondents were 2%, separated 1.3% and widow/widower 2% respectively. This implies that the majority of married men perform beekeeping activities. This implicates that though married men has family obligations, they involve themselves with beekeeping as it is not

time consuming. They also regard beekeeping as a source of cash income to meet various family's needs such as school fees, cloth and hospital bills.

4.2.3 Occupations of Respondents

Table 4.5: Respondents' occupation

Occupation	Frequency	Percentage (%)
Farmer	144	96
Entrepreneur	6	4
Total	**150**	**100**

Source: Survey findings, 2015

Table 4.5 shows that almost all respondents questioned were smallholder farmers who makes the total of 96% of all respondents, and 4% were both small holder farmers and entrepreneurs who buy honey from the beekeepers and sell to wholesaler traders and small amount to retailers. This has no doubt as Tanzanian economy mainly based on agriculture, it accounts for about half of the national income, and it provides raw material for the industries and a market for manufactured goods. It is also dominated by smallholder farmers (URT, 2013). Also in sub-Sahara Africa, agriculture is the only sector that employs the majority (Proctor, 2014). According to FAO 2013, revealed that women constitute the main part of the agricultural labour. Majority of smallholder farmers in these villages keeps bee because this non-farm activity is not time consuming and not fulltime activity but also the profit gained from honey selling.

4.2.4 Land ownership

Majority of interviewed respondents almost 97.3% own land, where 2.7% do not have land. Most of the respondent revealed that they bought the land they own, others through inheritance and other acquired it either by cleared bushes, given by village authorities or got it free).

4.2.5 Number of acres owned by the household

Table 4.6: Acre owned by respondents (in Acres)

Acre range	Frequency	Percentage (%)
1- 5	57	38
6- 10	53	35.3
11- 15	15	10
16- 20	9	6
21- 25	2	1.3
25 and above	11	7.3
None of the above	3	2
Total	**150**	**100**

Source: Survey findings, 2015

Majority of smallholder farmers 38% as shown in table 4.6, have plot farm size of 1 up to 5 acres; where 35% own from 6 up to 10 acres. Other respondents 10% own 10 to 15 acres where who own up to 20 acres are 6%. Also 1.3% own 21 to 25 acres where who own above 25 acres are 7.3%. Also who hire farms for cultivation makes the total of only 2 percent. The

major crops are maize, rice, cassava, sweet potatoes, groundnuts, and beans, vegetables like “mchicha”, cabbages, tomatoes onions, and fruits like oranges, water melon and mangoes. Other crops are cash crops like sunflower, tobacco and cotton. This imply that there are good source of bee forage so bees do not have to fly far to look for food.

Bees fly two metres to find food, so if they can find nectar around honey production are likely to increase. Maize and cassava occupy the greatest share in Tanzania as well as sweet potatoes (FAO, 2013). However the yields per year do not exceed 5 bags for those who own 1 up to five acres per annual and not more than 70 bags to those who own 25 and above acres. These imply subsistence farming where most of produce is consumed by the farmer and their families. The study by Costa, Crovetto and Bocchi (2013), found out that the standard yield for maize range from 2-5 bags when the harvest is good. This is due to the fact that agricultural activities in Tanzania are dominated by smallholder farmers cultivating an average of farm size of 0.9 to 3. About 70 percent of Tanzanian crops area is cultivated by hand hoe, 20% by ox- plough and 10% by tractor (URT, 2013). For cash crops like cotton and tobacco, yield range between 250 kg to 700kg.

The use of tractor to cultivate land leads to loss of valuable natural habitats and loss of wild flowers which are bees pasture. Wild bees require native wild flowers present in semi natural habitats to provide them with necessary floral resources, so when these are lack bees can go hungry and decrease the production. Although sunflower can be an alternative bee pasture, it can only

last for weeks; bees must have access to nectar and pollen all the time in the year to produce honey otherwise they will fly away to look for food.

So as farming becoming intensified bees can go hungry due to loss of their foraging resources. Also this will lead to low supply of honey in the value chain which results to low income earn among the beekeepers as their hives will be empty without bees or harvest low yields. This impact in the household of the beekeepers may cause food insecurity due to the fact that what is produced from farm is only consumed by the family and sometimes not enough.

In most time farmers use traditional way of farming like the use of hand hoe, unimproved seeds with no application of fertilizers which always results to low yields. Most smallholder beekeepers receive low price of their products (honey) to meet the needs of the family such as food, cloth and school fees. And this will make the smallholder beekeeper to be deprived actor in honey value chain.

4.2.6 Total numbers of hives owned by household

Table 4.7: Hives per household

Range number of hives	Frequency	Percentage (%)
1- 50	34	22.7
51- 100	34	22.7
101- 150	16	10.7
151- 200	14	9.3
201- 250	7	4.7
251- 300	9	6
301- 350	5	3.3
351- 400	6	4
Total	**150**	**100**

Source: Survey findings, 2015

From table 4.7 it was discovered that most of household owns 1 to 100 hives. This is supported by the result which showing that 22.7% have the range number of hives from one up to hundred respectively. 10.7% owns up to one hundred and fifty hives.9.3% owns up to200 hives,4.7% have up to 250 hives where those who owns p to 300 hives makes 6% and 3.3% for those who owns up to 350 hives. Result shows that 4% owns up to 400 hives, 2% 450 hives and 0.7% for those who have up to 500 hives. Those who have more than 500 hive accounts for 8 percent. Also for those who do not have any hive they make 6 percent. This implies that almost all smallholder

farmers keep bees. Almost all of these hives are kept in Kigosi game reserve (92.7%), and some are kept either in the farms or in the garden of the respondents (1.3%). These findings also match with the findings of the study conducted in Njombe and Siha districts respectively by Mbeyererwa 2014, which revealed that majority of farmers, were also using traditional hives.

This implicate that most hives in these three villages are locally made and most farmers engage themselves also in non- farm activities. In most household bees are kept due to the fact that beekeeping is practiced as hobby and a traditional activity that has been inherited over generation and as one of best practices that have been recognized to improve livelihood of poor farming communities without much investment cost (Kimaro, Liseki, Mareale, & Mrisha, 2013).

However, it was revealed that majority of farmers' uses traditional hives because they are cheap to afford either by buying or manufacturing. One of the respondent in Msonga village revealed that the box hive cost between 67000tsh up to 71000tsh which is expensive for smallholder beekeeper to afford. Furthermore, traditional hives are said to produce low yield of honey. The study by Agonafir (2005) in Ethiopia on Honey and Beeswax, also discovered that traditional beehives leads to low yields of average five to six kilograms of honey harvested per hive while the modern hive produce an average of 15 to 20 and above kilograms per hive.

Despite of producing low yields of honey, the traditional hives known as "gogo" hive in Swahili language may lead also to deforestation. Smallholder

beekeepers may need to increase their number of hives, and beginners of beekeeping all of them may cause loss of many trees on the perception that beekeeping can be started with minimal investment and traditional available materials as indicated in FAO report of 2012.

4.2.7 Type of house owned by household and its characteristics

Table 4.8: Respondents housing material

Type of house owned by respondent	**Igulwa village**		**Buntubili village**		**Msonga village**	
	Frequency (f)	Percent (%)	Frequency (f)	Percent (%)	frequency	Percent (%)
Grass thatched house	9	18%	3	6%	-	-
Block house	1	2%	-	-	1	2%
Bricks house with iron roof and concrete floor	22	44%	17	34%	25	50%
Bricks house with iron roof and earth floor	10	20%	22	44%	14	28%
Mud house with iron roof	8	16	8	16%	10	20%
Total	**50**	**100**	**50**	**100**	**50**	**100**

Source: Survey findings, 2015

Majority of the respondent 44% of Igulwa, 34% in Buntubili and 50% in Msonga villages in Bukombe district, lives in bricks houses with concrete floor and iron roof. Others, 20% in Igulwa village, 44% of Buntubili and 28% of Msonga villages' lives in bricks iron roof with earth floor houses. Those who live in grass thatched houses in Igulwa village accounts for 18% and in Buntubili village 6%. Also 16% had mud wall houses with iron roof in Igulwa village and Buntubili village respectively while in Msonga village, 20% owned this type of houses. The study found that only 2% of the respondents had block houses in both Igulwa and Msonga villages. There were no any respondents who had grass thatched house in Msonga village during the study, and none in Buntubili village with bock houses. These results are against the results found by EDI study on Survey on Poverty Welfare and Services in Bukombe District 2006, which revealed that majority of the households in the district, were living in mud, grass thatched and earth floor houses.

This findings implies that majority of smallholder farmers have modern houses. The 2012 census revealed that in Geita regions 93,853 of the population have baked bricks walls houses,187,251 houses are iron sheet roofed and 76,146 people lives in houses with earth flooring material(NBS,2013). The reason is that, other constructing materials like cement is very expensive for everyone in the village to afford. During this study, 50 kilograms sack of cement was sold 22,000Tsh, which is expensive for a smallholder farmer to purchase. Also availability of clay soil in the district and

forest where the firewood for burning bricks obtained make it easy for the majority to have access to bricks.

The material used for housing construction is an indicator of economic status of the household. Most of the poor household uses mud or sun dried bricks and thatches with grass, where respondents who are economical well construct their houses with baked bricks and iron roofing. Also the study observed that respondents who reside in remote areas where having grass thatched houses compared to those living near to the main road. It was also revealed that most smallholder beekeepers with good houses constructed them by the income obtained after selling honey. Therefore, those who are at least economically better have the ability to negotiate the price of honey and also produce the better quality of honey. This is because they have already started benefiting from honey selling and seeking to more advanced way of honey production.

Furthermore, the availability of small scale gold mining at Kerezia hamlet in Buntubili village contributes to the built of modern houses in the village. However, bricks baking has been claimed to contribute to deforestation due to the fact that, it involves cutting down trees for firewood. Although others have started using agricultural end products like paddy dust, cutting down trees has an implication in honey production because it destroys bee's fodders.

4.2.8 Dependency level at Household

Table 4.9: Dependent ration per household head

Dependent number	Frequency	Percentage (%)
1- 5	100	66.7
6- 10	40	26.7
11- and above	6	4
Non dependent	4	2.7
Total	150	100

Source: Survey findings, 2015

Majority of respondents 66.7% of the household head had direct range of 1up to 5 peoples depending on him or her for food, shelter clothing and other amenities. Also, 26.7% had about 10 dependents where those with more than ten dependents made 4% of this study and those with no dependent accounted for only 2.7%. Most of the dependents were the children and grandchildren of the household head who were at primary school and secondary schools. Others were those who have not been enrolled to school yet. Only one respondent from Igulwa village had a child at the university. This indicates that, there is more number of consumers than producers. When the household has many dependents it end up consuming everything produced and sometimes it may not be enough for the household to consume; and in this situation there are no savings at the household.

Majority of farmers sell their crops and non -farm products to earn their income. So when there are big numbers of dependents in the households make it difficult to have access to non -food demands like clothing, school fees, hospital bills, sugar and farming tools. However, this study observed that majority of the interviewed respondents had bicycle, bed, mattress, table, chairs, radio, axe and hoes. Bicycle and axes are very important assets in traditional beekeeping and in the three villages of this study because bicycles are used to transport honey from the forest to the market or home. Also axes are used to chop logs that are used for hives making. The study also revealed that out of 150 respondents interviewed, 4% of them had motorcycle, plough, ox-cart and cooking gas.

So despite of other crops to fail to ensure income it seems that beekeeping has significant effect to the livelihood of the beekeepers of Igulwa, Buntubili and Msonga village in Bukombe district. Therefore, this implies that when the household has many dependents they can help the household head in farm and non- farm activities. For example beekeeping activities can be performed by people of different age; therefore even the children and women can assist in honey production especially during the harvest time when the labourers are required. Since both girls and boys ride bicycle in these villages, they can help in transporting honey from the forest to the village as honey harvest season starts on June when many primary and secondary schools in Tanzania are closed.

However, when the number of dependent is too big, it become difficult for the household to meet the needs of the family especially food and non - food demands such as school fees, sugar, clothing, farming and beekeeping tools such as hives, packaging materials, hoes, axes, harvesting cloths, and plough.

4.2.9 Major source of energy used by household

Table 4.10: Source of energy used by household for cooking

Cooking energy	Frequency	Percentage (%)
Firewood	97	64.7
Charcoal	52	34.7
Other	1	0.7
Total	**150**	**100**

Source: Survey findings, 2015

Table 4.11 source of energy used by respondents for lighting

Source of light	Frequency	Percentage (%)
Kerosene	31	20.7
Solar energy	26	17.3
Torch	7	4.7
Other	86	57.3
Total	**150**	**100**

Source: Survey findings, 2015

This study also interested on finding out the major source of energy used by the household. It was revealed that 64.7% of respondents' uses firewood for cooking, 34.7% uses charcoal; where 0.7% uses kerosene stove and bottle gas as indicated in table 10.4 above. The results show that the majority of household are more dependent on wood energy than other sources of energy. According to Tanzania National Energy Policy (2003) only 1% of the population in rural Tanzania has access to electricity, and where it exists it is too expensive for dwellers to access the services.

So firewood and charcoal are the dominant source of energy used by the majority (Kilahama, 2012); and this has implication to the environment as it increases the rate of deforestation do to the high consumption. Bees depends much on wild flowers and other forest vegetation for its food. The demand of charcoal as the source of energy to majority of the people in the country in general will lead to an increase of cutting down trees for charcoal burning; which will results to bees fodder to disappear. Bees will starve and reduce the production of honey.

Also the smoke from the charcoal burner may chase bees away. These will affect the income of producers and traders but also the consumer. If the production of honey will decrease the price will be high due to its scarcity and demand. So, the use of charcoal has impact on both the environment and on honey production.

4.2.10 Source of energy used for lighting

Table 11.4 above shows that, majority of respondent's uses connected battery and small solar home lighting kits for lighting. Almost 57.3% of respondents revealed to use that source of energy where 20.7% uses kerosene, 17.3% solar energy (Solar Home System) and 4.7% uses torch. This implies that the use of solar electricity in un-electrified remote village is widely recommended as a more viable alternative to grid electricity (Kweka, Synnevag, Massawe, Wambura, & Mignouna, 2012).

In recent years many small scale lighting products have entered the Tanzania market. These off grid lighting product can be easily installed, assembled and used without requiring assistance from a technician; they are also affordable and can be an ideal replacement for kerosene lamps (Lighting Africa, 2012).

Kerosene has been reported to cause several injuries to people due to explosion of stove that uses kerosene and cause of fire. The study by Lam, Smith, Gauthier and Bates 2013, on *Kerosene: A Review of household uses and their hazard in low- income and middle income countries* revealed that kerosene emissions may impair lung function, increase infectious disease like tuberculosis, asthma and cancer risk. This is because when burn kerosene may produce health damaging pollutants which may be harmful to the well -being of smallholder farmers and beekeepers. It's also expensive for smallholder farmers to afford daily as a litre sold up to 2500Tsh.

4.2.11 Source of Drinking Water

Table 4.12: Source of drinking water

Water source	Frequency	Percentage (%)
River/spring	15	10
Protected dug well	26	17.3
Unprotected dug well	100	66.7
Community well / pipe	9	6
Total	**150**	**100**

Source: Survey findings, 2015

Majority of the respondents covered by this study, 66.7% of them uses unprotected shallow wells as a source of drinking water. Other 17.3% uses water from protected source, where 10% gets from rivers, and natural spring and 6% from community wells (Table 4.12).so, these results imply that majority of people in these three villages have no access to clean and safe drinking water and cooking. Population and Housing census 2012 in Tanzania which revealed that, 25% in rural areas main source of drinking water is unprotected shallow wells. Access to safe drinking water in Tanzania is more found in urban areas where about 74% of urban household have access to drinking water compared to rural counterparts (NBS, 2013). UNICEF thematic report on drinking water 2011, found out that 84% of the population without an improved water source in the world lives in rural areas; where the large number is found in Sub-Saharan Africa. Another report of

UNICEF 2012, also found out that one tenth of global population still relied on unimproved drinking water where the majority lives in rural areas.

The source of drinking water is important because in Tanzania water borne diseases such as diarrhea and dysentery are dominant. Sources of water expected to be likely free from these diseases are piped water, protected wells and protected spring, other sources such as unprotected wells, river, dams are more at the risky to carry disease- causing agent. In Tanzania water provision problems are closely connected with poverty and health problems. The poor; where Igulwa village has a total number of 4579 poor people and 2687 at least poor people, where in Buntubili the number of poor is 1020 and at least poor counts for 3214 people (Bukombe Planning Department, 2015) and majority of who live in rural areas, have limited access to clean water for domestic use and adequate sanitation.

People suffer not only from limited access to safe water but also because of the need to carry water for over long distances (World Bank, 2012). Bees also need water to cool hives during hot season and thinning honey to be fed to young insects. So, clean and safe water is very essential to farmers and beekeepers for their well-being and as it also used to clean the containers used for packing honey.

4.2.12 Savings Account

Table 4.13: Respondent's savings accounts

Savings account	Frequency	Percentage (%)
SACCOS	15	10
Bank	12	8
None	123	82
Total	**150**	**100**

Source: Survey findings, 2015

Table 13.4 above shows that majority of the respondents, 82% do not have savings account, only 10% have savings in SACCOS and 8% bank. The reason they don't have savings account is that they don't have money to save and others were afraid that their money may get lost. They also revealed that there are many procedures to follow and also found sim banking such as M- pesa as easiest way to save their money. Access to basic banking services in Sub-Saharan Africa remains limited, and lags far behind even other parts of the developing world (Dupas, Green, Keats, & Robinson, 2012). In their study (ibid) in Western Kenya, found out that main reasons people did not begin saving in their bank accounts are that: they do not trust the bank, service was unreliable, and withdrawal fees were prohibitively expensive.

The study by Piprek (2007) on *Linking with Savings and SACCOs to expand financial access in rural areas*; revealed that by January 2001, there were

646 registered SACCOs, of which 60 percent were rural. The total shares and deposits of the 40 percent urban SACCOs far exceeded that of the rural SACCOs. This proves the extreme level of poverty of the rural poor, which mostly eke out an existence through smallholder farming or small/micro enterprises, whereas members of urban SACCOs are often salaried income earners.

The study also revealed that, SACCOs are often limited in terms of their capacity, access to capital, and outreach. There have also been weak linkages between the informal financial institutions and formal banking institutions. When beekeepers spend all of their income makes them to borrow money from money lenders and honey traders who at the end blackmail them by asking them to sell honey to them in low price.

For small holder farmers and beekeepers to manage to stay in honey value chain as primary actor, must comply with chain demand such as adding value to honey, and producing quality product(honey). Also there is an urgent need to establish laws, policies and regulations that will favour all actors in the chain compared to existing ones which does not consider the smallholders. This will lead to higher price of honey they sell and they will be able to save either in bank by buying asset like cow, goats, farm and houses.

4.3 Honey value chain stakeholders in Bukombe district

After analyzing the demographic characteristics of the respondents and their economic profile, the study focused on identifying different stakeholders in honey value chain in three villages of Bukombe district which were Buntubili, Msonga and Igulwa. So, this part addresses the first research question which where interesting to find out roles different actors play in honey value chain. From stakeholder analysis the study identified the main actors/stakeholders in honey value chain in the district. These are as follows:

Smallholder Producers; these are smallholder farmers who farming method are traditional. They also practice traditional beekeeping. They tend to owns plot of land not above 5 acres, their farming rely mainly on family labour and what is produced part of it is normally consumed by the family. However, according to FAO (2014), they produce four-fifth of the developing countries food.

The role played by this group is to conserve and managing honeybee and bee fodder plants in village and private land. Other includes establishment of management of village bee reserves, the beekeeping reserves that has already established during this study were Nambubi, Nyamakunkwa and Bukombe. Negotiation on establishing another bee reserve in Iyogelo village, were on process during this study. Other roles include protecting bees from fire, diseases, pest and pesticides, setting quality standard for bee products and value added products. Also it is their role to use bee smoker and bee protective cloth to ensure sustainable conservation of ecosystem and to

make traditional bulk hives and seeking for permit to enter to the game reserve and forest to cite hives to trees, process honey at the initial stage and transport it from the forest to the village or direct to the market.

Traditional beehive makers; these are artisans and elder people who have knowledge and skills to make bee hives. They know type of the tree to make good hive which will last longer. Apart from making bee hives they also engage themselves in agriculture. They are smallholder farmers though they engage themselves in beekeeping activities especially bee hives making. Their major role is conserving the biodiversity and to make hives.

Casual labourers; these are young men who are energetic and who are able to climb the tall trees in the forest. They normally site the hives on trees and harvest honey.

Transporters; these are truck owners; their role is to transport honey from the forest to the village for those who have bulk honey.

Buyers (middlemen); these are honey traders who buys direct from farmers and they are also financially well. They compete themselves in getting quality and quantity honey as well as in price they offer small holder beekeepers. Their role in honey value chain in the district is bulk purchase of honey from beekeepers. Collecting honey to their stores and sell it to the exporters. They are also responsible for quality insurance as it was revealed during the discussion with them in Runzewe town. They also provide advance payment to beekeepers before the harvest.

Exporters; these are traders who buy bulk honey from the middle men traders and sometimes contacted farmers directly. They are familiar with honey market demand, and price. Most of them are coming from Rwanda and few Kenyans. Purchasing honey from the middle men and export it. Their role is to add value to honey by processing honey, packing and labeling for final market.

Local government; it was established in 1980s, and it divided in both urban and rural authorities in mainland Tanzania and Zanzibar. Urban authorities consist of city council, municipal council and town councils. Rural authorities also consist of district council with township councils and village council authorities. District council coordinates the activities of the township authorities and village councils which are accountable to the district for all revenues received for day to day administration. District Executive Director is the head of paid service in the district authorities where in urban authorities the head is Town/Municipal/ City Director (URT, 2006). The role played by this actor in honey value chain in Bukombe district is to provide training modern beekeeping, permits to enter council's forest, permit to transport honey and monitor the beekeeping activities in the district. It is also supposed to enforce law, coordinating beekeeping extension services with other related sectors. Local government is required to follow up title deeds for apiary sites, managing extension demonstration apiaries and ensure joint management of bee reserve.

Central government; plays the following roles: making policy and legislation, responsible for revenue collection, promotion of local produced honey, observe laws, rules and regulations. Also it has the role of planning and budgeting, sector financing, management of bee reserve and apiaries human resource development, provision of extension services and stakeholder coordination. Other roles as per Beekeeping policy, central government is responsible for coordinating beekeeping sector with other stakeholders, ensuring international cooperation and financing investment in beekeeping. Investment in beekeeping has already been started as the government provides the sector 150,000,000Tsh annually since financial year of 2007/2008 to date for training of beekeepers, providing modern beehives to beekeepers groups' beginners and buying harvesting protective cloths (URT, 2011).

Some respondents from Buntubili and Igulwa villages revealed that they received 27 modern bee hives in their beekeeping groups in 2010 during Participatory Forest Management project under TASSAF II programme. The study also observed new modern bee hives at the district office which later was revealed to be of new beekeepers groups in Nampalahala village in Runzewe ward. Also, central government has the role of promoting bee products and marketing them. Other roles include application of biodiversity guideline in managing beekeeping activities, as well as the application of EIA in beekeeping investment. Furthermore, to ensure joint management of conservation area, monitoring and to evaluate beekeeping activities.

SIDO/NGO's; these are non-governmental organizations this actors are required to create awareness, train beekeepers on modern beekeeping, processing package and labeling and provision of loans and beehives to farmers. Also the beekeeping Policy provide for them the role of promoting gender roles, women empowerment and encourage the youth to engage in beekeeping activities. In Msonga village, SIDO provided training on honey processing and packaging but also hives loan which were known as "Kopa mzinga Lipa Asali". They also introduces honey processing machine but unfortunately they were not good as they were having rust which may contaminate honey and being toxic to consumer.

Consumers; these are end user of honey; they can be individuals, pharmaceutical shops or cosmetics industries. Their role is to purchase and ensure that they get quality goods. They consume honey for domestic use or industrial use.

4.4 Governance in Honey Value Chain in Bukombe district

Beekeeping activities in Bukombe district are governed by wildlife management act of 1974 and beekeeping regulation of 2005. Wildlife act is the very strong due to the fact that majority farmers are keeping their bees in game reserve namely Kigosi game reserve.

Basing on *Wildlife Act*, 1974 and the *Beekeeping Regulation* of 2005, the laws and regulation that govern honey value chain in Bukombe are as follows.

i. Beekeeping activities shall be conducted 7 kilometres away from the tobacco farm and any other farm that pesticide on land may be applied.

ii. The use of bee's smoker if beekeeper is intending to harvest bee product.

iii. No use of bulk hives.

iv. Any person practicing beekeeping must ensure the conservation of environment.

v. Registration of beekeepers and bee products dealer.

vi. Removal of honey from combs immediately after harvest, and shall be filtered.

vii. To ensure quality and standard of honey. In this section the standard required for honey processing plant is that consist of a store for bulk honey, made of tiled walls and floor; running water is also important, clean clothes and headgear regarding to hygiene of stuff. Other important things to consider in a processing plant include wire mish in windows and the packaging room which should have an area of at least six metres long and four metres wide and where possible have a show room. Smoking, eating and drinking in work and storage is prohibited.

viii. To ensure honey quality the farmers are advised not to mix honey with any foreign impurities, to keep honey free from fermentation and to avoid adulteration, also to make sure that it ready to harvest.

ix. Honey is supposed to be stored in non-rusting tight container and at a temperature that do not exceed 25oc.

x. Honey for retail sale shall be packed in hygienically clean, plain well sealed jars or any suitable containers which are food grade, acidic resistant, non-reactive to the content and cannot cause the transfer of foreign odours to the honey. For bulk sale it shall be packed in new drums.

xi. All honey produce placed in market shall be labeled.

xii. Transportation of honey shall be made during the night to avoid heat of the sun as it may affect the quality of honey. So, any beekeeper or honey dealer who fails to adhere to these regulations commits offence and shall be preceded in accordance with the provision of act.

xiii. No person shall enter into game reserve without a permit, also those who are keeping bees shall record the killing of animal or wounded animal found in their apiary areas or any other abnormal situation. Also carrying weapons is not allowed to the game reserve as well as the use of motorbikes.

These government arrangements are focusing on producing a better quality of honey and the conservation of biodiversity where the interest of farmers are left behind. Beekeeping policy does not state clearly how smallholder farmers can be assisted to produce better quality of honey. It does not either offer reward such as higher prices, modern hives and training to farmers who can produce better quality of honey. Lack of coordination between the government, farmers and honey traders makes smallholder farmer's weak actor in the value chain. This is because the chain is more controlled by the

consumers who always demand better quality products and honey traders who are aiming at profit maximization.

However from different discussion with farmers they revealed that the beekeeping regulations are difficult to follow since beekeeping are still done traditionally and most of them do not have access to harvesting tools and post harvesting tools. Majority of farmers have never received or trained on beekeeping policies or regulations. This supported by District Beekeeping Officer who admitted that. Farmers are more aware of wildlife management acts and forest acts than the beekeeping. From different discussion it was discovered that only three farmers in the district have the brand name of their produce (honey) while the remaining does not. Also the study revealed that there was only one respondent who had processing plant that meets the required standard.

4.4.1 By-laws governing Honey value chain Bukombe district

The study found out that the district has no any by-law or regulations apart from that of national wide. However in Msonga village, smallholder farmers had their own by-laws which were:

i. No smallholder farmers were allowed to harvest honey before June which is the month of honey harvest in the district. The objective was to reduce honey theft in the forest.
ii. Also, farmers were not allowed to sell honey before harvesting time. When farmers sell honey before the harvest time either they harvest

honey which has not yet being matured or they offered low price when harvest time arrived.

4.5 Criteria for quality honey in the district

The best honey is raw honey, because this is produced with minimal processing and has nothing added or removed, and must be ripened well. To maintain the quality of honey, it should be kept in an airtight container, stored in dry place as it absorbs moisture. This is because honey with high moisture content can turn bad and ferment. Quality of honey is determined also by its colour. Most of discussant revealed that the light colour honey is more of good quality compared to the dark one. It is mild and sweeter in flavour and preferred as table honey.

The study interested to find out the differences between the two produce of honey where by the clarification was given. The light coloured honey in Bukombe district, is harvested in June and it has ingredient of one flower of miombo vegetation known as “msima” in Sumbwa language. This is supported by the report of FAO 2012, on Bees and their Role in Forest livelihoods which name the light honey as monofloral honey because is of one plant and it’s named according to that plant. Also, the findings on the study of *Trade Industry Brief* (URT,2005), on the rationale- why produce honey in South Africa, which discovered that although honey is sometimes filled with various flavourants, the most common determinant of the flavour is the flora in the area where the beehives are kept.

Depending on the plantation in the beekeeping area the honey will have different tastes due to the fact that it is absorbed by the honeybee. So, if beekeeping is practiced in an area with sunflower plantations the output will be sunflower honey. This study observed one sunflower farm around Kigosi honey processing plant and two modern bee hives and it was revealed that the beekeeper intention is to harvest sunflower honey.

The dark coloured honey is harvested on October and it taste stronger robust. It is known as multi-floral and it has several botanical sources (FAO, 2012) and the indigenous call it "*mienze*". It can be fermented easily due to high water content.

TFDA and TBS are the responsible authorities for quality assurance of honey produce, but in the study area buyer and farmers are the one who determine the quality of honey. Farmers are required to sort and grade their honey according to its color and water content during harvesting time. But in most cases farmers mix the all harvested honey in a single container due to time and labourers available. Farmers know the better quality of honey they harvested, but there have been cases where farmers add water to the honey to increase the quantity. Also one honey trader revealed that he once bought honey mixed with sand.

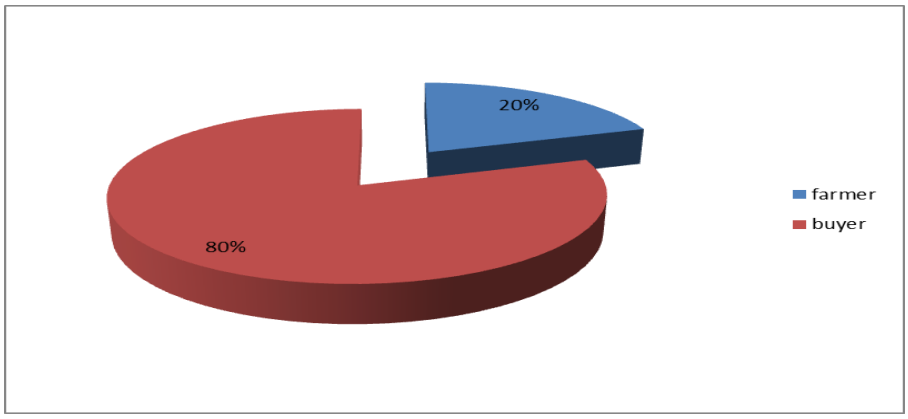
To be sure if the product (honey) sold is in good quality, determination is done locally as the buyer put his/her finger into the container filled with honey, or pour honey to check the colour and water content. No matter how

best the quality of honey is, always buyers have the final say in what price to offer. Smallholder farmers in the three villages are not yet in the position to claim for better and higher price to their products unless for those who added value.

Although, the beekeeping policy of 1998, provide for the beekeepers and farmers to ensure the quality of honey, it could have been better if the authorities responsible for quality assurance where the ones who had to prove the quality of honey. Despite of many people having experience on honey production and quality honey, eyes cannot be used as tool to measure because honey may contain other material than honey itself depending on what bees as feed on or the tools used to harvest or processing. For example the use of treated mosquito net used by some of farmers to filter honey may contaminate the honey and become harmful to the end user especially domestic users. Therefore, honey colour and water content are the major criteria of the majority of smallholder farmers in three villages of Bukombe district to measure honey quality.

4.6 Honey Market and Price

Figure 4.2: Results of who set honey price in the three villages



Source: Survey findings, 2015

The majority of interviewed respondents on who set honey price in the three villages, 80% of them revealed that it was the buyer; where 20% responded that smallholder farmer set the price of their product. These results imply that farmers do not have power on pricing their products (honey) despite of being the one who produces it.

Price setting is done by both farmer and the buyer and in most cases the buyers dominate the decision on what price to give to the farmer. Almost all of the interviewed respondent replied that buyers are the one who normally set the price of honey where smallholder holders farmers are not participating on setting honey price rather than negotiating on what buyers normally has to offer. Price of honey depends on many factors, but the quality and the origin of the honey are major factors in price setting (EPOPA, 2006). The main buyers of honey in Bukombe district are traders from

Rwanda. These traders buy bulk honey from the middle men in Runzewe centre. There is no honey collection centre in the district or nearby town, only individual stores that are owned by middlemen traders in Runzewe centre.

The light colour is more preferred than the dark honey as dark honey considered being heated and contaminated. The price of honey is 20,000tsh to 30,000tsh per 5litres container and 80,000tsh to 120,000tsh for 20 litres container where one litre when packed is sold 10,000tsh. The price is low during the harvest, and goes high before the next harvest. However the price may be below that or exceed that amount depending on a farmer's economic situation. During the study it was observed that, farmers who their economic status are at least good have power to bargain the price rather than those with low economic profile.

4.7 Honey harvesting, transportation, processing and packaging

Bicycles are used to transport honey from the forest to the village and for those with bulk honey uses cars. The best option for transporting honeys includes the plastic buckets with tight fitting lids. Using such buckets, beekeepers can easily categorize honey into qualities at time of harvest, and they can be used for the filtration steps during processing (Mbeyererwa, 2014). Also honey is supposed to be transported during the night to avoid being heated by sun during the day, however this contradicting with Forest Act which forbid transportation of forest produce during the night.

If anyone wishes to transport honey outside the district, is supposed to have a permit from beekeeping or forest office in the district. For the 20litres container of honey one is supposed to pay 2000tsh per each.

Before reaching the market the honey is supposed to be processed, packed and labeled. Almost all the farmer in the district use the local tools and sometimes dangerous to the honey consumer especially the domestic users. Other farmers admitted that they are using mosquito net to filter honey and put it in steel drums that are exposed to rust and in inappropriate facilities such as cooking oil gallons. This is because they have no other alternative due to the fact that, these facilities are not available to their areas or in near towns. So they have no choices but to use the available facilities which are against the law and regulations govern honey value chain in Tanzania.

According to MNRT (2007) report, the use of inappropriate processing methods and facilities leads to lower quality of honey. Also over heating of honey during processing leads to poor quality products, as well as the use of poor strainers (other farmers use mosquito net and piece of cloth). Delayed straining of honey after harvesting may cause granulation (forcing the beekeeper to heat honey). Processing of honey at those periods when air humidity is high makes honey liable to ferment. Honey processors lack adequate processing equipment which results into honey contamination. Unhygienic processing environment also lead to contamination of honey.

To ensure good quality, honey harvesting should be done during the daytime where every caution and care in hygiene can be taken to prevent contamination; however in the study area honey harvesting is done during the night. Equipment for harvesting honey must be clean and dry with air tight lids to prevent honey from absorbing air moisture, foreign matters or

robber honeybees. Honeybees must be brushed off from honeycombs. Brood combs and combs containing pollen should not be mixed with honeycombs (Honey mixed with brood can easily ferment). Harvested products should be stored in cool and dry storage facilities away from sun's direct heat (Beekeeping Regulations, 2005).

Most of the materials for honey packaging needed to be newly bought. The mainly size found in the district were of 450grams and one kilogram. The cost to acquire packages was reported as big challenge around. Only three respondents in the three villages had these recommended packaging material, two smallholder farmers in Msonga village who owns Kigosi honey and Runzewe honey labbels where the other respondent was from Igulwa village and the honey produced is named Bukombe (labbel). The remaining respondents use water bottles and cooking oil containers especially of 5 and 20 litres as shown in figure 4.2. below.

For those who have access to the package containers they bought them as orders from Arusha in quantities of dozens. The state of packaging materials is one of the factors in determining value-addition to organic products like honey. A value chain analysis by SNV 2005 in West Pokot Kenya, found that the beekeepers process their honey using very crude methods. They scoop honey, comb, wax, brood and pollen from the hive and mix it all together. The process is not hygienic, and the honey is so crude that it has no chance of being competitive in the market. The honey is typically stored in containers made of wood and leather, or in plastic buckets. The study also found out

that for retail sale, honey was filled in recycled bottles like whisky, mineral water, Ribena and tomato sauce.

Figure 4.3: Containers (20litres) used to pack honey in Igulwa, Buntubili and Msonga villages

Source: Survey findings, 2015

4.8 Extension services, capacity building and incentives

In Buntubili village some of farmers revealed that they had received cash and hives from central government through PFM projects which were implemented by TASAF II in 2011. Also SIDO has conducted training on honey processing and packaging in Buntubili and Msonga villages. Only few reached as they were in beekeepers groups for those who were not in groups did not receive training and incentives. Extension services are limited in the district as there were only two beekeeping officers available to serve the whole district during this study. This study observed many farmers from Igulwa and Buntubili villages have never been trained on modern beekeeping

or even received advices regarding their activities from government extension officers or any other.

The beekeeping department in Bukombe district revealed that all members of beekeepers groups in Msonga village has been trained on modern beekeeping which included harvesting by using bee smoker instead of fire, beekeeping regulation, honey processing and packing. Others were four leaders of each beekeepers group in Igulwa and Buntubili village perpendicularly. There were no actual statistics of how many beekeepers have received training in the three villages. Honey producers who have received training on modern beekeeping are said to produce good quality honey but also willing to change from traditional practice which considered being less profit compared to modern beekeeping. Few respondents who had contact with beekeeping officers revealed to this study that it only happens two to three times annually.

Almost all farmers do not understand what a beekeeping policy provides for them. Replying to this, District beekeeping officer confirmed it true and she said that it was because of limited fund and lack of bee extension officers that delaying them to conduct training and workshops to smallholder beekeepers. Apart from hives and cash given to these farmers by both SIDO and central government farmers in these villages have never received any incentives or training from agricultural extension services. This is due to declining of government involvement in agriculture and rural communities. Since 1990's through Structural Adjustment Programmes, developing country

governments, Tanzania being among them reduced their support to farming communities. Investments in rural infrastructure, input subsidies, marketing schemes, and services such as extension and research have all declined (IICD, 2014). Before SAP governments provided services to farmers and rural areas through commodity marketing boards and state-supported cooperative movements. The decline of these institutions has hindered economic development as well as farmers' access to local markets.

4.9 Honey selling contract

Smallholder farmers in three villages covered by this study do not sell honey by contract. No written document accessed during this study. Instead, smallholder farmers negotiate with honey traders or money lenders to give them money in advance before honey harvesting with the agreement of either selling honey to them immediately after harvest or returning back their money after selling honey.

This verbal contract in most cases is only between two people, thus the buyer and smallholder farmer or smallholder farmer and money lender and it is basing on experience of knowing each other and trust.

VEOs in three villages revealed there were several cases concerning this kind of contract where smallholder farmers were accused of breaching the contract. For example in Msonga village, there were a case of honey trader who lent money to honey producer on the agreement that after harvest he will sell all his honey to him; but refused and sell to other.

However, this study found out that smallholder farmers are the weak part in this kind of contract due to the fact they always offered low price at the end for the honey trader to cover the cost of value of money on the time being.

4.10 Beekeeping on livelihood of the smallholder farmers

Beekeeping provides better opportunity for the poor and landless smallholder farmers to gain income as in most cases it started with minimal investment. This off-farm sector also creates employment activities such as hives carpentry, honey selling, honey harvest and transporting. Beekeeping also supports agricultural production, forestry and maintenance of biodiversity (Ahmad & Partap, 2009).

Agriculture has lost hope among the majority of smallholder farmers in rural Tanzania in Africa. Climate change apart from other factors in most area of the country, especially long drought period challenging the productive agriculture due to the fact it is rain fed. Therefore beekeeping can be used as an alternative activity to earn income for smallholder farmers household.

Beekeeping in the district has helped many farmers to change their lives. Most of the discussant revealed that beekeeping is the reason why they have good houses, paying school fees for their children, taking care of their families. In regard to the question that were asking on how big the role of money earned from honey selling and what they are doing with the extra money from the selling of honey, majority revealed that they use it to buy land, cow, more hives also to pay for dowry for the second wife or third.

Report by FAO on Bees and their role in forest livelihood (2011) shows that, beekeeping keeps people out of poverty, and seen as important occupation especially to the rural communities, whose access to income is limited. According to Masuku (2013), apart from employment beekeeping provides pollination and conservation of biodiversity.

4.11 Position of smallholder farmers and their activities in honey value chain

This section answers research question two which was interesting on finding out in what ways smallholder farmers participate in honey value chain. The sub –questions included strategies effective inclusion smallholder farmers in honey value chain and how his/her position can be improved in the chain.

4.11.1 Farmers participation in honey value chain

Smallholder farmers are primary actor in the value chain in the district. They are the honey producers and sellers of honey. Their participation in honey value chain is seen

The main activities in the chain include making hives, sitting hives in trees, pest and disease control, harvesting, sorting, grading, packaging and transporting and trading. And these activities are conducted by various actors in the chain. Majority of farmers main activities are making hives and sitting them in the forest or farm, pest and disease control, harvesting and sorting and selling honey. Although other smallholder farmers grade and packaging,

only few observed in three villages; where only one in Igulwa village and Msonga village respectively.

Farmers are often at a disadvantage in honey value chains. They have little bargaining power vis-à-vis traders or input suppliers. They often lack market information, so they may not know how much their produce is really worth, and how much more they might earn if they were to transport it to the nearby town rather than sell to the traders who come directly to their houses or farm (Jama & Pizzaro, 2008). They are often involved only in producing honey, and not in processing it to add value. They lack an understanding of the market: they do not know who the other players in the market are, what happens to their produce after they sell it, or what types of products consumers want. They do not control the position on which they participate in the chain.

Rural areas in Africa are poorly served by infrastructure such as electricity and telecommunications. For the case of three villages covered by this study, it was observed that there was no national grid electricity yet. The supply of electricity in Bukombe district was on process during this study and generators electricity was the dominant especially in Ushirombo and Runzewe centres. They have limited access to information about prices, quality standards and other market-related information. All these factors make it difficult for smallholder farmers to benefit from the chains they are involved in. Farmers need to understand the players in the chain and the requirements of the different stages so they can produce the product which

every stage requires. That will increase their bargaining power in the chain, and improve the price they get for their product.

4.11.2 Strategies to effective inclusion of smallholder farmers in honey value chain in Bukombe district

Having discussion with different groups of farmers, most of them suggested the following strategies for smallholder farmers to participate effectively in honey value chain:-

i. Increase production, farmers revealed that what they are producing now is just a substance and it's not for commercial. The NBP1998, on the roles of different stakeholders in implementation of this policy provide for farmers to produce both substance and commercial honey. Bukombe district has the potential of producing 5000 tonnes annually but it has been reported to produce only 800 tonnes (National Beekeeping Program, 2001). Focus group discussion revealed that it was due to climatic change which has resulted to long period of dry season; these changes affect honey production as bees lack both sufficient food and water. Bees require water close to the hives as they need it for both cooling the hive during hot weather and diluting honey for young bees. Also the charcoal burning, bush fires and cutting of trees for both timber and mining activities said to contribute in low honey production as all these activities destroy bees fodder and nest. They revealed that if modern beekeeping equipment will be made available and in affordable price farmers can increase their yields. With modern beekeeping farmers may increase honey production as this is

supported by the findings of the study conducted in Wonchi district in Ethiopia by Beyene and Verschuur 2014, revealing that training on modern beekeeping and the use of modern equipment increased yield to Wonchi beekeepers.

ii. Adding value to bee product and trained on modern beekeeping. If farmers will be trained on adding value to bee product it may give them voice in the chain where they can have power on deciding on what price to sell their bee products, when and to whom they shall sell. The findings on the study by Berem, Obare and Owour (2010), revealed that the households that add value to its honey is guaranteed of higher prices than crude honey.

From observation during this study in three villages, this becomes realistic because farmers in these three villages sell 5liters of crude honey for 20,000tsh where those who add value to them sell 1litre for 10,000tsh so for five litre they get almost 50,000tsh. Training on modern beekeeping is also very important. Though most of farmers have indigenous knowledge on beekeeping, more training are needed in order to meet the international standard and power to compete with other actors in the same industry. Technology is very important tools for farmers to improve their production as well as their welfare as currently majority farmers still practicing traditional beekeeping.

Figure 4.4: Added value and packed honey from Igulwa village

Source: Survey findings, 2015

iii. Establishment of Collection centre and reliable market also can influence the smallholder position in honey value chain. Majority of beekeepers in Bukombe district sell their honey to middle men who store honey waiting for bulk honey buyers. Most of them have honey stores in Runzewe town. These stores do not meet honey hygiene quality as honey these stores keep other products like motorbike. When collection centre is available the farmer is sure of selling his/her products since the buyers will be available compare to the current situation where farmers store there honey to their houses waiting for buyers. Also this will help them to have one voice on the price and ensure quality of honey compare to the current situation where everyone has his/her own price depending on his/her needs.

iv. Formation of beekeeping association was proposed to be among the strategies that can lead to effective inclusion of smallholder farmers in the chain. Farmers will now have a place to discuss the issues they face and how they want them to be. They believe that through their association their voice can be heard and the government or any other governing body may react to their problems. One of the most effective ways for farmers to get understanding of the market situation and improved techniques for production is to work together in association. This will help them to develop networks for knowledge exchange and have influence on local and national policies (Beyene & Verschuur, 2014).

4.12 Challenges governing honey value chain in Bukombe district

This provides the findings of the question three of this study, which was interesting to finds out the major challenges governing honey value chain in Igulwa, Buntubili and Msonga villages of Bukombe district.

In all three villages covered by this study almost all, replied that honey market was the major challenge they were facing. This has led to every individual to sell honey in whatever price is given by the buyer. Also the wholesaler traders sometimes penetrate to the village to buy honey instead of buying to the middle men of which they offer low price to farmers so as to cover their transportation cost. Smallholder farmers lack information about markets, lack business and negotiation experience, and farmers association which can give them power they require to interact on equal terms with other actors in the chain, especially larger and stronger market traders (Magesa,

Michael & Ko, 2014). Moreover, internal market for honey found to be good than external market according to District Beekeeping Officer.

Buying power is concentrated on the hands of traders and consumers who refer good quality produce of which smallholder farmers can not comply due to the lack of appropriate technology and management skills (IIRR, KIT & Faida, 2010). Though bad and impassable roads are the one factor to access market, this is not the case in the study area as all three villages covered are found along Isaka- Rusumo road so they have an opportunity to contact market.

Unavailability of harvesting and processing tools was another challenge faces honey value chain in the three villages of Igulwa, Msonga and Buntubili. Almost of all respondent of the three villages covered by this study, revealed that they use outdated tools to filter honey, they don't have protective cloth instead they use heavy jackets, using mosquito net to filter honey and store it in already used container or bucket which is against to beekeeping regulations; but also reduce honey quality. Although beekeeping does not require high technology, the use of backward technology for honey production which includes traditional beehives results in low quantity and poor quality of honey produced. Modern beekeeping training is not readily available for farmers to adopt (Miklyaev et al, 2012).

Another challenges experienced were the destruction hives by charcoal and timber dealer who cut down trees and honey stealing. Livestock keeper also

reported to take farmers' beehives and uses them to feed calves. Although feeding domestic animals in game reserves is not allowed, respondents of this revealed that livestock keeper feed their animals in game reserve due to absence of feeding areas in the village. During this study the VEO's of Msonga and Buntubili villages confirmed to receive complains from beekeepers on honey theft and they were still working on it.

Corruption in two villages of Igulwa and Buntubili also revealed to be a challenge governing honey value chain. Most of respondents complained of being disturbed by game reserve officers even if they have permit for game reserve entrance. These government officers took away their harvested honey and destruct their harvesting camp. Though there are little to substantiate this corruption farmers are paying bribe to government officials especially game reserve officers. Also the study by Ingram 2014, found out that the larger trade intermediaries pay bribe to governmental officials in Cameroon so as to minimize bureaucracy and at border crossing and roadblocks.

Financial capital was also a challenge especially to beekeeping beginners and entrepreneurs. "Box hive cost up to 71000tsh per each, this is a lot of money for a smallholder farmer like me, "*I don't keep cows and yield to my crops goes down every year due to unfertile land and insufficient rain, where will I get that amount of money to purchase that hive?,"* Asked one of the discussant during the discussion in Msonga village. This leave small holder

farmers with no alternative rather than keep on using traditional hives which are highly discouraged due to its low yields.

Lack of a savings culture among beekeeping farmers even for income received from other activities apart from beekeeping deprive them from accessing financial services. Most commercial banks and Microfinance institutions require that client to have saved with them for periods of average three up to six months for them to qualify to apply for the available credit facilities. This helps the bank to be aware of the client's income, saving habits, cash-flow and other factors that are important when requesting a loan. This referred as a financial profile which most beekeeping farmers in the three villages are currently lacking (SNV, 2009).

4.13 Efforts to support beekeeping sector

There have been several efforts to support beekeeping sector in Tanzania. According to District Beekeeping Officer during this study revealed that, people are encouraged to use honey daily**;** where there is this say from Prime Minister of Tanzanian government *"a day without a spoon of honey is like a day without sunshine."*

Furthermore, it was revealed that beekeeping unit currently in districts is an independent department which receives 1000000TSH annually for office other charges (OC) from the government.

Also, central government through Tanzania Forest Service provides beekeeping training, beekeeping equipment like hives and protective cloth

and support beekeepers to take their produces to international trade like “Saba Saba” and other trade so as to promote their honey, exposure and find markets to their product.

4.14 Chapter Summary

This chapter discussed the major findings of this study, different strategies to improve the position of smallholder farmers in the chain and the challenges governing honey value chain in Igulwa, Buntubili and Msonga villages of Bukombe district. General conclusions of this study and recommendations are found in the next chapter.

CHAPTER FIVE

RECOMMENDATIONS AND CONCLUSION

5.1 Chapter overview

This chapter provides the summary of the findings discovered by this study and recommendations suggested by researcher so as to improve the position of smallholder farmers in honey value chain.

5.2 Conclusion

This study were focusing on the inclusion of small holder farmers in honey value chain, and its main objective was to find out how different policies, regulation and laws governing honey value chain in Bukombe district affect the livelihood of smallholder farmers. The study found that the regulating bodies in Bukombe district are less strict on applying different laws and regulation governing honey value chain. This has contributed the buyers to dominate the chain and farmers left on their own without training, incentives and access to market. No government structure that has helped farmers to get market or market price. Wildlife Act and Forest to be the only existing governance arrangement governing honey value chain in the district, the reason is that almost all farmers keep their hives in Kigosi game reserve. These acts restrict entrance to the game reserve and forest to perform any activity without a permit from Wildlife department or natural resource management department. Beekeeping in the district is male dominated due to the fact that it is still traditionally practiced by the majority thus 96% of the population studied.

The study also finds out that most farmers are disadvantaged in the chain and the most dominant is the buyer and consumer who always demand the better quality honey product. Farmers do not add value to their product (honey), they don't have farmer's organization and most of them lack bargaining power and information about market and market price so, they end up offered low prices.

However, through honey value chain farmers have been able to build good houses, paying school fees, buying land, cattle and more hives and other household needs.

5.3 Recommendations

This study recommends the following so as to improve the position of smallholder farmers in honey value chain:

i) Cooperation with other chain actors. It has been observed by this study that there is mistrust between honey producers and buyers. The farmers and traders fight over the price; some farmers may fraud the buyers by putting sand and combs at the bottom of the containers, and the traders may swindle the farmers by using inappropriate weights and measures. This can only be possible when each actor will recognize that the chain actors depend on one another to link the activities involved in the chain and accomplish them successfully.

ii) Adopting modern beekeeping; Traditional beekeeping is a male domain due to the fact that the activities involved such as sitting log hives high in trees and harvesting mainly at night become difficult for women to operate and endure. So there is a greater need for farmers to adopt modern

beehives and improved harvesting tools. Improved technologies should enable more women to become involved. Supporting linkages with credit providers will also help boost women's role in beekeeping activities.

iii) Different laws and policies should now be established to save the needs of the smallholder farmers. Most of policies and laws associated to beekeeping do not provide clear vision on how smallholder beekeepers can is benefited. The regulations setting do not give the alternative ways to farmers considering their situation and their state.

iv) Solving quality problem and improving packaging. This has doubt due to the fact that at each stage in the chain the value of the product goes up. So farmers must improve the quality and packaging of their product if they real want to compete in the value chain.

v) Banks and other micro financing institutions to consider how they can collaborating with local government to train farmers on financial management and also lend them money so that they can start small industries that are geared towards manufacturing of value added products like soap, candles, packed honey and confectionaries. This will greatly improve bee farmers' accessibility to markets, as well as increasing their income from hive products.

vi) Smallholder farmers should also be encouraged to form farmer's groups and actively participate in these groups so as to access credit and training.

vii) As a result, farmers require technology, financial capital, human capital, and organisation to avoid being excluded from the value chain.

5.4 Suggestions for further research

There is a need to conduct a study on the factors influencing adoption of value addition in honey products so as to establish the hindrances to value addition and hence be able to assist farmers in adopting value addition. There is also a need to conduct a research on the role played by the government and other stakeholders in honey value chain in enhancing the livelihood of the smallholder farmers in Bukombe district.

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APPENDICES

Appendix I: Smallholder Farmers (Interview Schedule)

GENERAL INFORMATION

1. NAME OF HOUSEHOLD HEAD…….

2. INTERVIEWERS NAME…….

3. DATE OF INTERVIEW……...

4. NAME OF VILLAGE……

A: HOUSEHOLD DEMOGRAPHIC AND THEIR OCCUPATION

a): Gender (tick (√) where appropriate)

1. Male ( )

2. Female ( )

b): Age …….

c): What is your highest level of education? (Tick (√) where appropriate)

NEVER BEEN TO SHOOL	
Primary Level	
Secondary Level	
University Level	
Other	

d): What is the size of your household. Thus the number of people lives in your house(tick (√) where appropriate)

None	
2	
3	
4	
5	
More	

II: HOUSEHOLDS ASSETS

i) Do you own land? If yes how many acres…….

ii) How did you get that land?(probe)

iii) What crops do you grow in your farm?.....

iv) How many kilos/bags do you get per acre annually / harvest?.....

……

v) Do you keep bees? If yes how many hives do you have? Do you keep your hives to your farm or to the forest?

vi) Do you live in your own house? (a) Yes(b) No, if no whose house? If yes, will you mind to tell the type of your house?

B: HOUSING CHARACTERISTICS

HOUSING CHARACTERISTIC	CIRCLE ONE
ROOFING MATERIAL	1. IRON SHEET 2. THATCH GRASS/ MUD 3. ASBESTOS/TILES 4. OTHER (SPECIFY)
FLOOR MATERIAL	1. CEMENT/CONCRETE 2. SOIL 3. TILES 4. OTHERS (SPECIFY)
WALLS	1. BRICKS 2. BLOCK/CEMENT 3. MUD AND POLES/STICKS 4. OTHER (SPECIFY)

C: WATER SOURCE AND ENERGY SOURCE USED BY HOUSEHOLD

MAJOR SOURCE OF	TICK THE ANSWER
DRINKING WATER	1.PIPE WATER WITHIN/OUTSIDE THE HOUSE 2.PIPE WATER IN THE VILLAGE 3. PRIVATE WELL (PROTECTED) 4. PUBLIC WELL (PROTECTED) 5.UNPROTECTED SOURCE (DAM, RIVER, SPRING)
COOKING FUEL	1.CHARCOAL 2.FIREWOOD 3.BOTTLED GAS 4.KEROSINE 5.OTHER
LIHGTENING ENERGY	1.KEROSINE 2.FIREWOOD 3.CANDLE 4.SOLAR 5.OTHER(NAME)

vii) Do you have any savings account? If yes, where?

A: STAKEHOLDER ANALYSIS

1. Who are the key actors in honey value chain in the district?
2. What roles do they play?

B: HONEY PROCCESSING

1. Do you sell crude honey or processed honey?
2. Do you have special place or building for processing honey?
3. Do you make branding of your honey? If yes, can I see the kind of label you use?
4. How do you pack your honey for selling? What type of packages do you use? Mention volume capacities.
5. Are processing facilities available to your place? If yes, are they affordable to smallholder farmer like you?
6. Are they available in retail shops or in wholesale shops?
7. What quality is required and who determine it?

C: HONEY MARKETING

1. Where do you sell your honey?
2. Do you have common place for selling your honey?
3. Who are main buyers?
4. Do you sell individually or as group?
5. How do you transport honey from home/forest/farm to the market?
6. Do you promote your product (honey)? If yes, what method do you use?
7. What are market regulations? Do you penalized if you fail to meet the

required regulation? If yes what type of penalty?

8. Do you have a license for selling and transport honey? If yes, how did you get it?

D: HONEY PRICING AND CONTRACT

1. Who set the price of honey? a) producer b) buyer c) government
2. What are the factors that govern the price of honey?
3. In what quantities by volume do you sell your honey and at what price?
4. Do you sell by contract? If yes, what are the conditions? Can I see the contract if you don't mind?
5. How do you perform contractual arrangements?

E: GOVERNANCE ARRANGEMENTS GOVERNING HONEY VALUE CHAIN

1. What are the laws and policies that govern honey value chain?
2. How do they affect the actors in the value chain?
3. Do these arrangements in any way consider the needs of smallholder farmers? If yes how?

F: REGULATIONS

1. What are by-laws govern honey value chain in the district?
2. Who set them?
3. How do they affect the actors in the chain?
4. How do these regulations influence smallholder farmers in the honey value chain in the district?

G: PARTICIPATION AND EXTENSION SERVICES

1. In what level do you participate in honey value chain?

2. Do you participate in honey price setting? If no, who set the price?

THANK YOU!

Appendix II: Checklist for Focus Group Discussion

I: SUSTAINABILITY AND LIVELIHOOD

1. How big role does income from the chain play in farmers overall livelihood?
2. What you use the extra money for?
3. Are there deliberate efforts for the management of bee resources?

II: CHALLENGES

1. What challenges do you face in honey value chain in the district?
2. How do you cope with these challenges?
3. Do you get any help from the government, NGO's or any other stakeholder to respond and cope with these challenges?
4. What do you suggest to be the solutions to these challenges?

III: GOVERNANCE ARRANGEMENTS GOVERNING HONEY VALUE CHAIN

1. What are the laws and policies that govern honey value chain?
2. How do they affect the actors in the value chain?
3. Do these arrangements in any way consider the needs of smallholder farmers? If yes how? What are strategies available to ensure effective participation of smallholder farmers in the value chain?
4. How can smallholder farmers improve their position in the value chain?
5. Are extension services available for smallholder farmer like you? If yes, are they sufficient?
6. Have you ever trained on modern beekeeping?

THANK YOU!

Appendix III: Key Informants Interview Schedule

1. NAME……
2. DESIGNATION……
3. AGE……..
4. SEX……...
5. DATE OF INTERVIEW……..

1. What does beekeeping policy provide for the role and different responsibilities of different actors in the chain?
2. What does the beekeeping policy say about honey market?
3. What are the government efforts in improving the bee sector?
4. What does the policy provide for smallholder farmers/beekeepers?
5. Are there any deliberate efforts for management of bee sector? If yes, will you mind to mention them?
6. The beekeeping policy is either supportive or conflicting with other policies in various aspects. Can you cite areas of conflicting in the following policies?
   i. Forest policy
   ii. Wildlife policy.
7. How do smallholders farmers helped to cope with challenges they face in honey value chain?

THANK YOU!

Appendix IV: Ethical Clearance form

ST JOHN'S UNIVERSITY OF TANZANIA

DIRECTORATE OF RESEARCH AND CONSULTANCY

INTERNAL REVIEW COMMITTEE

RESEARCH CLEARANCE CERTIFICATE

FOR MASTER'S AND DOCTORAL STUDENTS

Date of Review: 11th, March, 2015

Project title: **EFFECTIVE INCLUSION OF SMALLHOLDER FARMERS IN HONEY VALUE CHAIN IN TANZANIA. A CASE OF THREE SELECTED VILLAGES OF BUKOMBE DISTRICT.**

Researcher: NURU MANJEKA

Supervisor: Dr. E. NYANKWELI

Faculty / Institute / School: The Institute of Development Studies

Degree being studied for: M.A COMMUNITY DEVELOPMENT

This is to certify that the research proposal herein detailed has been examined and approved by the Internal Review Committee of St John's University of Tanzania

pp Dr. Angela Savage
Director, DRCPGS

Prof. C. Rubagumya'
DVCA