

**CHALLENGES AND OPPORTUNITIES FACING BEEKEEPERS ON
COMMERCIALIZING BEES PRODUCT IN TANZANIA-THE
EVIDENCE OF MVOMERO DISTRICT MOROGORO**

**CHALLENGES AND OPPORTUNITIES FACING BEEKEEPERS ON
COMMERCIALIZING BEES PRODUCTS IN TANZANIA-THE
EVIDENCE OF MVOMERO DISTRICT, MOROGORO**

By

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**A Dissertation submitted in fulfillment of the requirements for award of the Master
Degree of Business Administration-Corporate Management of Mzumbe University.**

2015

CERTIFICATION

We the undersigned supervisor certify that we have read and hereby recommend for acceptance by the Mzumbe University a research report entitled: **Challenges and Opportunities Facing Beekeepers on Commercializing Bees Products in Tanzania, the evidence of Mvomero District-Morogoro** in partial fulfillment of the requirements for award of Master Degree of Business Administration in Corporate Management of Mzumbe University.

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I, Dorice Dengenesa Munuo, declare that this thesis is my own original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

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DEDICATION

This work is dedicated to my child Precious Peter, together with my family for their endless encouragement, prayers, understanding and support. My sincere thanks go to my beloved parents Mr. and Mrs. N.K. Munuo for their moral and material support during my studies up to the completion of this report.

LIST OF ABBREVIATIONS

DITF	Dar es Salaam International Trade Fair
KAECO	Kanga Environmental Conservation Group
NBKP	National Beekeeping Programme
TTBH	Tanzania Transitional Bee Hive
TASAF	Tanzania Social Action Fund
UK	United Kingdom
URT	United Republic of Tanzania
SIDO	Small Industries Development Organization
SUA	Sokoine University of Agriculture

ABSTRACT

The purpose of the study was to identify potential challenges and opportunities facing beekeepers in commercializing of bee products in Tanzania, the evidence of Mvomero district. With a qualitative approach the study was conducted as a case study design. 52 beekeepers from five selected wards were interviewed on specific research questions about potential beekeepers, potential opportunities for beekeeping in Mvomero District; potential challenges facing beekeepers in commercializing bee products and measures to be taken to overcome the challenges facing beekeepers in commercializing bee products in Mvomero District.

The findings show that most of beekeepers in Mvomero district practice small scale traditional bee keeping. More recently than before, few beekeepers were transforming from subsistence to commercial bee keeping. The involvement of non-government organizations in beekeeping activities motivates beekeepers to shift from small traditional beekeeping to large modern bee keeping. Although the area is endowed with potential beekeeping natural resources like good forestry coverage there serious challenges still facing beekeepers in commercializing bee products. The challenges include lack of extension officers, expensiveness of the modern bee hives, poor social infrastructures to organize bee keepers, lack of package materials and market instability.

It is therefore recommended that measures suggested by beekeepers should be considered in order for commercial beekeeping to be realized in Mvomero district. These measures include: Market stabilization through special agents to encourage bee keepers, contract bee keeping to guarantee for market, capacity building to equip bee keepers with relevant bee keeping business knowledge, allocation of resident extension officers nearby the beekeeping zones to assure their availability, facilities like bee hives and storage facilities should be supplied to help beekeepers get them easily, harmonizing the social infrastructures to facilitate organized bee keeping

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Problem

Globally according to Akinwande (2011), beekeeping is an activity in which man rears honey bees and acquires their products. So long as a honey bee is an animal, the beekeeping is generally treated as a form of animal husbandry in a broader sense of the word, and consequently in many countries and regions it is supervised specifically by the administrative structure which controls livestock industry within the larger sector of agriculture. However, when honey bees are exploited as wild living things inhabiting forests, or when they are principally used for pollinating horticultural crops, the agency in charge of the forest management or that supervising horticultural affairs may become the administrative entity for controlling the matters of honey bees (Jones 1999). Moreover, when the beekeeping is taken up as strategic element in rural development programs, an agency in charge of development, on its own or in collaboration with agencies associated with agriculture, may promote beekeeping. Thus the existence of various possible ways of approaching the development of beekeeping that are different depending on what the honey bees are taken for or what is expected of them, is a characteristic of the beekeeping..

In case of United States according to USDA-ARS (2010) USA beekeeping is challenged by loss of colonies since has experienced its second worst recorded loss in the winter of 2009/2010 when a total of 33.8% of all managed hives perished between October and April. Several opinions show that modern beekeeping methods could weaken bee colonies to the point where they succumb to diseases that would otherwise have only minor impacts on colony health (Johansen and Mayer, 1990). Similarly, inability to find solutions to problems that plague the beekeeping industry, particularly those associated with the decline in agricultural areas, habitat loss and decline in plant diversity have also been associated with the plummeting populations of both feral and managed colonies.

In Nigeria, according to Akinwande et al, (2011) beekeeping has been part of the normal traditional agricultural enterprise of the Nigerian communities but honey production has always been on the decline and never satisfies local demand. The behavior of these bees such as regular absconding and aggressiveness has contributed to low colony establishment. Many people, found it difficult to work with the bees, study them or rear queens to improve them because they attack readily. For unexplained reasons, honey bee colonies are dying in record numbers throughout the world (USDA-ARS, 2010).

Furthermore in Nigeria, according to Babatunde *et al.*, (2007) Beekeeping for honey production has been identified as one of the activities that could serve both purposes of providing employment and reducing poverty among rural dwellers in Nigeria. Despite her potentials for honey production, due to excellent flora and fauna diversity, Ojeleye (2003), observed that, commercial beekeeping was almost non-existent in Nigeria, until recently. The country had relied on imported honey to meet the growing domestic demand for honey. Many farm families and rural dwellers run away from honey hunting because of the scare of honeybee sting. The local output of honey comes only from the few honey hunters and traditional bee farmers. These producers use traditional harvesting and processing techniques, which often lead to poor-quality honey.

In Kenya point of view, a memorandum was signed then for the development of the bee industry, establishing the position of a full-time bee officer and instructors. Four key outputs were expected out of this initiative, namely: provision of marketing facilities particularly in areas where trade in bee products was not already properly developed, improvement of quality and total quantity of wax produced, introduction of more suitable equipment to modernize operations, including double chamber hives and fireless smokers to reduce fire risks, thereby minimizing fatalities of bees when harvesting honey and increasing honey quality, and development of honey refineries for extraction.

More on in Kenya, to harmonize the quality of hive products in Kenya, standards have been set at national level for honey and beeswax that are intended to guide beekeepers on the permissible harvesting and processing procedures (Odwor and Aleke, 1997).

These standards not only demand that honey be graded by undertaking technical tests at the source but also insist that only plastic or stainless steel containers should be used for storage. Quality standards are nevertheless a new concept for traditional beekeepers who normally deal in crude honey. Much of what they produce is absorbed by a beer industry for which pollen and brood, technically regarded as impurities in honey, give added value to the brewing process (Clauss and Zimba 1989). Quality standards are therefore for the benefit of those who wish to penetrate external and export markets in which quality of a different nature is strictly enforced. Concerned about the fate of honey produced in Africa for trade on the world market, Wix (1989) and Wainright (1989) have suggested practical ways to produce good quality honey, which include educating beekeepers on the types of combs to harvest and improved processing methods to follow.

Case of Tanzania, Beekeeping in Tanzania has a long history from the time immemorial. Tanzania was an important source of beeswax during the Germany colonial period (Ntenga, 1976). Farmers were using traditional ways of keeping bee such as log, bark hives, reeds, pots and gourds while there were no formal sectors to regulate the industry. In the absence of cooperative and other forms of organization and farmers were using their own preferred methods of beekeeping, harvesting processing and marketing as a result the sector registered a huge number of disappointing results thus it did not grow any further.

Considering the benefit of Beekeeping, as it is a source of food like honey, pollen and brood; raw material for various industries like beeswax candles, lubricant; medicine like honey, propolis, beeswax bee venom and the source of income for beekeepers. Mlingwa and Mwakatobe, (2006) has demonstrated that, bee farming in Tanzania is mainly rural-based practiced by local beekeepers in the villages which result to low quantity and quality in the competitive market outlets.

The fact that beekeeping plays a great role in social economic development and environmental conservation the Tanzanian government intervene and beekeeping sector had been organized and development was coordinated by government and donors. Different policy and regulatory framework have been initiated to ensure sustainable

existent and improvement of the sector. Huge funding from donors has been disbursed to conduct a number of studies and develop a huge National Forest and beekeeping programmes.

In 1998 The National Beekeeping Policy, National Forestry Policy, National Wildlife Policy, Village land Act (1999), National Beekeeping Programme (NBKP, 2001), the Beekeeping Act No.15 (2002), and Tanzania Forestry Agency (2010), were established to enhance the contributions of beekeeping sector to the sustainable development and for the conservation and management of its natural resources for the present and future generations. Several Beekeepers organizations were established that supported the small beekeepers such as Tabora Beekeepers Cooperative Society (TBCS) with membership spanning throughout Tabora region and parts of Mbeya and Rukwa Regions.

The government effort through the use of better technology and ensuring quality and improving revenues through standardization of the beekeeping processes and marketing, the sector generates about U\$ 1.7 million in 2006 from the sales of honey and beeswax and employ about two million rural people (Mlingwa 2009).

Despite the government intervention in standardizing and developing the sector it's surprising to realize that this sector has not yet exploited to a significance level despite of its high potential as the current production per year is 90,000 tones while it is estimated that Tanzania can be able to produce about 138,000 tones of honey per year and earns Tshs. 1.8 trillion against the current production which earns Tshs. 27 billion (Mizengo Pinda, 2012). Thus, many small scale beekeepers have remained very poor which reveals that there is insignificant impact on the ground and call upon the researcher to investigate as to why.

1.2 Statement of the Problem

For quite sometimes now, 99% of beehives in Tanzania are still traditional low productive hives and beekeepers are using traditional methods (Mapolu, 2005). Promotion effort seems to have centered more on apiculture as a way to conserve forestry and biodiversity, business approach to beekeeping at producer level is almost absent while access to appropriate financial service is lacking, resulting too many constraints which hinder beekeeping development (Masue, 2010).

Among several places like Handeni, Manyoni, Kondoa, Kibondo and Tabora where average production per year is very high about 1,500 tonnes, Mvomero is not even in the list of medium-producing area in production of Beekeeping despite of huge opportunity due to the availability of vegetation like forestry and woodlands, the presence of agriculture land where substantial bee product can be harvested from agriculture crops like sunflower, green beans, mangoes coffee and sisal; coupled with indigenous knowledge in beekeeping (National Beekeeping Programme, 2001).

Therefore the researcher was interested on identifying the challenge facing beekeepers in Morogoro specifically at Mvomero District and identifying implementation strategies that will build on opportunities and mitigate the constraints.

1.3 Objectives of the Study

1.3.1 General Objective

General objective of the study was to identify potential challenges facing beekeepers in commercializing of their product in Mvomero district, Morogoro Region

1.3.2 Specific Objectives

Specific objective of the study are;

- i) To identify potential beekeepers in Mvomero District.
- ii) To identify potential opportunities for beekeeping in Mvomero District.
- iii) To identify potential challenges facing beekeepers in commercializing of bee products in Mvomero District.

- iv) To determine the measures and steps to be taken to overcome the challenges facing beekeepers in commercializing of bee products in Mvomero District.

1.4 Research Questions

The following are research question for the study;

- i) Who were potential beekeepers in Mvomero District.
- ii) What were the potential opportunities for beekeeping in Mvomero District.
- iii) What were the potential challenges facing beekeepers in commercializing of bee products in Mvomero District.
- iv) What were the measures and steps to be taken to overcome the challenges facing beekeepers in commercializing of bee products in Mvomero District.

1.5 Scope of the Study

The study was conducted at Mvomero district in Morogoro Region. The study was focused on the potential challenges facing beekeepers on commercializing bee products. The study took the case study design in order to guarantee a detailed and well explained study reliable for generalization.

1.6 Significance of the Study

The findings of this study will be useful to the government in providing the basic information about the underlying challenges that must be addressed to improve commercialization of bee products. This will be with respect to a need of predetermined way forward review.

All stakeholders in beekeeping including, beekeepers, bee products vendors and buyers will benefit from this study through their access to new way of learning and coping with bee product commercializing environment. In addition they will be able to analyze in particular what specific challenges they encounter in case of facing relatively different challenges among different groups of farmers and vendors not mentioning consumers.

The study will develop awareness among scholars, educationalists, workers and other interested parties on the reasons behind bee products commercialization in areas that seem to lag behind like Mvomero district of Morogoro region.

1.7 Limitations of the study

Limitations to this study include limited sources for secondary data which demanded high utilization of primary data. Some respondents to be involved lacked language proficiency and there for a tedious work of interpretation and multiple data collection methods. Financial limitations limited the study into one district and therefore leaving other victimized localities unreached.

1.8 Delimitations of the study

For the case of limited secondary data the researcher utilized primary data in large weight than relying on secondary data. For the case of language barrier the researcher used interpreted research instrument and include interview to help capture the whole of available data from the field. Finally the researcher used a case study design and concentrated to the details in order to make the study more reliable for accuracy of generalization to cover the left localities suffering the same challenges of commercializing bee products.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A body of relevant literatures was gathered in composing this section and two categories of reviews were heeded upon, these are empirical part and theoretical part. When reviewing empirical part of the literature, recent studies were pooled and squeezed in extraction of relevant body of ideas in liaison with research questions and statement of the problem. Upon reviewing theoretical part of the study, Bee farming was discussed, and some relevance and validity together with likely challenges was clearly detailed.

2.1.1 Bees

Bees are flying insects closely related to wasps and ants, and are known for their role in pollination and for producing honey and beeswax. Bees are a monophyletic lineage within the super family Apoidea, presently considered as a clade **Anthophila**. There are nearly 20,000 known species of bees in seven to nine recognized families, though many are undescribed and the actual number is probably higher. They are found on every continent except Antarctica, in every habitat on the planet that contains insect-pollinated flowering plants. Bees are adapted for feeding on nectar and pollen, the former primarily as an energy source and the latter primarily for protein and other nutrients. Most pollen is used as food for larvae. Bees are also known for pollination; they pollinate a wide range of crops and fruits trees such as the various species of citrus fruits, mango, avocado, coffee, cotton, and vegetables (Saner, 2004).

2.1.2 Beekeeping

Beekeeping is the maintenance of honey bee colonies, commonly in hives, by humans. A beekeeper keeps bees in order to collect their honey and other products that the hive produces (including beeswax, propolis, pollen, and royal jelly), to pollinate crops, or to

produce bees for sale to other beekeepers. A location where bees are kept is called an apiary or "bee yard" (Andrew, 2006).

According to NHB (2004), beekeeping date back to around 2500 BC, when the first evidence appeared in the paintings of ancient Egyptian art. Until the 19th century, when refined sugar became available, honey was the world's most popular sweetener and today, it is still being use as cake, tea, cereals, jam and jelly sweetener. The total annual global honey production is about 1.2 million tonnes, with Argentina, China and USA as major producers (Saner et al., 2004). While honey consumption is generally low in developing countries, industrialized countries like, Germany, Japan, USA and UK remain the major consumers of natural honey (Krell, 1996).

According to Akinwande, (2009) beekeeping is an activity in which man rears honey bees and acquires their products. So long as a honey bee is an animal, the beekeeping is generally treated as a form of animal husbandry in a broader sense of the word, and consequently in many countries and regions it is supervised specifically by the administrative structure which controls livestock industry within the larger sector of agriculture.

2.1.3 Beekeeping Systems

Beekeeping systems refer to the nature of the bee colony management. These range from the primitive rock and tree cavity shelters from which honey hunters harvested honey using smoke and fire to chase away the bees, to the modern beehives provided by beekeepers to protect bees from heat, cold, rain and pests, which are comfortable for the bees and suitable for the beekeepers (Saner, 2004). According to Shade, there are two types of beehives: the fixed comb hives and the movable comb hives. The former represent any kind of man-made container which can serve bees as a breeding place. Combs are fixed to the roofs and sides of the hives and are cut out and removed during harvesting. These include the traditional log hives. The latter hives are the modern types, including the TTBH, the mud hive and the Lang troth frame hive.

Traditional beekeeping

According to Akinwande, (2009) the type of traditional beekeeping that is still today found remaining in many parts of the world and had preceded the above-mentioned type with a cluster of artificial beehives is considered for a certainty to have been practiced since the times going well further back into the human history. In this respect, the traditional beekeeping practice using hollow log beehives currently found widely in Africa and is considered to belong to a more ancient class among traditional beekeeping techniques. Such practice of utilization of traditional beehives consists of processes of firstly waiting for the arrival of a migrant colony followed by the destruction of the hive after the elapse of a certain period to extract the honey Jones (1999). The products are similar to those obtained by honey hunting. Only, because the target honey bee species is one which essentially gathers propolis, it also has been counted since early as one of the products. Actually there are traces which suggest that propolis was used in the embalming of Egyptian mummies (JAICAF 2009).

The utilization of traditional beehives enables a large number of honey bees to establish their habitat in close proximity to the living environment of humans, which would stabilize the honey production commensurate with expectation to a certain extent.

Since traditional types of beekeeping concentrate honey bees in the areas close to human living environment, we may be able to suppose that they possess also the effect to promote the utilization of honey bees for the purpose of pollinating agricultural crops on arable lands. However, the significance in this sense is rarely appreciated, and honey bees are essentially deemed as the means of producing honey. Among cases of traditional beekeeping, particularly in the areas where it is difficult to acquire honey bee populations, the improvement of harvesting methods allowing the reutilization of bee colonies is in progress, and the effort can be interpreted as the factor creating a situation in which honey bee colonies with a high density are present close to humans and, albeit indirectly, serving to facilitate the pollination of crops. At this stage, the beekeeping may not be considered to have reached the level of domestication, but it still represents a

condition where human race is utilizing honey bees in a more efficient manner (Jones, 1999).

Modern bee keeping

According to Akinwande, (2009) the modern beekeeping, the basic system of which emerged about 200 years ago, was perfected to assume a form resembling that of present-day in North America where the European honey bee was being reared by immigrants from Europe. In Africa which was supposed to have the longest history of traditional beekeeping, the honey hunting and the beekeeping making use of traditional beehives were maintained, and no innovation by modern technology had appeared. The fundamental concept of modern apiculture is the reutilization of bee colonies for which it was called for to develop a method of honey harvesting with a lesser load on them. European honey bees construct a beehive consisting of multiple honeycombs within a closed cavity where they rear brood in the central part and store honey in the fringe portion. In the traditional beehives of hollow log, since honey is stored in the upper part and brood is kept below it, the attempt to collect honey necessarily leads to the loss of brood. Moreover, because the entire beehive is taken out and crushed to extract honey, bees have to start anew by rebuilding combs (Jones, 1999). In modern beekeeping, a beehive consists of two stages, which enables the use of the principle that the lower stage is devoted for rearing brood (brood-box) and the upper one for storing honey (honey-super). Moreover, by the arrangement that the comb frames in the upper stage are made in a smaller size and thanks to the adoption of “separation” of honey by means of a centrifuge, the emptied honeycombs can be easily returned to bees, thus enabling to minimize the impact due to honey extraction. Only, while the traditional beekeeping always produces beeswax as a byproduct of honey harvesting, in the modern system no byproducts other than honey cannot be obtained in an ordinary process of honey extraction.

Kihwele et al, (2001) the structure of beehives allowing the inspection and management of multiple frames of honeycomb individually has enabled beekeepers to carry out various management tasks including division of a colony, addition of empty frames for

harvesting honey or inversely thinning out surplus frames to build a more compact colony. With this structure of beehives the trading of live honey bees themselves has become possible, and the beehives of a standardized size are easily mounted on transportation vehicles, allowing the movement of bee colonies for purposes other than honey harvesting, for instance, the conveyance of colonies exclusively used for pollination to the vicinity of target crops. In short, modern beehives currently in use are very versatile in their function from the viewpoint of efficient utilization of honey bees (Jones, 1999). Consequently, beekeepers are using a type of beehives that represents a kind of the greatest common divisor for the majority of beekeepers, but it is also recognizable that an individual beekeeper may not be making use of all the functions available on his equipment. In modern beekeeping the honey has become a product easily to be harvested whenever it is needed, and hence it has become possible to produce a particular kind of honey collected from a specifically targeted source and stored in honeycombs in a short term (Johansen, 1990).

Beekeepers have become able to produce a honey bearing a specific flower name, and the honey products have been diversified and the control of their quality has become possible to a certain extent. Similarly the products which are particular but valueless unless they are fresh, like royal jelly, have come to be produced in a great quantity. Regarding propolis, it has become easy to modify the construction of beehives so that it can be produced as the principal product and not as a byproduct. On the other hand, regarding the beeswax, new honeycombs are rarely harvested along with the extraction of honey, and consequently the products derived from aged honeycombs used for a long period predominate the merchandise in markets, causing problems related to quality. Thus the modern beekeeping can be deemed as a technology that while its primary pursuit concerns the production of honey, has evolved also around the efforts to obtain other articles, the secondary and the tertiary products with higher added value. Moreover, beekeeping for the exclusive purpose of pollination is also practiced and this also essentially falls under the category of modern beekeeping technology which needs the techniques including the division of colonies and the introduction of queen bees. In

other words, the modern beekeeping could be identified as a style of beekeeping that can meet the diverse requirements arising from the diversification of objectives of honey bee utilization (JAICAF 2009)

2.1.4 Bee products

Honey

Honey is sweet-that's given. It is produced from nectar, which is obtained from floral nectaries deep within flowers. Honey has a number of medicinal and antibacterial properties, and has been used in pain relief and healing of burn victims. The sugars in honey nourish healthy cells and help support the development of new white blood cells. Honey's antioxidants, amino acids and vitamins play a role in reducing inflammation. The antibacterial activity of honey rapidly kills the pathogens that cause typhoid fever, bacterial pneumonia, strep throat and bacterial dysentery. In fact, in 1998 honey was proven to be more effective than silver sulphadiazine, the antibacterial ointment most widely used on burns in hospital situations, in the treatment of burns (Kihwele et al, 2001).

Honey is as its best as produced by the bees and no amount of processing can improve it. This implies that the less that is done to honey after harvesting the better. Production of good quality honey requires that the beekeepers and honey handlers do not inadvertent reduce the quality of honey by bad or careless handling, while the best time to harvest honey is normally late afternoon or early evening, so as to minimize the possibility of other bees in the area robbing the hives (Hisao, 2009).

Wax

Bee wax has traditionally been used in a number of items including furniture and shoe polish, crayons, candles, lip balms, lipstick, hand creams. In terms of worldwide corporate sales, the five largest users of bee wax are cosmetic companies, candle makers, pharmaceutical companies, dentist offices, and chewing gum companies (Kihwele et al, 2001).

Apart from beeswax and honey none of the other hives products such as propolis, royal jell and bee venom are produced and developed by beekeeping actors in Tanzania which narrow the exploitation of bee's product to its full significant (Mlingwa, 2006).

2.1.5 Commercialization

Commercializing means to offer for sale; make available as a commodity and to emphasize the profitable aspects of, especially at the expenses of quality (Mapolu, 2005).

Undrakh Ganbaatar (2011) contends that commercialization in small agribusinesses is analyzed using a case study approach. Relying on supply chain theory and transaction cost economics, a theoretical framework to model successful commercialization by small firms is developed and tested in case studies undertaken among food processors. The commercialization models assume that small agribusinesses can access commercial markets through achieving economies of scale and, hence, succeed in commercializing their new products. The commercialization includes three main challenges of commercialization, namely increasing production scale, accessing commercial markets, and defining optimal production scale and corresponding barriers.

According to Seperich, Woolverton, and Beierlein (1994), agribusiness involves all activities performed both on and off farms, which means it includes not only farmers or producers, but also the individuals and firms that provide the inputs, process the output, manufacture the food products, and transport and sell the products to consumers. Therefore, activities carried out by agribusinesses make the food system work. More specifically, agribusiness consists of agricultural input production, manufacturing or processing, and the distribution/retail sectors.

According to Industry Canada (2006) on commercialization proposed that people and excellence are two main elements of commercialization. In fact, without people no activity takes place while excellence refers to who wins in the face of emerging market

opportunities through his/her commitment to building a highly skilled workforce, undertaking outstanding research, and making far-sighted investments. They also point out that successful commercialization has two sides: the supply of and the demand from the marketplace for new products and processes. Getting new ideas to market is one of the most difficult steps in the innovation process because many innovations cannot go beyond the R&D stage for a number of reasons such as lack of production capacity, limited access to funding, the inability to create a demand and so forth.

2.2 Theoretical review

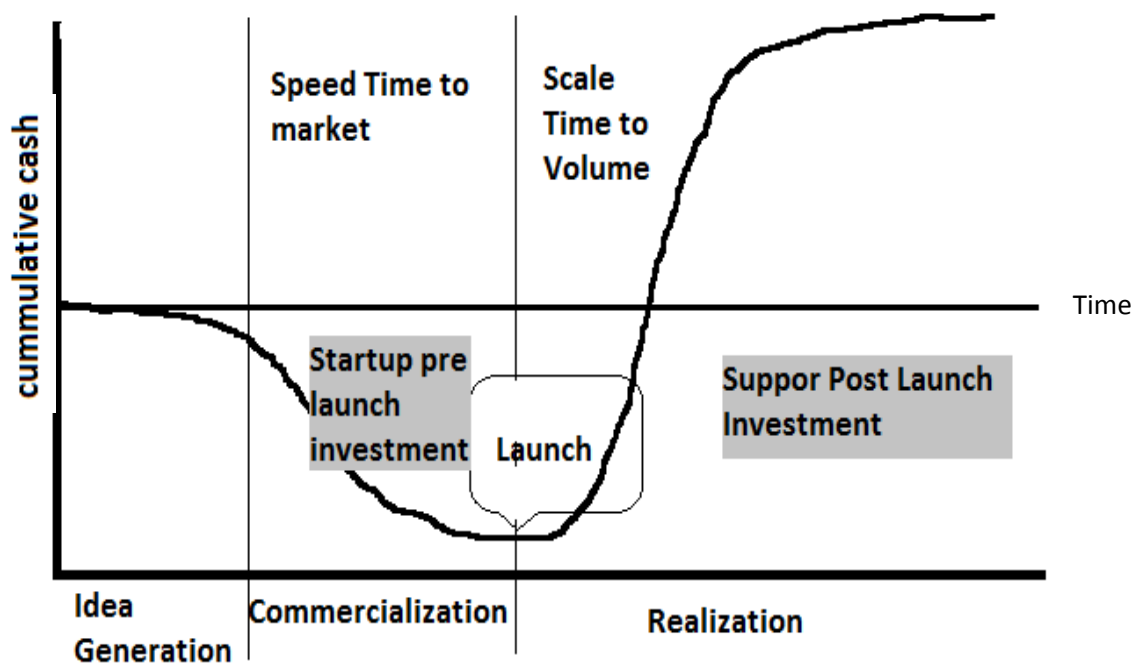
2.2.1 Commercialization theory

According to Andrew et al, (2006) innovation is the process of developing ideas to realize payback and consists of three phases of activity: idea generation, commercialization and realization. Of these, commercialization is the most challenging phase for innovators because during this phase the company must evaluate the potential payback it could generate from its innovative idea and make important decisions with respect to the innovation business model, investment, management, company organization. They note that besides generating a cash payback, the innovation process also brings indirect benefits that affect the company's ability to generate cash later.

In commercialization model, start-up costs (pre-launch investment), speed (time to market), scale (time to volume) and support costs (post-launch activities) are four factors directly affects cash payback. A large pre-launch investment may enable a company to develop assets and capabilities required to commercialize and generate a large payback, whereas the post-launch investments ensure success of the commercialization and maximize the payback from the launched innovation. Post-launch investments can be made in marketing and promotional activities, product improvements, and sales, distribution, and channel initiatives. Increasing speed and reducing time to market can increase payback by enabling a company to capture a larger market share at a higher average selling price and by starting the cash flow quickly.

However, overly aggressive time to market may disproportionately increase development costs and negatively impact the quality of innovative products or the indirect benefits. Time to volume refers to the period from launch until the new product achieves volume production on the scale planned and that can deliver payback.

Figure 2.1: Commercialization model



Source; Andrew et al, (2006)

This cash curve as a commercialization model emphasize that having sufficient financial capital to invest in the project is more important in the first two phases corresponding to idea generation and commercialization because this accelerates the transition period between these phases and also speeds up time to market, which facilitate successful marketing and future profitability. After the product is brought onto the market, the time to reach a profitability threshold of volume is another important factor that affects commercial success or failure. In fact, the sooner the product or service reaches the optimal production scale that enables a reduction in unit costs, the more quickly the firm will be able to generate profits. In the third phase of realization, the firm puts the emphasis on the profitability of investments that is, however, not

always achieved in earlier years because of the incremental costs of technical support, advertising and development. Thus, capturing economies of scale is a key strategy to achieve commercial markets and, thus, successful commercialization.

2.2.2 Beekeeping in Mvomero District

Mvomero is one of the six districts of the Morogoro Region of Tanzania. It is bordered to the north by the Tanga Region, to the northeast by the Pwani Region, to the east and southeast by Morogoro Rural District and Morogoro Urban District and to the west by Kilosa District. The district has well forest covered vegetation suitable for beekeeping activities. With a total of 18 wards the well endowed for beekeeping areas are two namely Kanga and Nguru forest reserves (Mlingwa 2006).

According to (Morogoro Regional Commissioners Office, 2006), although bee-keeping is a well suited economic activity in the Morogoro Region due to its extensive forest cover and well-watered lands, in Mvomero district this important activity is handicapped by low technical know-how in modern bee-keeping techniques. As such the potentials in this sub-sector have not been adequately exploited. The number of traditional and modern beehives in Mvomero district was estimated to 880 and 10 respectively making a total of 890 beehives. No wonder why the production in Mvomero district is low of about 400.0kgs of bee wax equal to 1.1% of total beewax produced in Morogoro region and 18,026.0kgs of honey 5.8% of total honey produced in Morogoro region.

The potential beekeepers in Mvomero district are individuals both men and women, groups like KAECO (Kanga Environmental Conservation Group), Tumekubali women group and Tumaini Jema also constitute the beekeepers in Mvomero district. According to Kambona, (2013) these potential beekeepers are underutilizing the potential opportunities since they are getting about 4 – 5 Lt of honey which is sold at 6000/= per Lt. they have so far got about 300,000/= from sells of honey. No income was obtained from wax as they do not know how to prepare it so that it can fetch a good market. This income was compared with modern hives which can give 15 – 20 lts per hive because

the use effective equipments like honey press and strainers will increase amount of honey which otherwise left with other residues. Again wax will be prepared and sold hence more income. Lack of the modern Tanzania Transitional Bee Hive (TTBH) is the main challenge facing beekeepers in Mvomero district.

2.2.3 Potential opportunity for beekeeping in Mvomero

Good forest coverage

Forestry and Beekeeping Division (2005) identified Kanga forest reserve as suitable for beekeeping for the sake of rainforest conservation. The vegetation is a wide range of forest types from lowland to submontane, montane and upper montane on the wetter eastern side. Woodlands occur in the drier areas in the foothills and on western side from 380 - 600 m, another is Nguru South forest reserve that comprises of a wide range of vegetation types resulting from a wide range of topographic and climatic features and soil conditions. Lowland rain forest occurs in valleys of the eastern slopes between 300 - 900 m. Submontane forest covers large areas in the eastern valleys between 900 - 1400 m, with fragments on the western slopes at 1400 - 1500 m. Montane forest occurs between 1400 and 1800 m with mossy covered upper montane forest at higher altitudes and a drier montane forest on the western side at 1600 -2000 m.

According to (Daily News, 2014) The exhibitors from Mvomero district taking part in the 38th Dar es Salaam International Trade Fair (DITF) argued that Mvomero has the potential of producing huge amount of honey and wax for export due to the endowment of the natural vegetation.

High demand of bee products in the market outlets

Another opportunity found, is increase in demand of bee products both domestically and internationally. Demand for honey and beeswax in the world market is very high and the demand for Tanzania honey and beeswax exceeds supply. The international markets for Tanzanian honey and beeswax are highly competitive in terms of quality. In 1991, Tanzania honey won by 100% the quality test for "organic honey" in UK (Krell, 1996).

2.2.4 Challenges facing the commercialization of bee products

Using honey for brewing and selling of local brew

In Mvomero, According to Masue, (2010) brewing and selling of local brew is an important economic activity in Kanga ward communities, it involves 12% of households. It can be noted that local brew business is practiced largely by Better Offs (47%) and Less Poor (38%). While the business is widely found, it is not very clear as to the extent of the overall negative impact on the communities' economies since beer drinking takes place even during working hours of the day. According to Egerton University Travel Report (2013) some of the challenges facing bee products commercialization were adequately among others brought forth by; most of the honey being used for brewing local brew and hence people tend not to need very good quality.

Market instability

According to the (Daily News, 2014), market instability, bad packaging supplies and lack of extension officers in the country are among the components impeding the beekeeping sector in the country. The exhibitors taking part in 38th Dar es Salaam International Trade Fair (DITF) recommended a calling for urgent support from the government and other stakeholders to make the activity more sustainable. This is in support of Joseph Gasper (2014) who noted "We produce large quantity but we are not assured of the market, this impedes our efforts as we end up keeping the products at home and when there is market, supply surpasses demand, badly affecting the price,"

Inadequate Packaging materials

Other challenges were noted including scarcity of packaging material since Small Industries Development Organization (SIDO) is the only reliable organisation distributing the materials to all beekeepers in the country. Such a lack of such materials rendered beekeepers products inferior in the market as cited in the (Daily News, 2014)

Shortage of extension services

Shortage of extension services amongst beekeepers makes producers to have inadequate knowledge on appropriate keeping methods. "Most of beekeepers in Mvomero lack relevant knowledge on beekeeping and end up applying traditional ways which are not result oriented," as cited in the (Daily News, 2014)

According to Mwakatobe, A. and Mlingwa, C (2006) Beekeeping in Tanzania is carried out using traditional methods that account for 99% of the total production of honey and beeswax in the country. Approximately 95% of all hives are traditional including log and bark hives. Others are reeds, gourds, pots etc. During the colonial and early independence period the production of bee products was higher than what we have now and was among the important non-wood products from the forests with a higher contribution to the national GDP and international trade as cited by (Kihwele, 1991). However, today the industry has declined in exports to an insignificant level despite of its high potential. The main challenges have been grouped into:-

Poor quality of bee products

The issue of quality is explained by inadequate skills/knowledge to apply improved technologies, use of inappropriate technology in harvesting, processing, storage and packaging and poor storage of products.

Low production of bee product

Poor use and access to improved production technologies, increased loss of beekeeping areas, inadequate and ineffective extension services and inadequate statistical information to guide plans and operations.

Inadequate marketing of bee product

Inaccessibility to markets, unreliable transport, lack of market information, inadequate entrepreneurship skills among beekeepers and inadequate joint efforts in marketing.

2.3 Empirical review

Akinwande, Badejo and Ogbogu (2011) conducted a study on Challenges Associated with the Honey Bee (*Apis Mellifera Adansonii*) Colonies Establishment in South Western Nigeria. A study was carried out in Lagos, Ogun and Osun states between December 2009 and September 2011 examined 14 randomly selected commercial bee farms for problems associated with decline in colony establishment. Sampling and treatments were split equally between each apiary and three colonies were selected in each. All the colonies were housed in Tanzania/local top bar hives. The findings show that there were 58.34, 44.84 and 40.61 average percentage declines in colony establishment in Lagos, Ogun and Osun States, respectively. Presence of pests and diseases, pesticide poisoning, poor hive and seasonal management, ecological problem and lack of queen rearing were potential problems identified by the beekeepers. Therefore study focused on the health related challenges of honey bees unlike this study in which the researcher was interested to find out the challenges in commercialization of bee products in Mvomerao district.

Babatunde *et al.*, (2007) conducted a study on Economics of Honey Production in Nigeria. The paper analyzes the economics of honey production in Oyo state, Nigeria. The analysis was built on survey data collected in 2006, from selected beekeepers in five local government areas of the state. The result first indicates that honey production is very profitable with a gross income of 890 naira per litre (US \$7) and 4888 naira per man-day (US \$ 41) on average. Econometric analysis shows that number of hives, labour and fixed assets have significant impact on honey output. Secondly, economic challenges in relation to commercialization of beekeeping are the triggering factors for entry and exit. The study recommended that appropriate policies should be targeted at encouraging the participation of rural dwellers in beekeeping and providing accessible credit to beekeepers to reduce poverty and foster rural development.

From the research conducted by Tanzania Wildlife Research Institute (2006), Honey and Beeswax value chain analysis in Tanzania (2007), and Beekeeping/Honey value chain financing study report (2009) they revealed many challenges facing beekeepers in Tanzania. These are;

- Seasonality and low quality of bee's product; lack of quality, quantity and consistence make it difficult to access sophisticated market outlets.
- The perception of honey as medicinal products and limited awareness among local communities makes the local market very small and unattractive to traders
- Limited access to new beekeeping technologies and low adaptation among producers and processors make Tanzania bee product less competitive in the region and global markets
- Absence of standardization of bee products limit the quality assurance and marketability of the products
- Underdevelopment of other bees products such as propolis, queens jell, and pollen, due to limited technology limit income to the farmers
- Low levels of Tanzanian smallholders beekeepers assets act as a serious barrier into modern beekeeping practice and skills requirements
- Lack of appropriate tested and proved financial services models for small scale beekeepers inhibits their capacity to break poverty cycle and venture into economically viable beekeeping.

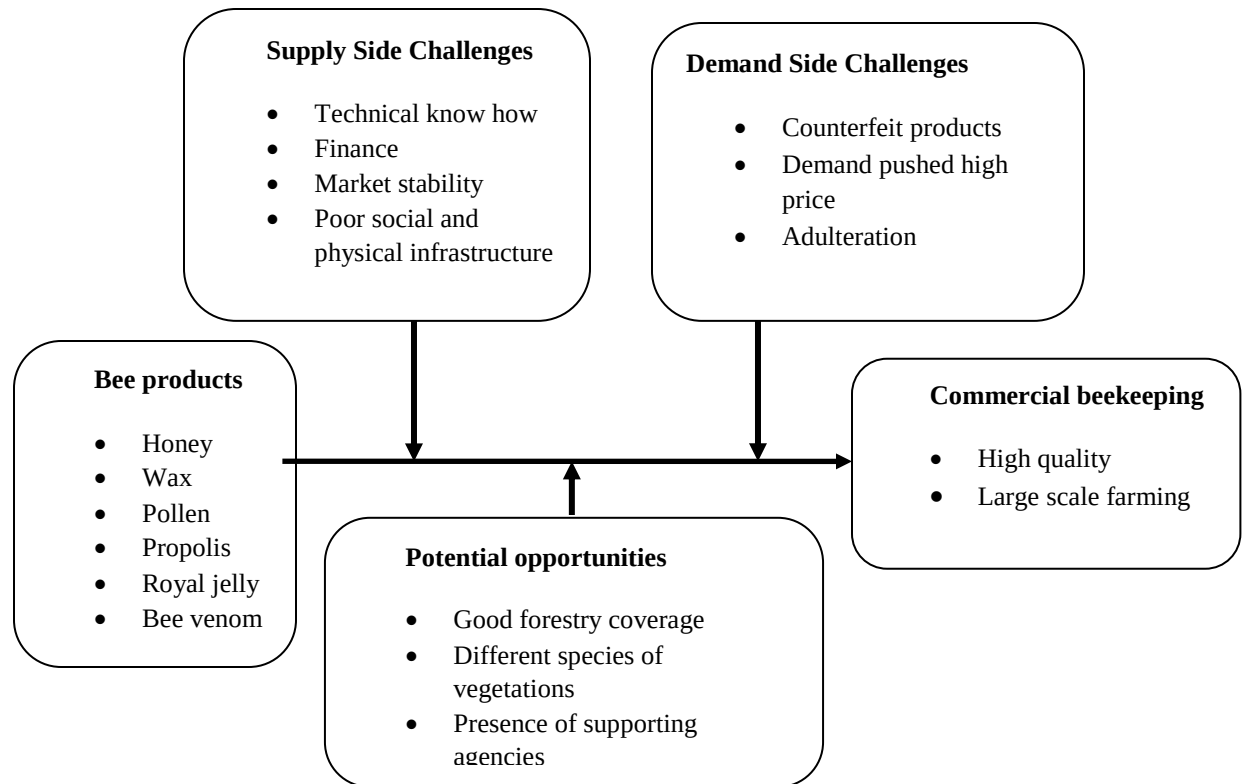
Given the above restrictions from prior researches it was observed that most of them were conducted before 2010 which is more than four years from now, thus gave the researcher the curiosity to investigate more as to why there was no significant improvement after realizing the given constraints. Also most of other studies were qualitative and quantitative research through the use of questionnaire and survey to collect data, while in the current study the research was qualitative approach using a case study design and survey interview as a way of collecting primary data.

A study by Masue, (2010) on the community economic analysis in Kanga ward in Mvomero District, Tanzania found that Kanga ward communities are near to Forest natural reserve, the area potential for bee keeping. Therefore, the study is recommending for community members to make use of this opportunity, since modern beekeeping industry is an environmental friendly and bee products have good price in the market. This study was focusing on all economic activities and lacked details in the beekeeping matter of this study.

A study by Egerton University (2013) found out that some of the challenges facing bee products commercialization were adequately brought forth by; poor coordination of apicultural market research, lack of transparency, poor infrastructure, inadequate personnel and poor training, substandard inappropriate equipment, human wildlife conflict and poor quality products where most of the honey is used for brewing local brew hence people tend not to need very good quality, and Low production; this was as a result of poor quality equipment.

2.4 Conceptual framework

Figure 2.2: Conceptual framework



Source: Developed by Researcher 2015

From the figure 2.1 above was a conceptual framework showing the bee products towards a commercial beekeeping stage. The concept here is that beekeepers are on the supply side and consumers from the demand side. The challenges encountering the commercialization of bee products from the supply side are presented in the group of being technical know-how, finance, poor infrastructures and market instability challenges. Nevertheless some other challenges arise from the demand side where adulteration and counterfeit products withdraw buyers faith while higher prices discourage ill afford consumers. This is how the challenges facing beekeepers in commercializing bee products can be explained. On the other hands, are potential opportunities available for beekeeping which includes good forestry coverage, different species of vegetations and present of supporting agencies from non government organization.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers type of the study, study area, study population, units of analysis, sample size and sampling techniques, types and sources of data, data collection methods, validity and reliability of the instrument, and data analysis plan.

3.2 Study Area

The study was conducted at Mvomero District which is among of the district found in Morogoro. The researcher decide this area because of the existence of conducive environment for Bee production even though its result on the production is not yet realized, while the availability for many university libraries like Mzumbe and SUA made it easy to collect secondary data concern the challenges facing beekeepers on commercializing their products.

3.3 Research approach

The research approach in this study was a qualitative approach. According to Creswell (2009) qualitative approach is explanatory and exploratory and it gives the researcher an opportunity to listen to the informants/respondents and get a clear picture of the event, problem, and matter of the research project. “It seeks to establish meaning of a phenomenon from the view of participants” (Masue 2010). This approach is more concern with the theoretical explanation of a phenomenon. It usually involves fewer variables hence allowing in-depth study.

3.4 Research Design

The research design in this study was the case study design. According to Kothari (2004) the case study method is a very popular form of qualitative analysis and involves

a careful and complete observation of a social unit, be that unit a person, a family, an institution, a cultural group or even the entire community. It is a method of study in depth rather than breadth. A case study places more on qualitative data and emphasizes the use of results for insight into problem-solving, evaluation, and strategy. Therefore it will facilitate the smooth sailing of various research operation, thereby making the research as efficiency as possible yielding maximum information with minimum expenditure of effort, time, and money. In this research, a researcher employed the case study design in order to enhance the deep scrutiny rather than sweeping the general information which may end up causing the study findings too general and unreliable.

3.5 Population

According to Hisao, (2009) population is the group of interest to the researcher, the group to which the researcher would like the results of the study to be generalized. The population studied encompassed beekeepers found on Mvomero District. Regardless of the size and capacity of each beekeeper, the research included even the least producer to enable comprehensive and relevant information.

3.6 Sample and Sampling procedure

According to Carron, (2003), a sampling procedure involves by choice made about studying some people, object, situation or event rather than all. Depending on the nature of beekeepers composition and distribution in the district Purposive sampling was used. According to Kothari, (2004) purposive sampling method involves purposive or deliberate selection of particular units of the universe for constituting a sample which represents the universe. A total of 52 bee keepers were included in the sample where 2 of them were also experts including the forest conservation officer and field extension personnel for bee keeping.

3.7 Sources of data

For data collection, the researcher used both primary and secondary sources of data. Therefore both sources are summarized as follow.

3.7.1 Primary data

The primary data are those which are collected afresh and for the first time, and thus happen to be original in character (Kothari, 2004). This information was received directly from the respondent based on the researcher needs. Primary data were collected from selected respondents using interview methods on challenges they are facing during commercializing bee products.

3.7.2 Secondary data

The secondary data are those which have already been collected by someone else and which have already been passed through the statistical process (Kothari, 2004). The secondary data were collected from official documents and reports. Data included identification of beekeepers.

3.8 Data Collection Methods

In order to attain adequate, appropriate and reliable information, the research work used both secondary and primary information. The methods used were documentary review method, observation method and interview method.

3.8.1 Documentary review

This is the collection of data from documents, records or other archival sources (Korathi, 2004). Instead of directly observing, interview or asking someone to fill in a questionnaire for the purpose of the inquiry, the researcher dealt with something already produced for other purpose. This method was used to gather secondary data.

3.8.2 Observation method

Significant data were not left behind/ ignored thus observation was put into practice, participatory and non-participatory observation. The aim of this technique was to obtain the primary data that lay the stepping stone for the secondary data which together produce a meaningful version for analysis.

3.8.3 Interview method

This is another method which was used in collecting data. Different farmers from different wards were surveyed using face-to-face interview. Also since interview is verbal interaction between the researcher and the respondents designed to solicit information. Views and opinions from the respondents helped the researcher to plug loop holes that could be lost by the documentary review and observation.

3.9 Data collection instruments

It is the one which includes coding abstraction sheets as well as various measures used. (Ganbaatar, 2011). The following were the data collection instruments which were used;

3.9.1 Documentary guide

Documentary guide, that is various documents, here should be a guide on searching material over documented sources. Is the most influential form of content and can have sustaining visual and emotional impact on each of us (Masejo, 2009). This guided the researcher to collect data from various documents.

3.9.2 Interview guide

According to Kothari, (2004) on the Guidelines for Successful Interviewing, an interview guide is necessary in case of big enquiries, where the task of collecting information is to be accomplished by several interviewees, so as to ensure reasonable uniformity in respect of all salient points in the study. In this study the interview guide was used to conduct interview.

3.9.3 Observation check list

When using observation as the primary data collection technique the data can be greatly influenced by the observer's expectations about what s/he is observing which can influence the selection of the specific incidents to which s/he pays attention, which in turn influences the amount and type of information that is recorded. Ways to reduce the impact of the expectations of the observer include having a well-prepared checklist

which lists the specific items to be observed and the times at which they were to be observed.

3.10 Data validity and reliability

3.10.1 Validity

Validity was concerned with whether the findings are really about what appear to be (Creswell, 2009), validity defined as the extent to which data collection methods accurately measures what they were intended to measure that is the extent to which a test measures what we actually want to measure.

The supervisor helped the researcher to ensure the validity of the questionnaire and the response to the objectives of the study. Content validity was used to establish whether the questionnaire measured what it should measure. The content validity was found by considering the number of items declared relevant divided by total number of items presented. The face validity was assured by logically consistent questions to guarantee relevance.

3.10.2 Reliability

According to Creswell, (2009) reliability refers to the degree to which data collection method will yield consistent findings, similar observations would be made or conclusions reached by other researchers or there is transparency in how sense was made from source. Carron, (2003) have defined reliability as many things to people, but in most contexts the notion of consistency emerges.

Reliability was improved in the following ways:

By standardizing the conditions under which the measurement takes place i.e., the researcher ensured that external sources of variation such as boredom, fatigue, etc., are minimized to a larger extent possible. The researcher carefully designed directions for measurement with no variation from group to group, by using trained and motivated persons to conduct the research and also by broadening the sample of items used. This improved equivalence aspect

3.11 Data Analysis Techniques

According to Kothari, (2004) data analysis refers to examining what has been collected in survey or experiment and making deductions and inferences. It involves extracting important variables, editing (i.e. Detecting errors and testing any underlying assumptions), coding, classifying and tabulation.

3.11.1 Qualitative data analysis technique

Qualitative data analysis technique methods were applied whereby the collected data were edited, classified in to their categories, finally data were tabulated, and the analysis took the form of factual and logical interpretation of the study findings.

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF RESULTS

4.1 Introduction

The findings covers the profile of the respondents, the identification of potential beekeepers in Mvomero District, the identification of potential opportunities for beekeeping in Mvomero District, the identification of potential challenges facing beekeepers in commercializing bee products in Mvomero District and determination of the measures and steps to be taken to overcome the challenges facing beekeepers in commercializing bee products in Mvomero District.

Through documentary review secondary data show that among others; only 10 wards in Mvomero district were naturally good for bee keeping. Out of 10 wards the researcher decided to choose 5 wards. Two wards Mtibwa and Sungaji were purposively selected due to the fact that in these wards beekeeping is practiced highly compared to other wards. Three wards Mhonda, Mlale and Doma were randomly selected among others. Ten beekeepers were randomly selected from each ward and two district personnel who also were beekeepers. This made a total of 52 beekeepers respondents who were interviewed.

4.2 Profile of the Respondent

This part presents the background information of the respondents who participated in the study. The purpose of the background was to find out the characteristics of the respondents and show the distribution of the population in the study. The demographic characteristics of the respondents are characterized by gender, age, education level and experience in bee keeping.

Table 4.1: Profile of the Respondent

Parameter		Frequency	Percentage
Gender	Male	39	75
	Female	13	25
	Total	52	100
Age	18-28	8	14
	29-39	27	51
	40-50	12	22
	50+	7	13
	Total	52	100
Experience	Less than one year	26	50
	One to three years	13	25
	Above three years	13	25
	Total	52	100
Education Level	Didn't attend school	13	25
	Primary education	20	38.5
	Secondary education	4	7.7
	College/technical education	8	15.4
	Higher education	7	13.5
	Total	52	100

Source: Primary Data 2015

Respondent by Gender

From table 4.1 show that majority of the respondents were male (75%), female were 25%. This implies that most of the bee keepers in Mvomero district are male than female

Respondent by Age

From table 4.1 majority of the respondents (51%) were in age group 29-39 years, 22% in the age group 40-50 years and a few of them were in the age group 18-28 years (14%) and 50+ years (13%). This implies that bee keepers are mainly matured youths than older and juvenile youths.

Respondent by Education

From table 4.1 majority of bee keepers had primary education (38.5%), those who didn't attend to school were 25%. A few of the bee keepers had secondary education (7.7%), college/technical education (15.4%) and higher education (13.5%). This implies that most of bee keepers are less educated which may negatively impact their ability to commercialize their bee keeping.

Respondent by Experience

From table 4.1 50% of bee keepers had less than one year in bee keeping, 25% had between one to three years and 25% had more than three years. This implies that all groups of bee keepers from less experienced to highly experience were included in the study to enhance the availability of key informants.

4.3 Potential beekeepers in Mvomero District.

The objective of the researcher was to identify the potential beekeepers found in Mvomero District. With this purpose the researcher want to understand the potential bee keepers in Mvomero district basically in terms of nature, size of their bee keeping and the intimate goal for their engagement in bee keeping.

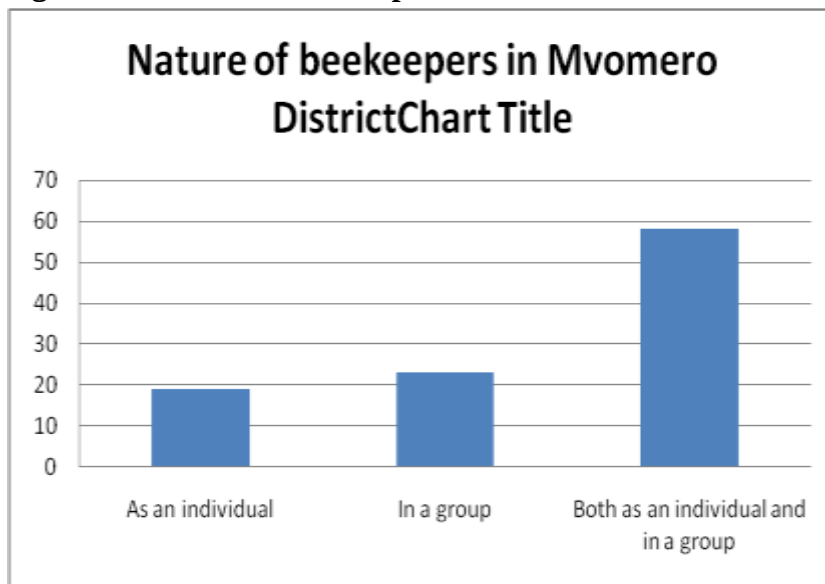
Table 4.2: Nature of beekeepers in Mvomero District

Nature	Frequency	Percentage
As an individual	10	19
In a group	12	23
Both as an individual and in a group	30	58
Total	52	100

Source: Primary Data 2015

From table 4.2 majority practice bee keeping as individuals and in groups (58%), some of them practice bee keeping as individuals (19%) and some in groups (23%).

Figure 4.1: Nature of beekeepers in Mvomero district



Source: Primary Data 2015

From figure 4.1 majority practice bee keeping as individuals and in groups (58%), some of them practice bee keeping as individuals (19%) and some in groups (23%). The findings imply that majority of beekeepers are interested in group formation which maximizes their access to financial and technical support. This is in line with a comment made by the potential bee keepers that:-

“I was previously as individual keeping bees for honey, I could not extend my activities, I was just limited to small scale farming. For the sake of both technical support and financial support we were informed to make groups in which funders and assistants can easily get access to our needs. We finally formed different groups including Ruhebeke, the group in which I am a member and chairman of the same. Since then we are growing in terms of size of production and quality which all together add financial value to our beekeeping” Said Juma

Table 4.3: Number of traditional bee hives

Number	Frequency	Percentage
1-5 bee hives	6	11.5
6-10 bee hives	6	11.5
11-20 bee hives	10	19
Above 20 bee hives	30	58
Total	52	100

Source: Primary Data 2015

From table 4.3 majorities had traditional bee hives above 20 bee hives (58%), whereas 19% had 11-20 traditional bee hives. The rest had 1-5 and 6-10 traditional bee's hives 11.5% each. This implies that the traditional bee hives are highly used by bee keepers in Mvomero District.

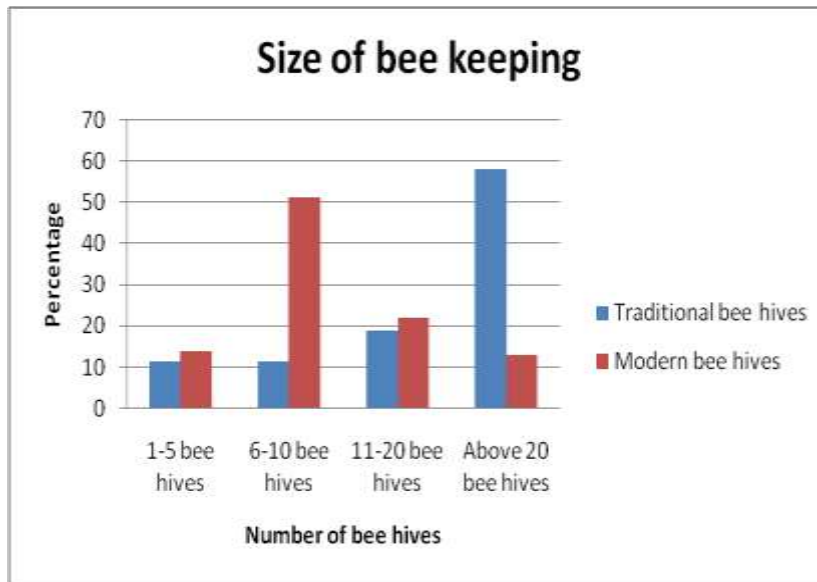
Table 4.4: Number of modern bee hives

Number	Frequency	Percentage
1-5 bee hives	8	14
6-10 bee hives	27	51
11-20 bee hives	12	22
Above 20 bee hives	7	13
Total	52	100

Source: Primary Data 2015

From table 4.4 Majority had 6-10 modern bee hives (51%), whereas 22% had 11-20 modern bee hives. The rest had 1-5 and above 20 modern bee hives 14% and 13% respectively. This implies that the traditional bee hives are highly used by bee keepers in Mvomero District.

Figure 4.2: Number of bee hives



Source: Primary Data 2015

From figure 4.2 majorities (58%) had traditional bee hives above 20 than modern bee hives 6-10 modern bee hives (51%). A few of respondents (13%) had modern bee hives above 20. The findings imply that modernization of beekeeping as part and parcel of commercialization of beekeeping is still at its infant stage in Mvomero district. This was commented by the Forest reserve officer:-

“It’s more recently when beekeepers have started using modern bee hives, they have been using traditional bee hives due to lack of technical know-how, and lack access to the modern bee hives due the fact that they are relatively expensive compared to traditional bee hives, after interventions by NGOs and the government support at least the modernization process is fastening and therefore farmers are gradually transferring from subsistence to commercial beekeeping”

This was also the support of (Morogoro Regional Commissioners Office, 2006), although bee-keeping is a well suited economic activity in the Morogoro Region due to its extensive forest cover and well-watered lands, this important activity is handicapped by low technical know-

how in modern bee-keeping techniques such as adoption of modern bee hives.

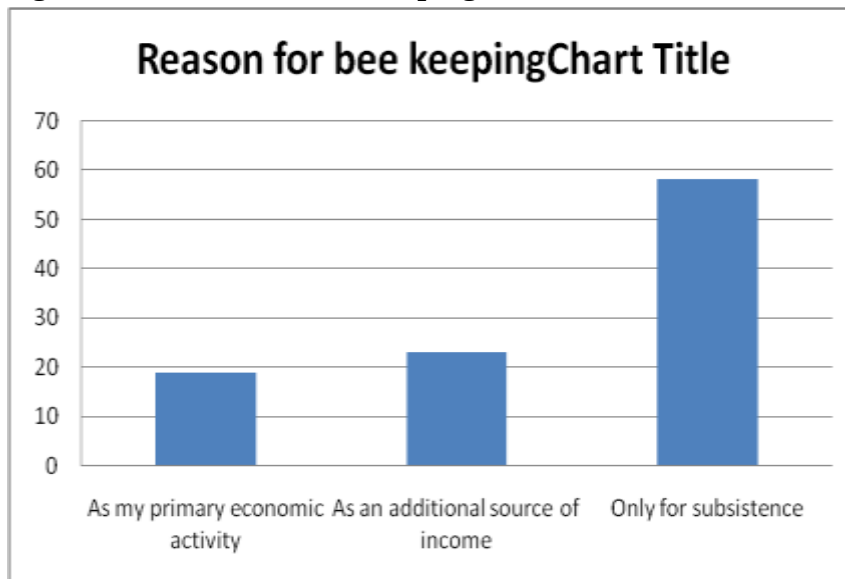
Table 4.5: Reason for bee keeping

Reason	Frequency	Percentage
As my primary economic activity	10	19
As an additional source of income	12	23
Only for subsistence	30	58
Total	52	100

Source: Primary Data 2015

From table 4.5 Majority (58%) practice bee keeping only for subsistence, 23% for additional source of income, 19% as primary economic activity. This implies that most bee keepers are not commercializing their bee products.

Figure 4.3: Reason for bee keeping



Source: Primary Data 2015

From figure 4.3 Majority (58%) practice bee keeping only for subsistence, 23% for additional source of income, 19% as primary economic activity. This implies that most bee keepers are not commercializing their bee products.

4.4 Potential opportunities for beekeeping in Mvomero District

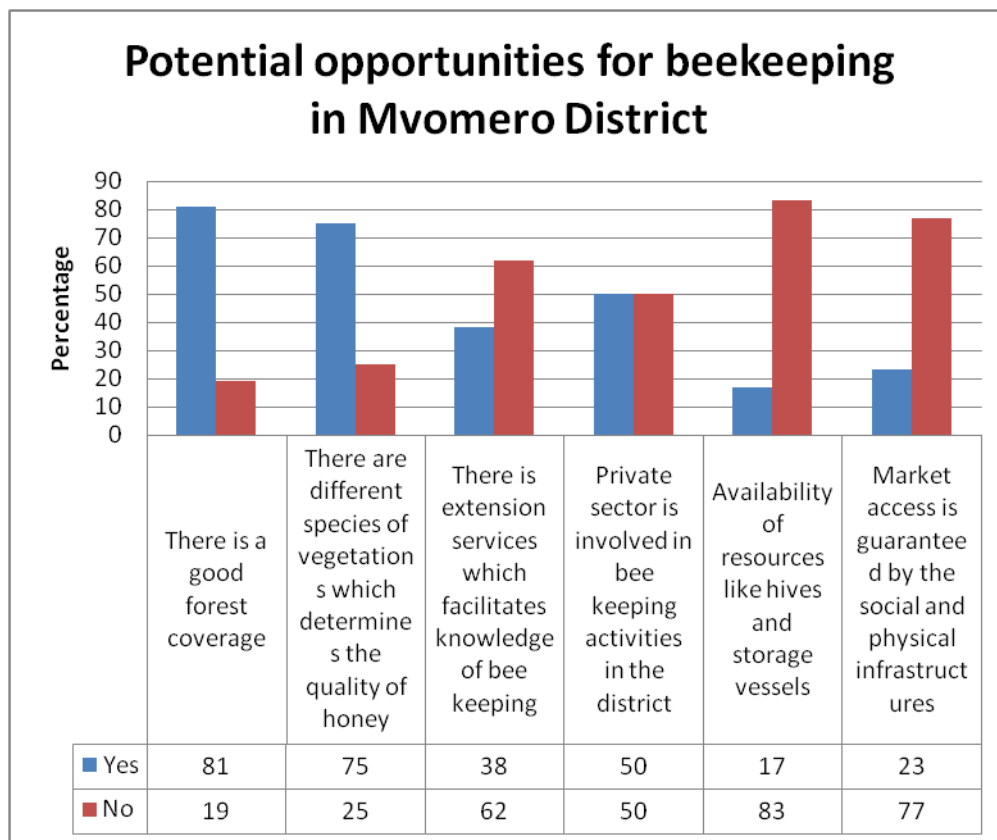
Table 4.6: Potential opportunities for beekeeping in Mvomero District

Potential opportunity	Frequency			Percentage		
	Yes	No	Total	Yes	No	Total
There is a good forest coverage	42	10	52	81	19	100
There is a variety of different species of vegetations which determines the quality of honey	39	13	52	75	25	100
There is extension services which facilitates the knowledge concerning bee keeping	20	32	52	38	62	100
Private sector is involved in bee keeping activities in the district	26	26	52	50	50	100
Availability of resources like hives and storage vessels	9	43	52	17	83	100
Market access is guaranteed by the social and physical infrastructures	12	40	52	23	77	100

Source: Primary Data 2015

Table 4.6 shows that potential opportunities for bee keepers in Mvomero district include: good forest coverage (supported by 81% of respondents), existence of a variety of different species of vegetations which determines the quality of honey (supported by 75% of respondents), Private sector is involved in bee keeping activities in the district (supported by 50% of respondents). On the other hand other opportunities are not in a reasonable state which include: the extension services which facilitates the knowledge concerning bee keeping (supported by 38% of respondents), Availability of resources like hives and storage vessels (supported by 17% of respondents) and Market access is guaranteed by the social and physical infrastructures (supported by 23% of respondents).

Figure 4.4: Potential opportunities for beekeeping in Mvomero District



Source: Primary Data 2015

Figure 4.4 shows that potential opportunities for bee keepers in Mvomero district include: good forest coverage (supported by 81% of respondents), existence of a variety of different species of vegetations which determines the quality of honey (supported by 75% of respondents), Private sector is involved in bee keeping activities in the district (supported by 50% of respondents). On the other hand other opportunities are not in a reasonable state which include: is extension services which facilitates the knowledge concerning bee keeping (supported by 38% of respondents), Availability of resources like hives and storage vessels (supported by 17% of respondents) and Market access is guaranteed by the social and physical infrastructures (supported by 17% of respondents).

Moreover the distribution of forest coverage in the surveyed ward is shown in the table 4.9 below

Table 4.7: Forest coverage in surveyed wards

	WARD	FOREST	VILLAGE	BEEKEEPERS GROUP	NGOs
1	Mtibwa	Mtibwa teak forest Pagare forest reserve	Rungo Nyangala	Sweethoney Luhebeke Chapakazi Uwama Tumekubali	World Vision TASAF PMMT SIDO
2	Sungaji	Dunduma forest reserve Kanga and Nguru forestry researve	Kilimanjaro	Makangavu Tumaini Jema	
3	Mhonda	Mkingu Natura reserve	Kunge	Amani Msetule Uvi Kwemau	
4	Mlale	Homboza forest Mongwe forest	Mlale	 Pekonisegize	
5	Doma	Mikumi National park	Mikumi	Tushikamane Akutema Twikinde Mkata	

Source: Primary Data 2015

4.5 Challenges facing bee keepers in commercializing bee products

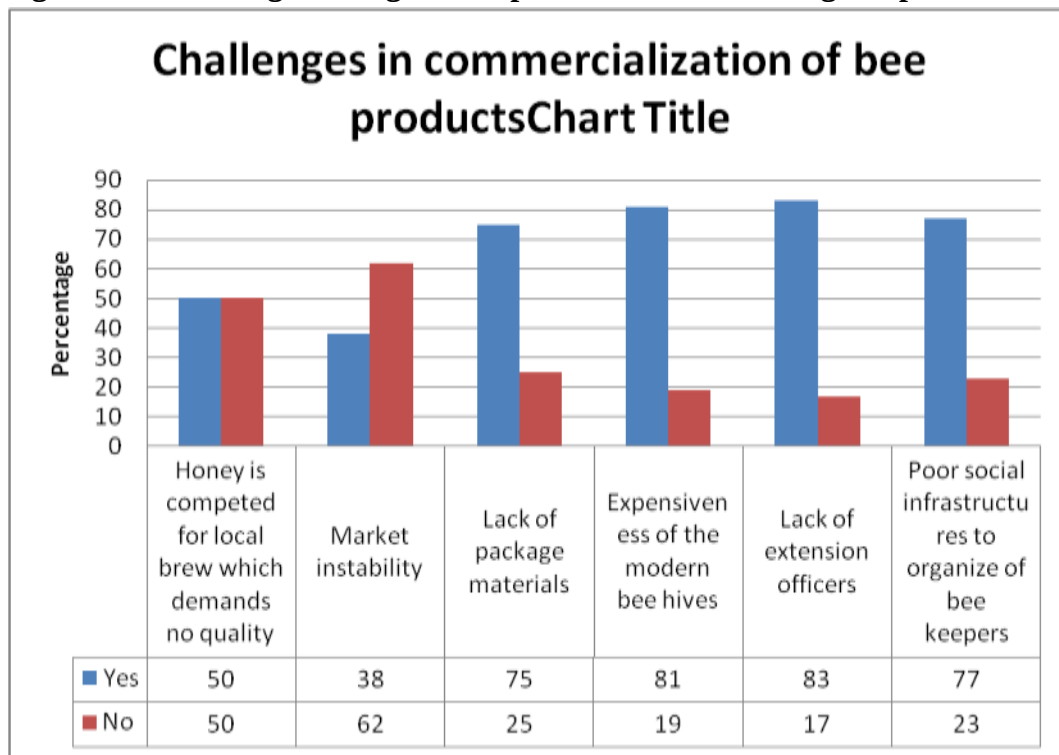
Table 4.8: Challenges facing bee keepers in commercializing bee products

Challenges in commercialization of bee products	Frequency			Percentage		
	Yes	No	Total	Yes	No	Total
Honey is competed for local brew which demands no quality	26	26	52	50	50	100
Market instability	20	32	52	38	62	100
Lack of package materials	39	13	52	75	25	100
Expensiveness of the modern bee hives	42	10	52	81	19	100
Lack of extension officers	43	9	52	83	17	100
Poor social infrastructures to organize of bee keepers	40	12	52	77	23	100

Source: Primary Data 2015

Table 4.8 shows that there are serious challenges facing bee keepers in commercializing bee products in Mvomero district which include: lack of extension officers (supported by 83% of respondents), Expensiveness of the modern bee hives (supported by 81% of respondents), Poor social infrastructures to organize of bee keepers (supported by 77% of respondents), Lack of package materials (supported by 75% of respondents). Other challenges include honey being competed for local brew (supported by 50% of respondents) and Market instability (38%).

Figure 4.5: Challenges facing bee keepers in commercializing bee products



Source: Primary Data 2015

Figure 4.5 shows that there are serious challenges facing bee keepers in commercializing bee products in Mvomero district which include: lack of extension officers (supported by 83% of respondents), Expensiveness of the modern bee hives (supported by 81% of respondents), Poor social infrastructures to organize of bee keepers (supported by 77% of respondents), Lack of package materials (supported by 75% of respondents). Other challenges include honey being competed for local brew (supported by 50% of respondents) and Market instability (38%).

4.6 Measures and steps to be taken to overcome the challenges facing beekeepers in commercializing of bee products

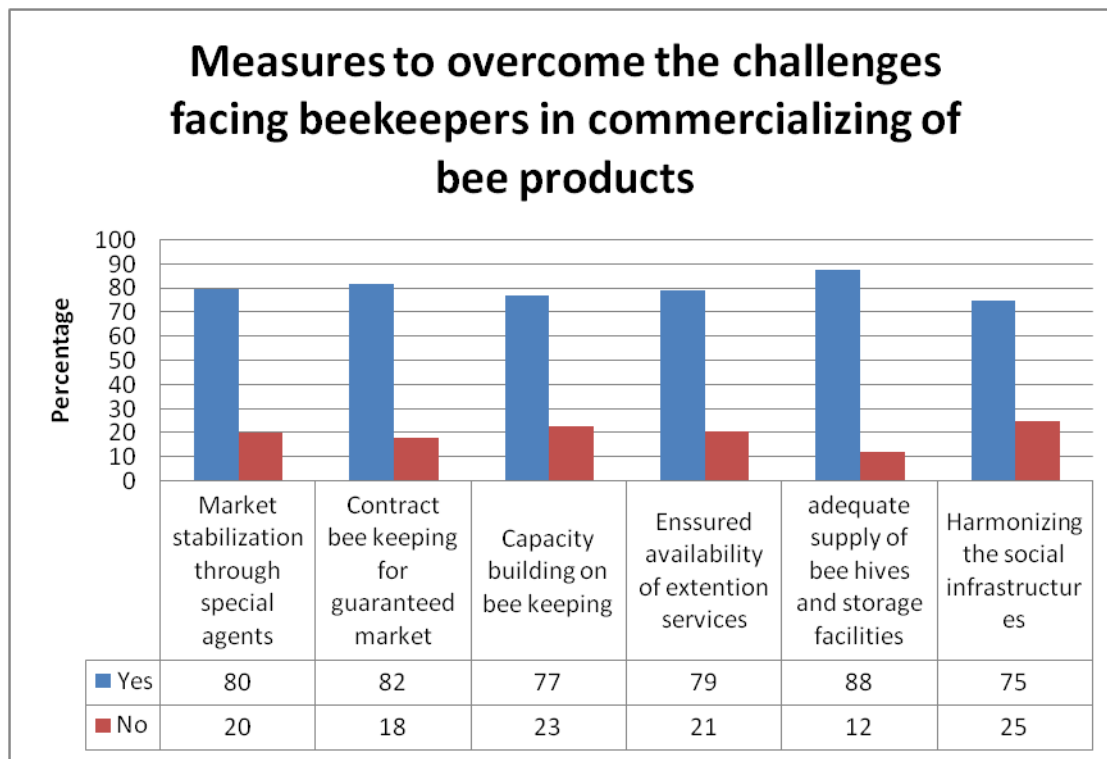
Table 4.9: measures and steps to be taken to overcome the challenges facing beekeepers in commercializing of bee products

Measures to overcome the challenges facing beekeepers in commercializing of bee products	Frequency			Percentage		
	Yes	No	Total	Yes	No	Total
Market stabilization through special agents to encourage bee keepers	42	10	52	80	20	100
Contract bee keeping to guarantee for market	43	9	52	82	18	100
Capacity building to equip bee keepers with relevant bee keeping business knowledge	40	12	52	77	23	100
Allocation of resident extension officers nearby the beekeeping zones to assure their availability	41	11	52	79	21	100
Facilities like bee hives and storage facilities should be supplied to help beekeepers get them easily.	46	6	52	88	12	100
Harmonizing the social infrastructures to facilitate organized bee keeping	39	13	52	75	25	100

Source: Primary Data 2015

Table 4.9 shows that majority of the respondents pointed out measures to be taken for each challenge. These measures include: Market stabilization through special agents to encourage bee keepers (suggested by 80% of the respondents), Contract bee keeping to guarantee for market (suggested by 82% of the respondents), Capacity building to equip bee keepers with relevant bee keeping business knowledge (suggested by 77% of the respondents), Allocation of resident extension officers nearby the beekeeping zones to assure their availability (suggested by 79% of the respondents), Facilities like bee hives and storage facilities should be supplied to help beekeepers get them easily (suggested by 88% of the respondents) and Harmonizing the social infrastructures to facilitate organized bee keeping (suggested by 88% of the respondents).

Figure 4.6: Measures and steps to be taken to overcome the challenges facing beekeepers in commercializing of bee products



Source: Primary Data 2015

Figure 4.6 shows that majority of the respondents pointed out measures to be taken for each challenge. These measures include: Market stabilization through special agents to encourage bee keepers (suggested by 80% of the respondents), Contract bee keeping to guarantee for market (suggested by 82% of the respondents), Capacity building to equip bee keepers with relevant bee keeping business knowledge (suggested by 77% of the respondents), Allocation of resident extension officers nearby the beekeeping zones to assure their availability (suggested by 79% of the respondents), Facilities like bee hives and storage facilities should be supplied to help beekeepers get them easily (suggested by 88% of the respondents) and Harmonizing the social infrastructures to facilitate organized bee keeping (suggested by 88% of the respondents).

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.0 Introduction

This chapter looks at the research findings and shows the summary of the findings, conclusion, recommendations and the area for further research.

5.1 Summary of the findings

The purpose of the study was to identify potential challenges and opportunities facing beekeepers in commercializing of bee products in Mvomero District. The study was guided by four specific objectives which include: identification of potential beekeepers in Mvomero District, identification of potential opportunities for beekeeping in Mvomero District, identification of potential challenges facing beekeepers in commercializing of bee products in Mvomero District and determination of the measures and steps to be taken to overcome the challenges facing beekeepers in commercializing of bee products in Mvomero District.

On the profile of the respondents findings show that by gender majority of respondents were males (75%), by age majority were aged 29-39 (51%) followed by age group 40-50 (22%) which implies that mature youths dominate the beekeeping community in Mvomero district. Majority of bee keepers had primary education (38.5%), those who didn't attend to school were 25% whereas 50% of bee keepers had less than one year in bee keeping, 25% had between one to three years and 25% had more than three years. This implies that beekeeping has been considered as an economic activity more recently than before.

For example Beda Karani of Mlale says *“nowadays bee keeping is a big deal, with modern beekeeping one can meet all he needs for himself and his family”*

5.1.1 Potential beekeepers in Mvomero District.

From the findings majority practice bee keeping both as individuals and in groups (58%), some of them practice bee keeping as individuals (19%) and some in groups (23%). To understand potential beekeepers more, the researcher had to know the state of beekeeping by asking and observing the size of beekeeping and intimate reasons for beekeeping among beekeepers.

5.1.1.1 Number of bee hives per individual

Majority had traditional bee hives above 20 bee hives (58%) than modern bee hives 6-10 modern bee hives (51%). A few of respondents (13%) had modern bee hives above 20.

Nevertheless some beekeepers complained about the quality of traditional bee hives, For instance a woman in Mtibwa ward at Nyangala village said *“I had have 10 traditional bee hives, but where are they?, at heavy rainfall my bee hives decomposed and bees migrated”*

5.1.1.2 Reason for bee keeping

Findings show that majority (58%) practice bee keeping only for subsistence, 23% for additional source of income, and 19% as primary economic activity. This implies that most bee keepers in Mvomero district were not commercializing their bee products.

5.1.2 Potential opportunities for beekeeping in Mvomero District

Findings show that potential opportunities for bee keeping in Mvomero district include: good forest coverage (supported by 81% of respondents). Forests available include Mtibwa teak forest, Pagare forest reserve, Dunduma forest reserve, Mkingu Natura reserve, Homboza forest, Mongwe forest and Mikumi National park. This is in line with the findings by Forestry and Beekeeping Division (2005) that identified Mvomero forest reserves as suitable for beekeeping for the sake of rainforest conservation.

Other potential opportunities include existence of a variety of different species of vegetations which determines the quality of honey; Private sector is involved in bee

keeping activities in the district (World vision, TASAF, SIDO and PMMT). On the other hand other opportunities are not in a reasonable state which include: is extension services which facilitates the knowledge concerning bee keeping (supported by 38% of respondents), Availability of resources like hives and storage vessels (supported by 17% of respondents) and Market access (supported by 17% of respondents).

5.1.3 Challenges facing bee keepers in commercializing bee products.

Findings shows that there are serious challenges facing bee keepers in commercializing bee products in Mvomero district which include: lack of extension officers (supported by 83% of respondents), expensiveness of the modern bee hives (supported by 81% of respondents) which relates to findings of Mwakatobe, A. and Mlingwa, C (2006) Beekeeping in Tanzania is carried out using traditional methods that account for 99% of the total production of honey and beeswax in the country. Approximately 95% of all hives are traditional including log and bark hives, poor social infrastructures to organize of bee keepers (supported by 77% of respondents), lack of package materials (supported by 75% of respondents). Other challenges include honey being competed for local brew (supported by 50% of respondents) and market instability (38%) which is in support of Joseph Gasper (2014) who noted "We produce large quantity but we are not assured of the market, this impedes our efforts as we end up keeping the products at home and when there is market, supply surpasses demand, badly affecting the price,".

5.1.4 Measures and steps to be taken to overcome the challenges facing beekeepers in commercializing of bee products

Findings show that majority of the respondents pointed out measures to be taken for each challenge. These measures include: Market stabilization through special agents to encourage bee keepers (suggested by 80% of the respondents), contract bee keeping to guarantee for market (suggested by 82% of the respondents), capacity building to equip bee keepers with relevant bee keeping business knowledge (suggested by 77% of the respondents), allocation of resident extension officers nearby the beekeeping zones to assure their availability (suggested by 79% of the respondents), facilities like

bee hives and storage facilities should be supplied to help beekeepers get them easily (suggested by 88% of the respondents) and harmonizing the social infrastructures to facilitate organized bee keeping (suggested by 88% of the respondents).

5.2 Conclusion

The findings show that most of beekeepers in Mvomero district practice small scale traditional bee keeping. More recently than before, few beekeepers were transforming from subsistence to commercial bee keeping. Mvomero district is covered with good forests for beekeeping; the NGOs like world vision, TASAF, SIDO and PMMT motivate beekeepers to shift from small traditional beekeeping to large modern bee keeping. Although the area is endowed with potential beekeeping natural resources there were found serious challenges still facing beekeepers in commercializing bee products. The challenges include lack of extension officers, expensiveness of the modern bee hives, poor social infrastructures to organize of bee keepers, lack of package materials and market instability.

5.3 Recommendation

The suggested measures and steps to be taken to overcome challenges facing beekeepers in commercializing their bee products should be positively considered. They include the following

- i) Market stabilization through special agents to encourage bee keepers
- ii) Contract bee keeping to guarantee for market
- iii) Capacity building to equip bee keepers with relevant bee keeping business knowledge
- iv) Allocation of resident extension officers nearby the beekeeping zones to assure their availability
- v) Facilities like bee hives and storage facilities should be supplied to help beekeepers get them easily. This can be facilitated through provision of loan to beekeepers so as to able to purchase them.
- vi) Harmonizing the social infrastructures to facilitate organized bee keeping

5.4 Areas for further research

Further research should focus on how to initiate contract beekeeping, ways in which beekeeping can attain market stability and the basis for relevant social infrastructure for beekeeping.

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APPENDICES

Appendix 1:

INTERVIEW GUIDE

Introduction

Dear Sir/Madam,

My name is Dorice M. Dengenesa, a student at Mzumbe University.

I am pursuing Masters of Business Administration in Corporate Management, Field work and report is part of my course. Therefore I am conducting a research on Challenges Facing Beekeepers on “Commercializing Bees Products in Mvomero District-Morogoro”. You are kindly requested to respond to these questionnaires to help me to accomplish the study. The required information will be treated with confidentiality and is only for academic purpose and not otherwise. I ask your permissive response to my few questions.

Interview questions

Section A:

Part 1: Personal Information (encircle the right response)

1. Gender (Observe)
 - a. Male
 - b. Female
2. What is your Age (Ask)
 - a. 18-28
 - b. 29-39
 - c. 40-50
 - d. 50⁺

3. What is your highest level of education
 - a. Didn't attend school
 - b. Primary education
 - c. Secondary education
 - d. College/technical education
 - e. Higher education

Part 11: Bee keeping (encircle the right response)

4. Are you a bee keeper
 - a. Yes
 - b. No
5. Do you practice bee keeping as an individual or in a group
 - a. Individual
 - b. Group
6. If practicing beekeeping in a group, which group(s) are you a member?
.....
7. For how long have you been a bee keeper
 - a. Less than one year
 - b. One to three years
 - c. Above three years
8. How many bee hives you possess as an individual or group
 - a. 1-5 bee hives
 - b. 6-10 bee hives
 - c. 11-20 bee hives
 - d. Above 20 bee hives
9. How many bee hives are traditional bee hives
 - a. 1-5 bee hives
 - b. 6-10 bee hives
 - c. 11-20 bee hives
 - d. Above 20 bee hives

10. How many bee hives are modern (Tanzania Transitional Bee Hives)

- a. 1-5 bee hives
- b. 6-10 bee hives
- c. 11-20 bee hives
- d. Above 20 bee hives

11. How do you consider your bee keeping

- a. As my primary economic activity
- b. As an additional source of income
- c. Only for subsistence

Section B (Potential opportunities for bee keeping in Mvomero district). Encircle every response made

Note: don't suggest an answer, just listen to the respondents' response

12. What are the potential opportunities for bee keeping in this district

- a. There is a good forest coverage
- b. There is a variety of different species of vegetations which determines the quality of honey
- c. There is extension services which facilitates the knowledge concerning bee keeping
- d. Private sector is involved in bee keeping activities in the district
- e. Availability of resources like hives and storage vessels
- f. Market access is guaranteed by the social and physical infrastructures

Other specify below

- g.
- h.
- i.

**Section C (challenges facing bee keepers in commercializing bee products).
Encircle every response made**

Note: don't suggest an answer, just listen to the respondents' response

13. What are the challenges you face in commercializing bee products like honey and wax

- a. Honey is competed for local brew which demands no quality
- b. Market instability
- c. Lack of package materials
- d. Expensiveness of the modern bee hives
- e. Lack of extension officers
- f. Poor social infrastructures to organize of bee keepers

Other challenge: Specify

- g.
- h.
- i.
- j.
- k.

**Section D (measures and steps to be taken to overcome the challenges facing
beekeepers in commercializing of bee products). Encircle every response made**

Note: don't suggest an answer, just listen to the respondents' response

14. What are possible measures and steps to be taken to overcome the challenges facing beekeepers in commercializing of bee products

- a. Market stabilization through special agents to encourage bee keepers
- b. Contract bee keeping to guarantee for market
- c. Capacity building to equip bee keepers with relevant bee keeping business knowledge

- d. Allocation of resident extension officers nearby the beekeeping zones to assure their availability
- e. Facilities like bee hives and storage facilities should be supplied to help beekeepers get them easily.
- f. Harmonizing the social infrastructures to facilitate organized bee keeping

Other: Specify

- g.
- h.
- i.
- j.
- k.

THANK YOU FOR YOUR CO OPERATION

Appendix II:**OBSERVATION CHECK LIST**

No	Item	Observed (√)	Not observed (✕)
1	Traditional bee hives		
2	Tanzania Transitional Bee Hive		
3	Storage facilities		
4	Harvesting garment		
5	Other (specify)		
6	Other (specify)		

Appendix III:

RESEARCH BUDGET

Item	Transaction	Amount(Tshs)	Total(Tshs)
Stationers	Purchase of materials and binding	150,000	150,000
Communication	Telephone	40,000	
	Internet services	70,000	110,000
Meals	Breakfast	60,000	
	Lunch	200,000	260,000
Transport	To visit supervisor	150,000	
	Submission cost	100,000	250,000
Secretarial Services	Photocopies	40,000	
	Printing	100,000	
	Typing	100,000	240,000
Other Related Costs	Any Other Related Costs	101,000	101,000
	1,010,000 X 10%		
Supervision costs		300,000	300,000
Total			1,411,000

Appendix IV:

Time Schedule

ACTIVITY	TIME TO BE TAKEN															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Orientation/ Familiarization																
Research design																
Data collection																
Answering Research questions																
Data analysis & interpretation																
Documentation & submission																