

**HONEY MARKET STRUCTURE AND PRICING EFFICIENCY IN THE
PASTORAL AREAS OF BARINGO DISTRICT, KENYA.**

BY

OYUGA, JOSEPH KERE

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KABETE LIBRARY**

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DECLARATION

I, Oyuga Joseph Kere, hereby declare that this Thesis is my original work and has never been submitted for examination in any other University.

Signature..... 05/09/2008

Date

Oyuga, Joseph Kere

This Thesis has been submitted for examination with our approval as university supervisors.

.....

Date .. 17/9/08

Dr. Kimpel Munei

.....

Date .. 18-9-08

Dr. Hellen Ommeb Natu

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ACRONYMS & ABBREVIATIONS

AGOA	African Growth and Opportunity Act
ALRMP	Arid Lands Resource Management programme
ASAL	Arid and Semi Arid Lands
CV	Coefficient of Variation
DALEO	District Agriculture Livestock Extension Officer
GEF	Global Environment Facility
GOK	Government of Kenya
HHI	Hirschman Herfindahl Index
JICA	Japan International Cooperation Agency
K-MEPP	Kenya Micro Enterprise Project
NGO	Non Government Organisation
KVDA	Kerio Valley Development Authority
LPP	Livestock Production Programme
LOOP	Law Of One Price
NIE	New Institutional Economics
NTB	Non Tariff Barriers
PI	Pricing Inefficiency
PRA	Participatory Rural Appraisal
SCP	Structure Conduct and Performance
SPS	Sanitary and PhytoSanitary
VAR	Vector Auto Regression

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ABSTRACT

A competitive market structure is a sufficient condition for the market pricing efficiency. This in turn ensures that price provides producers with the incentives to enhance production depending on available resources. The main objective of this study was to examine the structure of the honey market in the pastoral areas of Baringo in order to characterize its competitiveness and the pricing efficiency resulting there from. Observations, informal interviews and a honey traders' survey in Chepkelacha, Nginyang, Loruk, Kokwototo, Tangulbei, Kolloa and Yatya markets, and Marigat town, identified the categories of traders involved in honey trade as wholesalers who mainly purchased and sold honey in bulk, wholesalers-cum retailers who purchased and sold honey in bulk and occasionally, in small quantities to consumers and retailers who sold honey to consumers in small quantities.

The findings showed that the honey market in the pastoral areas of Baringo had about ten equally sized traders who were dealing in a homogeneous product, honey. Poor infrastructure was identified as one of the major barrier to enter honey trade. The demand and supply of the honey in the market determined the price at which the commodity was sold. Honey traders colluded to influence the price at which they purchased honey from beekeepers by easily sharing marketing information. Although competition for honey among the traders was noted to be intense, one trader was identified as dominant, controlling the largest market share. These findings showed that the honey market structure in the pastoral areas of Baringo was of an organised collusive oligopsony form.

Honey marketing costs were found to be high at sixty four per cent of the mean gross marketing margins. Personal travel was found to contribute the largest proportion of the marketing costs at thirty eight per cent followed by brokers' fees at twenty seven per cent. Both the honey transport and packaging costs contributed twelve per cent of the total marketing cost. The pricing efficiency of the honey market was found to be low at thirty three per cent with wholesalers-cum retailers recording the least pricing efficiency compared to the other two categories of traders.

The study recommends the promotion collective action among beekeepers to enhance honey market competitiveness; training of honey traders so as to enhance specialization; increasing vertical integration between beekeepers and high end markets; development of a honey market information system that provides up to date price information at the market place to both bee keepers and traders; and studies on the marketing of other beekeeping products such as beeswax, propolis and bee venom.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND INFORMATION

By their very nature, the pastoral areas are marginal with high levels of covariate risks¹ and poverty. This in effect makes the resident pastoralists highly vulnerable to food insecurity. In fact, the pastoral areas have some of the highest poverty incidence rates estimated at 65 per cent (GoK, 2003). Although livestock production is the principal source of livelihood, Hogg (1985) observes that between 1960 and 1984, 40 per cent of cattle population was lost in Turkana district alone as a result of frequent and short interval droughts. Aklilu and Wekesa (2002) further estimates that the 1999-2001 droughts resulted in the loss of 30 per cent small stock and 30 per cent cattle in the southern rangelands of the Arid and Semi Arid Lands (ASAL). As a result of these shocks, the pastoralists have been left destitute and in need of alternative activities for sustainable livelihoods. Small-scale beekeeping has been identified as a valuable activity in the rural areas of developing countries and as a significant contributor to livelihood security.² Beekeeping is also recognised as an important development strategy in the ASAL (GoK, 2004). Given the devastation that results from drought shocks, recovery of the pastoralists assume greater importance. According to Japan International Cooperation Agency (JICA) and GoK (2001), beekeeping has been identified as a resilient activity in the pastoral areas of Baringo that is not as seriously affected by drought as livestock and crop agriculture and thus capable of enhancing recovery of the pastoralists.

¹ These are expounded in section 2.1 of the report under pastoral areas and pastoralism.

1.2 CONTRIBUTION OF BEEKEEPING TO PASTORAL INCOMES

Beekeeping as an activity is undertaken for different reasons by pastoralists depending on their income levels. The very low income individuals engage in beekeeping as a means of survival and a substantial percentage of their total incomes deriving from the activity. On the other hand, the high income individuals use beekeeping as a diversification strategy and thus, as a hedge against risk. Therefore, honey sales provide pastoralists with income which they use for different livelihood outcomes. Shaffer et al (1987), notes that the marketing system has to play an important role if the incomes of the rural poor have to be increased. They further observe the existence of a relationship between the marketing system and poverty trap². This implies that certain changes in the marketing system can contribute to development process.

To the extent that the marketing system plays a part in the determination of the rural household real income, it is important. This provides the motivation for the desire to understand the functioning of various commodity markets in the rural areas due to their effect on development. Todaro and Smith (2003) put this into perspective by identifying the three objectives of development as: a) increasing the availability and widening the distribution of life sustaining goods such as food, shelter, etc. b) raising living standards and c) expanding the range of economic and social choices for individuals and nations. Although income deriving from beekeeping is used primarily for the purchase of food, a substantial amount is also used in the purchase of clothing, livestock, livestock drugs and payment of school fees.

² Poverty traps for the ASAL include, geographic location, remoteness, low level of education among others

1.2.1 CONTRIBUTION TO ECONOMIC GROWTH

Economic growth can be defined as the rise in national income (Thirlwall, 1989). Hardwick et al (1994) identify the growth of a country's labour force, capital stock and technical progress as the determinants of economic growth. The potential contribution of beekeeping to national income through an increase in capital stock would be high if all the possible products from the activity were exploited. The main beekeeping products traded currently are honey and beeswax. However, there is potential for pollen, bee venom, propolis and queen rearing. Importation of beekeeping products results in the outlay of the country's foreign exchange thus negatively affecting economic growth.

Table 1-1 Import and export of honey and bees wax - 1997 to 2004

YEAR	Honey exports (kgs)	Honey imports (kgs)	Bees wax exports (kgs)	Bees wax imports (kgs)
1997	595	20,187	29,515	630
1998	971	24,995	180	96
1999	5,053	36,753	7,500	444
2000	351	63,316	16,000	368
2001	324	31,642	24,012	2,551
2002	1,216	47,245	305	370
2003	545	10,578	0	1,181
2004	8,564	82,607	10,301	0

Source: Central Bureau of Statistics

From table 1-1, it is clear that though Kenya produces and exports honey, a substantial amount is imported. Further, there are significant fluctuations in the exported honey as

compared to imports which have been steadily increasing over the years. This fluctuation depicts the erratic nature of production caused by weather variations among other things. The main beekeeping product that is imported is table consumption honey as a result of the general feeling that local honey is of poor quality. Traditional beekeeping methods have contributed to the production of low quality honey particularly due to the mixing of brood and honey during harvesting. Although beeswax exports appear to be more, the potential is still high given that very few beekeepers harvest wax for sale. Overall, importation of more honey than that which is exported leads to a drain in the country's foreign exchange reserves. Enhanced quality production would result in foreign exchange savings.

1.3 HONEY MARKETING

China, Argentina, Canada, Germany, and Mexico are the world major honey producers. Between 1990 and 2000, their combined production averaged 205, 000 tones out of the world average of 304,000 tonnes. The five produced about 67 per cent of the total world honey between 1990 and the year 2000 (FAO, 2001). The exports of the major producers account for 57 per cent of the world honey exports. The major importing countries of honey include Germany, United States (US) and Japan. These three import 42 per cent of the total world honey production. Other significant importers are United Kingdom and France. However, the structure of the international market has been greatly affected by the prolonged subsidies and protection of the US producers. This has significantly affected Chinese and Argentinean exports to the US. New Sanitary and Phytosanitary (SPS) requirements further poses significant threats to the future of honey exports to the

developed countries given stringent requirements³. These in effect could amount to non tariff barriers (NTB) to trade.

However, for developing countries that qualify, Kenya included, international trade arrangements such as African Growth and Opportunity Act (AGOA) of the USA present a window for honey export.

Internationally, monofloral⁴ and organic honey attract better prices. However, prices are also dependent upon the subjective opinion of consumers. Colour is the basis upon which honey is graded with the benchmark price indicator being the light amber Yucatan (Mexican honey). Honey trade is usually undertaken in 300kg epoxy-lined steel drums with hygiene strictly adhered to.

Specialized trading companies in the main consumption centres of the importing countries purchase the honey. Packers who include both multinational corporations and small independent companies also import or purchase honey from merchants. It is the packers who blend and bottle the honey according to specific market needs before selling to large supermarket chains which then sell directly to consumers. The large supermarkets do not purchase directly from the producers.

The potential for honey market has been boosted by the general increase in health concerns and the preference for 'health foods' amongst consumers. Although the high rainfall areas in Kenya have the ability to produce more honey due to abundant bee forage, the pastoral areas have a comparative advantage in the production of highly

³EU regulations presently specify that imported honey should be completely free of contaminants such as wax, vegetal residues and insects, and contain very limited contents of agricultural chemicals. There must be no added sucrose. It must be free of fermentation and contain no more than 19.5 per cent moisture. The content of 5-hydroxy-methyl furfuraldehyde known as HMF, (a naturally occurring contaminant, which grows in the honey, especially in hot conditions) should be no higher than 20 parts per million"

⁴This is honey produced when bees forage on one particular type of flower.

valued and preferred 'organic' honey. If the quality can be assured and the product properly promoted, then the possibilities of increasing returns to beekeeping in the pastoral areas are real. The limited potential livelihood activities in the pastoral areas further illuminates the importance of beekeeping. An interesting development into the exploitation of beekeeping is evidenced by the establishment of an apitherapy unit at the national beekeeping station in Kenya and the documentation of ailments treated with propolis – a beekeeping product. The fact that propolis has been given a monetary value and is being purchased by the apitherapy centre of the national beekeeping station at a price of Kshs. 1 per gram, provides an opportunity for expanding trade in beekeeping products in Kenya.

1.4 STATEMENT OF THE PROBLEM AND JUSTIFICATION

1.4.1 STATEMENT OF THE PROBLEM

It is estimated that over 80 per cent of the total land mass in Kenya with over 25 per cent of the population is ASAL (Omiti and Irungu, 2002; GoK, 2003). Livestock production and other related activities are the main source of income. However, in the recent past droughts have impacted negatively on livestock production, the basis of pastoral livelihoods. As a result, the resilience of pastoral households has been reduced and their vulnerability to poverty increased. Further, Heffernan et al (2001), Sereem (1994) and Omiti and Irungu (2002) posit that the marginalization of the pastoral areas politically, socially and economically has resulted in "economic stagnation, destitution and persistent social conflict". These are some of the problems that have led to poor living standards and rampant poverty in the pastoral areas.

Although efforts have been made to try and improve the living standards in the pastoral areas, it is unfortunate that these have tended to be mostly responses to emergency situations. These have not significantly improved pastoral lives and in fact, have restricted pastoralists coping strategies (Aklilu and Wekesa, 2002).

Honey production has been identified as a viable intervention that can help alleviate rampant poverty in the pastoral areas⁵ due to the resilience of beekeeping activity⁶. However, little is known about the workings of agricultural product markets, including honey, in pastoral areas. Furthermore, success of any diversification strategy is contingent upon the understanding of other important factors including costs, competitiveness and constraints facing the different production and marketing systems. It is estimated that only fifty percent of the potential honey production in Baringo is being achieved (GoK, 2002). The large price spreads and the seeming small share of consumer shilling that the honey producer receives has been identified as one of the possible reason. However, there is need for empirical proof which the study will endeavour to provide by evaluating the level of pricing efficiency.

Markets are important in determining the level of farm incomes particularly if the marketing systems work properly. Increasing market penetration in the pastoral areas has heightened the dependence on markets for incomes and food and the need for more knowledge on the important variables necessary for ensuring the proper functioning of the marketing systems. Unfortunately, little is known about the honey marketing system not only in Baringo but also in other pastoral areas of Kenya. It is thus not possible to

⁵ Poverty Reduction Strategic Papers were developed at the village level with identified community members engaging in a participatory poverty assessment and strategic planning the results of which were incorporated into the national poverty reduction strategy

⁶ JICA and GoK report

delineate the important variables necessary for the improvement of the honey marketing system for the benefit of the pastoralists. An evaluation of the structure of the marketing system provides an opportunity for identifying policy variables which can enhance market participation by the poor.

1.4.2 JUSTIFICATION

Hogg (1997) notes that, "Any disaster planning in pastoral areas must start from an understanding of the main characteristics of pastoral societies.", and proceeds to identify the main characteristic as dependence on livestock. To increase the likelihood of success in the pastoral areas, any suggested intervention must consider the characteristics of the pastoralists in its formulation. Duyu (2003) cites a study by Kagio and Mureithi (1988) which though find beekeeping in most communities, confirm that the ASAL areas have the highest potential for honey production as compared to other ecological zones. The abundance of leguminosaeac vegetation with the Acacia variety being the most predominant in these areas provides ample bee forage that can enhance honey production. In the case of Baringo district, abundant acacia mellifera provides uniform foraging vegetation leading to the production of monofloral honey.

Increasing depletion of natural resources behove judicious and effective use of scarce resources. At the moment, beekeeping is the only known activity that utilizes nectar from plants to produce a commodity useful to human beings (Kagio and Mureithi, 1988). Honey production therefore contributes significantly to the effective and sustainable use of resources with minimum wastage (Kagio and Njoka, 2002). In fact the usefulness of beekeeping is further evidenced by the wide range of beekeeping products and their important applications. As an example, Krell (1996) identifies pollen as one of the many

beekeeping products important in medicine, food, cosmetics, pollination and pollution monitoring. Other products include wax, royal jelly, propolis and bee venom.

Omiti and Irungu (2002), advocate for the diversification of the pastoral economy through the exploitation of honey production amongst other products. However, the success of any diversification strategy is contingent upon the understanding of the underlying factors that would affect production and marketing. The study also forms part of a response to Kodhek (1999) observations that Kenya is long overdue for a livestock census, projections of supply and demand for animals and animal products, as well as studies looking at the costs, competitiveness and constraints facing the different production and marketing systems.

Observations by Behnke and Kerven, (1994), and Scoones, (1995) as cited by Hogg (1997) that despite the conflicting views towards the pastoral problems, strengthening of the pastoral marketing system remains an integral intervention for pastoral development.

Barren (2001) asserts that agricultural economists' important task of advancing and improving the understanding of efficiency in international trading relationships is contingent on case studies of efficiency in specific countries for individual commodities.

The study endeavoured to answer the broad question: How is the honey market in the pastoral areas organised and how does it operate? Further decomposed into the following components:

1. How is the honey market structured?
2. How is pricing undertaken in this market and how efficient is it?

1.5 RESEARCH OBJECTIVES

1.5.1 GENERAL OBJECTIVE

The general objective of this study is to examine and analyze the structure of the honey market in the pastoral areas of Baringo so as to characterize its competitiveness. The competitiveness of the market has a direct bearing on the conduct of the actors and ultimately determines the performance of the marketing system. The study thus aims at drawing broad conclusions on the potential policy options necessary for the improvement of the efficiency of the honey market.

1.5.2 SPECIFIC OBJECTIVES

- I.) To examine the honey market structure in the pastoral areas of Baringo in order to characterise its competitiveness.
- II.) To analyze the pricing efficiency of the honey market in the pastoral areas of Baringo.

1.6 RESEARCH HYPOTHESES

With regards to the honey market structure and pricing efficiency, the following hypotheses were to be tested:

- I.) That the honey market structure is not competitive.
- II.) That the pricing of honey is not efficient

1.7 ORGANIZATION OF THE THESIS

This thesis is organised into five chapters including chapter one in which this introduction falls. Chapter two presents the literature review of both the topic and the

conceptual framework upon which the study is based. In chapter three, the thesis presents the methodology used in the study including the sampling procedure used in collecting the data for analysis. In chapter four, the results and discussions are presented in detail. Finally, chapter five provides a summary of the findings, draws the general conclusions of the study and end with recommendations deriving thereon.

CHAPTER 2

LITERATURE REVIEW

2.0 PASTORAL AREAS AND PASTORALISM

By its very nature, Pastoralism is practiced in an environment characterised by high seasonal variation of weather. Rainfall varies widely between years and spatially within a season. The implication is that vegetative cover also varies and livelihood strategies based on agriculture are limited. Crop agriculture can only be undertaken in the so called good years when the rains are ample. Livestock keeping remains the most appropriate activity especially given the ability to move in search of pastures. These areas are also prone to frequent famines and droughts increasing the vulnerabilities of its inhabitants.

Hogg's (1997) isolated dependence on livestock as the basic characteristic of pastoral societies. Citing Swift (1988), Mortun and Meadows (2000) amplifies this fact describing a pastoral system as 'one where households derive 50 per cent or more of their gross revenues from livestock and related activities or where more than 15 per cent of the household food energy consumption consist of milk or milk products'. Seventy per cent of the world's rural poor keep livestock as their main source of livelihoods and most of them live in ASAL areas (Gura and LPP, 2003).

Strategies¹ that pastoralists use in livestock keeping coupled with the fragile nature of the ASAL areas often result in overstocking and eventually, environmental degradation. The time taken for livestock to mature and reproduce also means that it takes much longer to recover from droughts.

¹ Especially in terms of offtake where only male animals are sold and female ones left for reproduction and milk. Lead to large stocks especially when the years are good.

Remoteness is another characteristic of the ASAL areas. Bird and Shepherd (2003) observe that remote areas often are deficient in geographical capital (natural, physical, political, social and human) and exhibit 'spatial poverty traps' characteristics. Pastoral areas are not suitable for intensive cropping, are sparsely populated and with very little physical infrastructure in place. Poor roads and distance from the markets reduces trade and specialization opportunities. Local markets are thin with fairly high transaction costs as markets tend to operate poorly (Bird and Shepherd, 2003).

Two different paradigms dominate pastoral development interventions, one argues for destocking and eventually, pastoral livelihood diversification from livestock as it believes that pastoral problems are caused by overstocking. The other views the so called 'overstocking' as an important buffer to droughts and thus is an appropriate strategy. It thus argues for a well planned restocking to ensure a smooth return to pastoral life after a shock (Hogg 1997). Previous interventions in the pastoral areas have concentrated on livestock and infrastructural development. However, Hogg (1985) concludes that these interventions tend to increase rather than reduce vulnerabilities. Sedentarization and consequent concentration of livestock near settlements where there is water have resulted in overgrazing and environmental degradation. Other potential interventions such as irrigation can only act as a supplement but not substitute in pastoral areas as livestock production is the only viable economic activity. Further curtailing the possibility of irrigation in pastoral areas of Baringo is the high fluoride content of ground water which is inappropriate for agriculture. Lastly, under-stocking of the range-lands implies huge

opportunity costs as the unused grass means lost milk and meat to pastoralists, while encroachment of bushes⁴ mean loss of rangeland resource.

Though restocking has been identified as one viable intervention if well undertaken with local conditions considered (Hogg 1985, Moris 1988, Heffernan et al 2001), the widely accepted view is for the use of interventions like beekeeping that utilize pastoral resources effectively.

Unfortunately, literature on beekeeping and particularly honey marketing is virtually nonexistent in the public domain. It is thus not possible to evaluate the activity and its effects in the pastoral areas effectively.

However, like the marketing of other agricultural commodities in the pastoral areas, honey marketing definitely exists in regions of small scale honey production. Gormsen (1985) notes that these markets are characterized by traditional transport facilities and result in the many small periodic markets which supply the rural population with goods not produced in the area while at the same time serving as bulking points for excess production. Similarly, honey markets in the pastoral areas are faced with numerous marketing costs especially in relation to transportation and other marketing tasks including collection, packaging among others.

In studying the relationship between marketing systems and development in ASAL areas, Shaffer et al (1985) observe that unexploited economic opportunities and barriers to improved market system performance exist and can be identified. There is no doubt that these opportunities exist in the honey market. Necessity for more diversification as a result of continued change in pastoral areas indicates the importance of these

⁴ In Baringo district, pastoralists have observed a steady decline in grassland and increase in bushes and thickets over the last 30 years, mainly by *Acacia* species and *prosopis*. (Tangulbei division PRA report)

opportunities. A study on the honey market structure brings to light important variables as relates to the players in the market, how activities are carried out and their impact on pastoral livelihoods while pricing efficiency study help in evaluating the performance of the market in pricing honey so as to be able to determine whether the producers get a good price without necessarily overcharging the consumers. The end result is the availability of useful information upon which future developments of the sub-sector can be premised. The foregoing can further be viewed in the context of Carney's (1999) observations of the factors that significantly influence the working of a market as including the number and size of buyers and sellers, the level and availability of information and mobility of goods or services.

2.1 BASIC MARKETING CONCEPTS

2.1.1 MARKET AND MARKETING

Market denotes an area where one or more sellers of a given product/service meet with a buyers to exchange goods. Beckman and Davidson (1962) identifies a market as a point or place within which price making force operates and exchange of title effected accompanied by the actual movement of goods. Conceptually, a market can be visualized as the process through which ownership of goods is transferred from the sellers to buyers. Baines et al (2002) observe that marketing is applicable in a wide range of activities where human beings seek mutually beneficial exchange. Exchange activities of buying and selling forms the basis of the definition used in the study where, marketing includes all activities involved in moving honey from the producer to the consumer. This derives from the concept of a market which involves the exchange of goods and services. According to Kotler and Armstrong (2003), marketing aims to bring about profitable

exchange relationships by creating value and satisfying needs and wants. Marketing concept is a philosophy of business which states that customers want satisfactions (Lele and Jain 1997). This is the economic and social justification for the existence of firms which should then strive to identify what the customers want and then satisfy those wants profitably.

Tao et al. (1996), Udry (1996); Faschamps et al. (2003);, amongst many other conclude that a well behaved market ensure efficient transmission of price signals which in turn enable the producers to allocate their resources optimally.

2.1.2 MARKETING SYSTEM

Broadly, marketing system may be defined as the totality of product channels, market participants, and business activities involved in the physical and economic transfer of goods and services from producers to consumers. Within the marketing system, various intermediaries perform different functions from production to final consumption (Islam et al., 2001)

2.1.3 MARKET EFFICIENCY

According to Cramer and Jensen (1982) market efficiency is measured by the ratio of output to input with a high ratio indicating high efficiency. The output of the market is measured from consumer satisfaction with the goods and services while inputs are the various resources used by the marketing firms including labour, capital and management. Effective and efficient marketing systems induces the production of products in quantities that result in maximum returns to consumers after deduction of marketing charges and

production costs (Kohls and Uhl, 1985). Since consumer satisfaction cannot be measured directly, changes are analyzed in terms of "technical" and "pricing" efficiency.

Technical Efficiency: Is concerned with the performance of physical marketing functions to achieve maximum output per unit of input. Abbott and Makeham (1981) notes that technological changes like new packaging methods can be evaluated to determine whether they reduce marketing costs per unit of output by preventing quality deterioration.

Price Efficiency: Is concerned with price transmission between producers and consumers to reflecting product demand. Pricing efficiency aims at improving the operation of buying, selling and pricing aspects of the marketing process and is affected by marketing costs and the nature and degree of competition in an industry (Kohls and Uhl, 1985). Cramer and Jensen (1982) identify improvement of market news and information, and competition as important for enhancing pricing efficiency.

2.3 APPROACHES TO THE STUDY OF AGRICULTURAL MARKETING

There are three main approaches to studying agricultural marketing problems; Functional, Institutional and Commodity approaches.

2.3.1 FUNCTIONAL APPROACH

This involves marketing activities performed in getting the farm product from the producer to the consumer. Using the functional approach, it is possible to "cost" the activities and compared between intermediaries or a standard (Cramer and Jensen 1982).

They identify three categories of activities as acceptable marketing functions including: a) exchange (buying and selling), b) physical (processing, storage and transportation, and c) facilitating (standardization, financing, risk bearing and market information).

2.3.2 INSTITUTIONAL APPROACH

This approach examines activities of business organizations or people in marketing. Shafter et al (1987) identify the main components of the marketing system as including "the physical distribution of economic inputs and products and the mechanisms and processes of coordinating production and distribution." It is the latter part of this observation the New Institution Economics (NIE) deals with. The term coined by Oliver Williamson (1996) as cited by Kherallah and Kirsten (2001) is defined as: 'a set of formal (laws, contracts, political systems, organizations, markets, etc.) and informal rules of conduct (norms, traditions, customs, value systems, religions, sociological trends, etc.) that facilitate coordination or govern relationships between individuals or groups' (Majale and Albu 2001, Kherallah and Kirsten 2001, Matsuert 2002). The branches of NIE include; New Economic History, New Social Economics, Transaction Cost Economics, Theory of Collective Action and Law and Economics. These give rise to Social Capital, Property Rights and Economics of Information.

In the study, various institutions in the market are analysed qualitatively at the micro level. This level is concerned with institutional arrangements that focus on individual transactions and analyses are based on organization forms. An institutional arrangement is basically an arrangement between economic units that governs the ways in which its members can cooperate and/or compete (Kherallah and Kirsten, 2001). NIE is used in the

study not for detailed analysis but only as an exploratory tool to bring into perspective the findings of the structure and pricing efficiency of the honey market. Falchamps and Minten (1998) have shown that social capital has significant influence on trader returns and efficiency, an illustration of just one instance in which NIE use can prove informative. Though this study relies on the neoclassical structure, conduct and performance model as the basis for analysing the honey market structure, New Institutional Economics (NIE) is also used in the qualitative analysis of institutions involved in honey marketing at the micro level.

2.3.3 COMMODITY APPROACH

Kohls and Uhl (1985) notes that this approach focuses on the product after production with analysis focusing on functions and institutions involved in the marketing process. The approach involves chain analysis of the product to identify areas where changes can enhance efficiency in handling. This approach together with the other already mentioned approaches will be used in studying various aspects of the study.

2.4 STRUCTURE-CONDUCT-PERFORMANCE FRAMEWORK

Structure-Conduct-Performance (SCP) paradigm is a basic framework which has been used in the analysis of market power – profitability relationship (Aleksandrova and Lubys, 2004). Sutton (2006) cites Bain (1959) as the originator of the paradigm which involves two ideas: a) one-way chain of causation that runs from structure (concentration) to conduct (firm's pricing behaviour) to performance (profitability) and b) high levels of concentration are traceable to the presence of certain "barriers to entry". According to

SCP, the structure of an industry influences the behaviour of (conduct) of suppliers and buyers and ultimately their performance.

2.4.1 MARKET STRUCTURE

Market Structure is an integral component of the Structure-Conduct-Performance (SCP) framework and entails the analysis of those factors that determine competition within an industry. In this regards, Fischer (1997) and Martin (2001), delineates the variables of market structure which have received greater attention as; a) the number and size distribution of buyers and sellers, b) product differentiation, c) ease of entry and exit and d) vertical integration. Fischer (1997) further notes that market structure is important as it affects market outcomes through its impact on the motivations, opportunities and decisions of economic actors participating in the market. Likewise, Scarborough and Kydd (1992) and Scott (1995) cited by Dessalegn et al (1998) posit that the structural characteristics of the market have an influence on the behaviour of the market participants and the resultant performance of the industry in general.

Briefly, market structure variables include:

a) Number and Size Distribution of Buyers

This refers to the number of participants in the market and their size in terms of their market share. Market share can be evaluated either in terms of the physical quantities of the product or monetary value of the products (Martin, 2001). Thus if trader i handles q_i kilograms of honey, and all the traders handle a total of Q kilograms of honey, then trader i 's market share (size) is $\frac{q_i}{Q}$ likewise, if n traders

buy q_1, q_2, \dots, q_n quantities of honey at prices, p_1, p_2, \dots, p_n , then

market share of trader one is, $\frac{q_1 P_1}{q_1 P_1 + q_2 P_2 + \dots + q_n P_n}$

Here, it is important to note that market share analysis is more useful in the evaluation of the degree of market concentration.

b) Extent of Product Differentiation

Multiplicity of products or categories of a single product also has implications in the analysis of the market structure. As was seen in the theoretical characterisation of the market, this has an effect on buying behaviour as it may imply price differences. Mueller and Raunig (1998) posit that the intensity of advertising can be used as a measure of product differentiation.

c) Effectiveness of barriers to entry or exit

Any barrier to entry or exit of a system directly affects the number of participants in that system and or the rate at which this number changes. Barriers can be legal, operational or otherwise provided they influence an individual trader's ability to easily enter into the honey trade business or easily exit from it.

d) Degree to which the industry is vertically integrated

Vertical integration results when a trader is involved in one or more subsequent marketing activity in the marketing chain. It has important implications in analysis of the value chain where the locations of value addition on the product occur along the marketing chain. It is important to note that coordination can also be horizontal or diagonal. Meulenber and Kool (1994) as cited by Anrooy (2003) notes that vertical cooperation in the marketing chain mainly aims at increasing profits for the participants, risk sharing, and cost reduction amongst others. By enabling traders to control activities along the marketing chain, vertical integration can indicate supply

problems or other problems along the marketing chain. Anrooy (2003) further cites Wysocki (1999) who identifies; increase in exchange of marketing and technical information, preference for long term relationship, use of oral agreements and contracts, trust and loyalty, financial support and joint handling of products as variables characterising vertical cooperation.

However, Martin (2001) identifies market share and concentration as amenable to empirical analysis of market structure as they provide information on the size distribution of the buyers.

In determining the basic features of the market, the SCP framework has been widely used as it not only suggests the organization of the market but also the conduct of the market participants and the resultant effect this has on the performance of the market (Waswa-Wangia 1977, Ng'eno 1978, Ainebyona 1988, Ngigi 1988, Karugia 1990, Nduati 1993, and Abila 1995). The framework is also important in identifying market distortions in terms of prices, costs, total quantity of produce in the market, level of product wastage, product shortage and factor productivity. Market efficiency can be improved by the manipulation of these structural variables.

Wiggins (1997) argues that market structure, and in particular its concentration is the primary determinant of market competitiveness. Market competitiveness can thus be assessed in terms of the market structure and specifically in terms of the number and size distribution of traders in the market, and presence or absence of any single trader influence in the market (Yeh and Chen 2001, Martin 2003).

The structure of the market, and subsequently its competitiveness has empirically been analysed by use of the *m*-firm concentration ratio⁹, the Hirschman Herfindahl index¹⁰ and the Lorenz curve¹¹ (Abila 1995, Ainebyona 1988, Waswa-Wangia 1977). However weaknesses¹² in the concentration ratio and Lorenz curve methodologies endears the use of the Hirschman Herfindahl index in the determination of the market structure competitiveness. This is because it combines both the size distribution and number of sellers and buyers in the analysis. The index vary between 0 and 1 with a zero value indicating perfect competition and one, perfect monopoly. The reciprocal of the index further gives the number equivalent of traders in the market. When the index is zero, then the number equivalent is infinity indicating very many traders and thus perfect competition whereas when it is one, the number equivalent of traders is one indicating only a single trader and thus pure monopsony.

Although the prospect of a perfectly competitive agricultural market seems unlikely, Udry (1996) cites Hays (1975), Jones (1980), and Pingali et al's (1987) appreciation of the possibility of the existence of spot markets operating competitively. It is this possibility that motivates the first hypothesis of the study.

The quantities of a product that a firm can sell at a given price are largely dependent on the type of market in which the firm operates. This market is classified according to the

⁹ The sum of the market share of the *m* largest firms in an industry

¹⁰ Denoted by H is the sum of the squared market share of all the firms in the industry.

$$H = S_1^2 + S_2^2 + S_3^2 + \dots + S_n^2$$

Where *n* is the number of firms in the industry and S_i^2 the square of the market share of the *i*-th firm.

¹¹ This method also uses the market shares to plot a graph showing the degree of inequality

¹² E.g. a 4 firm CR -60 could mean 3 firms with market share of 18 each and 1 firm with a market share of

60, or it could also mean 1 firm with market share of 50 and the other 3 firms market share of 5, 3 and 2

respectively, causing an indefinite conclusion as to the meaning of the measured CR-60. The Lorenz curve on the other hand presents the situation where a Gini coefficient is necessary for confirmatory purposes

importance of the individual firm in relation to the whole market and the homogeneity of the product being sold. These two basic factors provide the means through which the market structure can be characterized. Consequently market structures are described as pure competition, pure monopoly or imperfect competition (Eckert and Leftwich, 1988). This study involves honey traders and thus is a buyers' market classified as purely competitive, purely monopsonistic or imperfectly competitive. Brief explanations of each follow:

2.4.1.1 Pure Competition

This is a market structure characterised by many buyers buying the same product with none of them large enough to exert any influence on the market price. Withdrawal of any buyer does not result in any price change due to reduced competition. The buyers act impersonally with no cases of rivalry occurring since none believes that the decisions of the other can affect it and vice versa (Eckert and Leftwich, 1988).

2.4.1.2 Pure Monopsony

Pure monopsony describes a market structure characterised by a single buyer of a given product (Eckert and Leftwich, 1988). As a result, it is this buyer who determines either the prices or quantities of the product. Though unrealistic in the modern economic environment as a result of liberalization, cases still exist e.g. Kenya Pyrethrum Board is the sole buyer of pyrethrum from the farmers.

2.4.1.3 Imperfect Competition

This is observed when the structure falls in between pure competition and pure monopsony (Eckert and Leftwich, 1988). Two categories can be distinguished:

a) Oligopsonistic competition

Occurs when there are a few buyers of a product which may or may not be differentiated. Organised oligopsony exists when there is a large buyer who is able to purchase a large quantity of the product and is also able to influence prices.

b) Monopsonistic competition

Occurs when there are many buyers of the commodity however, differentiation in the product causes specific buyers to prefer the product of one seller over the others.

2.4.2 MARKET CONDUCT

Market conduct refers to the behaviour or strategies that traders use in order to maximize profits. Cramer and Jensen (1982) observe that though firms are driven by profit maximization objective, they will often act differently depending on their industry. Meijer (1994) identifies conduct as a pattern of behaviour enterprise follow to adjust or adapt to the market in which they buy or sell. According to Abbott and Makeham (1981), conduct refers to the market behaviour of all firms including, how they compete in terms of employing new techniques, searching for new investment opportunities among other strategies.

2.4.3 MARKET PERFORMANCE

Market performance is mainly influenced by the structure and resultant conduct which impacts on prices, costs, volume and quality of the product produced (Cramer and Jensen, 1982). Abbott and Mekeham (1981) observe that market performance indicate the success of the firm in accomplishing its objectives of profit maximization. Market performance will thus consider issues like timely and accuracy in the relay of market information, efficiency in assembly and delivery of the product with minimum waste, increasing sales, reliability of product quality among others. Thus market performance will include technological progressiveness, efficiency of resource use, growth orientation, product improvement and maximum market services at the least possible cost (Meijer, 1994). In this study, pricing efficiency is used to evaluate the performance of the honey market in the pastoral areas of Baringo district.

Abbott (1968) cites Bain's (1959) enumeration of the main dimensions of market efficiency as:

1. Prices, costs and profit margins tending towards a level just sufficient to reward investment and provide incentive for further sustainable endeavour. That is absence of super profits or excessive margins
2. Firms should operate at the most efficient scale and firm numbers should approach this scale in correspondence with aggregate effective demand in operation.
3. Service provided should not be of very high or very low quality in relation to cost and consumer desires. Provision of these services should be consistent with

economies of large-scale operations which in essence result in the reduction of average costs.

2.4.3.1 Pricing efficiency

Price influence supply and demand and acts as an important indicator of the level of relative product scarcity (Hughes, 1997). Price sends signals important in the efficient allocation of resources to the market participants enabling producers to choose between the most profitable options.

Kutner (1997) identifies three concepts of efficiency in economics as, Smithian, Keynesian¹³, and Schumpeterian¹⁴. This study applies the Smithian concept of efficiency. Also referred to as allocative efficiency, it can be traced back to Smith (1776). Martin (2003) has correlated cost minimization with efficiency to which Barrett (2001) points out as relating to the satisfaction of zero marginal benefit equilibrium condition.

Profits can only be maximized when resources are efficiently allocated. This efficiency has been referred to as allocative efficiency or pricing efficiency (Hughes 1997). Yotopoulos and Lau (1973) observe that price efficiency is purely a behavioural concept necessary for the maximization of profits. Bravo-Ureta and Pinheiro (1997) further note that allocative efficiency is attained when various factors of production are used in the best proportions vis-à-vis their prices i.e. producing a certain level of output using cost minimizing input ratios. Pricing efficiency occurs when the price signal correctly indicates and coordinates the supply and demand conditions. (Ngumi 1976; Tao et al

¹³ Efficiency gains resulting from full-employment, lack of depressions and recessions in the economy.

¹⁴ Efficiency gains that result from technological progress - technical efficiency.

1996). Further, according to Ngumi (1976) pricing efficiency is related spatially, temporally and in terms of product transformation.

Consequently, when the pricing is efficient, then the difference in prices of a commodity in geographically separated markets equals transfer costs. Similarly, from one time period to another, price differences should equal storage costs and when the product form is changed, then the difference in the prices of the original and the transformed product should be equal to the processing cost. This is what is referred to as the law of one price (LOOP). Barrett (2001) defines LOOP as follows:

If trade occurs and all profitable arbitrage opportunities are extinguished, prices are equalized up to the cost of commerce.

As aptly put by Roehner (1995):

A clear operational criterion of an efficient market would consist in checking that price differentials do not exceed transaction and transport costs¹⁴.

It is important to note that pricing efficiency is only an indicator and cannot be used to infer the overall market efficiency. Numerous controversies resulting in difficulties of formulating theoretical models for efficiency analysis still abound (Waswa-Wangia, 1977; Dittoh, 1992). However, various methods have been developed and used to analyse market pricing efficiency. Tao et al (1996) evaluates three pricing efficiency models namely; market integration and pricing systems, Symmetry of price transmission, and Long run and Short run of price dynamics using a vector auto regression model. They further note that the Law of One Price and Vector Auto Regression (VAR) models have also been used to evaluate pricing efficiency. Shrivastava and Ranadhir (1995), Zanden (2003) in studying market pricing efficiency argues that the seasonal variation in the

¹⁴ This basically implies the total marketing costs.

prices of the most important agricultural commodities between wholesalers and retailers can be used as proxy for the degree of pricing efficiency of the marketing system. This approach is employed by Ngigi (1988) who, used time series data on monthly producer price and retail prices to determine their correlation behaviour and assess the degree to which a change in producer price is reflected at the retail level as indicating market pricing efficiency.

As a vindication of Waswa-Wangia's (1977) observations, many researchers have used market integration models to evaluate pricing efficiency even though Dittoh (1992) cites Blyn (1973), Eicher and Baker (1982) expressing a critical view of the use of the bivariate correlation coefficient as a measure of integration and consequently infer efficiency as used by Jones (1968, 1972). Kariungi (1976) among others concludes that unless an appropriate method is used to measure integration, it would not be correct to infer market pricing efficiency. Barrett (2001) further critiques the use of law of one price cum integration in the analysis of pricing efficiency especially for international trade observing that though applicable in the case of a commodity's physical tradability in several markets, price based analysis have not been able to reflect trade flows resulting from globalization especially due to the limitation of available data.

Market margins have also been used to analyse pricing efficiency, (Shrivastava and Ranadhir 1995; Bekure and Tilahun 1982). These authors argue that a low margin indicates a high level of pricing efficiency. Siamwalla (1993) asserts that though market margins - which represent the price of marketing functions - can be used to measure market pricing efficiency, the approach could be misleading in situations where traders might not be earning super profits due to fierce competition and suggests the

appropriateness of looking at the optimal size of operations that would cut down marketing costs.

Barrett (2001) cites Barrett et al (2000) computing the allocative inefficiency in international agricultural trade using the transfer cost to export price ratio; noting the importance of transaction costs in the final outcome of trade between countries. One of their findings, that large transaction costs impede specialization is important in identifying barriers to honey trade in the context of this study. In the same vein, Shrivastava and Ranadhir (1995) uses the ratio of marketing costs to gross margins to evaluate pricing efficiency calling it pricing inefficiency.

CHAPTER 3

METHODOLOGY

3.0 INTRODUCTION

This section looks at the study area, data needs and sources, sampling procedure used in collecting the data for analysis and the theoretical framework upon which empirical testing of the null hypotheses is based.

3.1 THE STUDY AREA

3.1.1 LOCATION AND SIZE

Baringo district is one of the ASAL districts located in the northern part of Rift Valley Province and is approximately 8655 km² in size (GoK 2001). The actual study area¹⁴ includes three divisions in the pastoral areas of Baringo namely Nginyang, Tangelhei and Kolloa, which form the East Baringo Sub-district with an area of 4233 km². It is located between longitudes 35° 30' and 36° 30' East and between latitudes 00 10' South and 140' North. This area is located in the northern part of the district and borders Marakwet, West Pokot, Turkana, Samburu and Laikipia districts of the north rift region. The altitude ranges between 300 and 1550 m above sea level.

This study area was selected due to the high incidence of poverty and food insecurity, and limited livelihood options.

¹⁴ A map is provided later in this chapter

3.1.2 RAINFALL AND VEGETATION

Rainfall figure collected over 26 years gives an average of 584 mm per annum with the temperature averaging 35°C (Serem, 1994). The rainy season is from March to September with a maximum in May and August and a minimum in January. However it is important to note that rains are very unreliable between years and within the different areas. The main vegetation in the area is *acacia mellifera*, however, other acacia species and shrubs also exist. Local buffed grass also grows well in the region where soils allow.

3.1.3 WATER RESOURCES

The whole study area is serviced by a series of seasonal rivers, sub surface dams and pans, springs and shallow wells. The main permanent water source is Kerio River, located west of the study area at the border with Marakwet district. The dam water and shallow well water is recorded to have unusually high quantities of fluoride. This limits the uses to which the ground water can be applied; consequently an important option like extensive irrigation is limited.

3.1.4 LAND USE

Consistent with other pastoral areas, land is mainly used in livestock and livestock related enterprises. Main livestock species include cattle, sheep, goats, camels, donkeys and bees. In certain areas where the soils are of good quality and water available for irrigation, pockets of agriculture is practiced with maize, sorghum, finger millet and vegetables being produced. The three divisions within the study area produce an average of 99,923 kg of honey annually, approximately 40 per cent of the whole district output.

This is estimated to be about 50 per cent of the potential (GoK, 2002).

Pastoralists observe that in the last 20 years, the grasslands and pastures have significantly been reduced by the expanding shrubs and acacia growth¹⁷.

The main economic activity in the area is livestock keeping. There are also other livestock related activities including livestock trade, trade in hides and skins and sale of milk. Swift (1988) as cited by Morton and Meadows (2000) emphasizes the dominant role played by livestock in pastoral production systems where about a half of all gross domestic revenue derives from livestock and livestock related activities. This is true of the study area. However, due to the increasing vulnerability to livestock keeping as a result of erratic weather conditions, other activities are emerging with beekeeping being the most significant and ecologically sustainable.



Baringo District

Figure 1 Location of Baringo District (Shaded) in Kenya
 source: District Development Office, Baringo

3.2 DATA REQUIREMENTS AND SOURCES

Both secondary and primary data was used to evaluate the objectives of the study. Requiring a wide range of information for the evaluation of the structure and pricing efficiency of the honey market in the pastoral areas of Baringo with particular reference to honey traders, available information was collected from periodic reports of the relevant government offices and the traders.

3.3 SAMPLING METHODOLOGY

Purposive sampling of the honey markets in the pastoral areas of Baringo was used. All the traders present during the marketing days were interviewed. Casley and Lury (1985) notes that the 'need to study a particular phenomenon in a case context necessitates deliberate selection of the case' concluding that, 'attempts to introduce randomness may only lead to weakening what would be the strength of the case study'. The markets identified included Amaya, Kolloa, Yatya, Chepkelacha, Loruk, Churo, Nginyang, Kokwototo and Tangulbei. However, due to insecurity, Amaya and Churo markets were omitted from the survey

3.4 METHODS OF DATA COLLECTION

The secondary data used in the study was collected from various secondary sources including Central Bureau of Statistics, Ministry of Livestock Development and the County Council of Baringo. A structured questionnaire (appendix 1), was used to collect primary information. Two enumerators were trained to administering the questionnaire

and a pre-test was carried out to enable the further refinement of the data collection instrument.

Additional information was collected qualitatively including actual honey handling, behaviour of various market participants and perceptions of various informants in explaining certain outcomes amongst other subtle features.

3.4 DATA ANALYSIS METHODS

3.4.1 HONEY MARKET STRUCTURE AND ITS COMPETITIVENESS

General descriptive statistics including, cross-tabulations, frequencies, means and percentages were computed for the variables used in analyzing barriers to entry, product differentiation and degree of vertical integration. Based on the significance of each statistic, broad conclusions on the nature of honey market structure were drawn.

3.4.1.1 Testing the competitiveness of the honey market

Economic theory characterises a competitive market as having many buyers and sellers. Due to its economic and cultural importance, beekeeping is undertaken by many pastoral households in Baringo albeit in a small scale. Consequently, there are many sellers of honey in the pastoral areas of Baringo. It is this realization that influences the study of the demand side of honey market represented by the traders who buy honey from the pastoralists.

Employing the Hirschman Herfindahl Index (HHI), the study measured the honey market concentration in the pastoral areas of Baringo as it captured both the average size of the trader and the inequality of size between them. It is from this index that the competitiveness of the honey market was determined.

The assumption made is that all the honey presented in the market for sale was actually purchased by the traders. Within the market, the total quantity of honey presented for sale constituted the honey market. Thus if a trader purchased q kilograms of honey at ksh p , then the trader handled honey valued at Kshs. qp . In the case of n traders, then total value of honey handled by all traders = $q_1p_1 + q_2p_2 + q_3p_3 + \dots + q_n p_n$

From the foregoing, each trader thus handled a proportion of the total market value. The proportion handled by trader i represented the market share of the trader. Letting S_i represent the market share of trader i , then;

$$S_i = \frac{q_i p_i}{q_1 p_1 + q_2 p_2 + q_3 p_3 + \dots + q_n p_n} \dots\dots\dots(1)$$

This can also be presented as;

$$S_i = \frac{\text{Value of honey handled by } i\text{th trader}}{\text{Total value of honey handled by all traders}}$$

It is important to note that since the market shares of the traders represented the proportions of the market they controlled, the sum of all the traders' market shares equaled one.

The HHI is obtained by summing all the traders market shares squared. Thus,

$$HHI = S_1^2 + S_2^2 + S_3^2 + \dots + S_n^2 \dots\dots\dots(2)$$

Equation 2 can be presented more compactly as follows:

$$HHI = \sum S_i^2$$

As can be seen in equation 2, the HHI incorporates the market share of all the honey traders in the market. The calculated HHI takes a value between zero and one with zero indicating pure competition while one shows pure monopsony.

Further, the HHI is desirable to use because its reciprocal gives the number equivalent of equally sized honey traders in the market. This is evaluated from the following expression;

$$n = \frac{1}{HHI} \dots\dots\dots (3)$$

Where,

n - is the number equivalent of equally sized traders in the market

HHI - is the computed Hirschman Herfindahl Index of the honey market

The number equivalent of honey traders is interpreted as the number of equally sized traders who operate in the honey market. A large n indicate many equally sized traders and thus a highly competitive market.

The null hypothesis that the honey market structure is not competitive is tested using;

$$H_0 : n = 1$$

Against the alternative that

$$H_1 : n > 1$$

The test is not amenable to statistical¹¹ hypothesis test as n is an index obtained from an aggregate of the sampled traders market share squared. However, the results will further be evaluated in terms of the total number of traders interviewed during the market survey since any figure above one can imply duopoly, oligopsony or pure competition.

¹¹ Srivastava et al (1983) define statistical hypothesis as a statement about a population or its probability distribution characteristics that is to be verified from a sample. That statistical hypothesis must be tested using population parameters. These are summary measures that describe a characteristic of an entire population like the mean or proportions

3.5.2 HONEY PRICING AND ITS EFFICIENCY

Descriptive statistics were used to evaluate honey pricing variables as observed by the traders including honey price discovery, mean and percentage price spreads, marketing costs and margins.

3.5.2.1 Test of honey pricing efficiency

Price efficiency is also referred to as allocative efficiency. A firm is price efficient if it maximizes profit by equating its marginal revenue to marginal cost. It is this analogy that forms the basis of pricing efficiency analysis in this study.

Honey traders perform various marketing functions in the flow of honey to the final consumer. Depending on the marketing function undertaken, the trader will incur some expenditure. This gross expenditure is referred to as marketing cost. In the study, the variables that comprise a trader's marketing costs were taken to include, personal travel, honey transport, packaging, storage, brokerage fees, market fees and telephone costs.

Pricing efficiency is attained by a trader who maximizes profit while ensuring that the average marketing cost are lowest. This trader will in effect be allocating the marketing services in the correct proportions given their costs and the gross margin. Since profit maximization require that marginal revenues equal marginal costs, the ratio will be computed per kilogram of honey handled by respective trader.

Thus,

$$MC_i = \{T_{ci} + S_{ci} + P_{ci} + Pt_i + Tel_{ci} + B_{ci}\} \dots\dots\dots (4)$$

Where;

MC_i - Total marketing costs for trader i .

T_{ci} - Transportation costs for trader i .



- S_{ci} - Storage costs for trader i .
- P_{ci} - Packaging costs for trader i .
- P_{ti} - Personal transport for trader i .
- Tel_{ci} - Telephone costs for trader i .
- B_{ci} - Brokers fees for trader i .

Equation 4 shows the derivation of trader i marketing costs.

The marketing cost per kilo of honey handled by trader i is obtained as follows:

$$MC_{mi} = \frac{MC_i}{q_i} \dots\dots\dots (5)$$

Where:

- MC'_{mi} - Marketing Cost per kilogram of honey handled by trader i
- MC_i - Total marketing cost of trader i
- q_i - Quantity of honey handled by trader i in kilograms

The gross marketing margin of each trader was obtained by taking the difference between honey purchase and sales price.

Thus,

$$GMM_i = P_{si} - P_{pi} \dots\dots\dots (6)$$

Where:

- GMM_i - Gross Marketing Margin for trader i per kilogram of honey in Kenya shillings
- P_{si} - Price at which trader i sells a kilogram of honey in Kenya shillings
- P_{pi} - Price at which trader i purchases a kilogram of honey in Kenya shillings

Equation 6 calculates the gross marketing margin per kilogram of honey that trader i obtains from buying and selling the honey. The gross marketing margin indicates the

returns to the trader from undertaking honey trade. Rationally, this should be positive since the trader sells at a higher price after accounting for costs. It is important to note that a trader operating at a loss will return a negative gross marketing margin.

It is from equations 5 and 6, that pricing inefficiency index is obtained (Shrivastava and Ranadhir 1995; Barrett 2001).

Efficiency is measured by the ration of output to input. Its inverse gives the pricing efficiency. The marketing cost is the input to the marketing function while gross marketing margin is the output of the function. Thus, pricing inefficiency index of trader i is evaluated from the following relationship.

$$PI_i = \frac{MC_w}{GMM_i} \dots\dots\dots (7)$$

Where:

PI_i - is the pricing inefficiency index for trader i

MC_w - Marketing Cost per kilogram of honey handled by trader i .

GMM_i - Gross Marketing Margin for trader i per kilogram of honey in Kenya shillings

The overall inefficiency of the honey market in the pastoral areas of Baringo is evaluated from the average inefficiency as follows:

$$PI = \frac{1}{n} \sum_{i=1}^n \frac{MC_w}{GMM_i} \dots\dots\dots (8)$$

where,

PI - is the overall pricing inefficiency of the honey market.

MC_w - Marketing Cost per kilogram of honey handled by trader i .

GMM_i - Gross Marketing Margin for trader i per kilogram of honey in Kenya shillings

The null and alternative hypotheses that honey pricing is not completely efficient are;

$$H_0 : PI = 1$$

$$H_1 : PI < 1$$

With PI being the sample traders mean pricing inefficiency. The null hypothesis is premised on the understanding that one represent complete pricing inefficiency. The assumption here is that the traders are rational¹³ and thus any figure above one indicates economic losses. Using $\alpha = 0.05$ (the level of significance), t-test¹⁴ is performed to evaluate the statistical significance of the observed pricing inefficiency as the population standard deviation is unknown. This tests whether the mean pricing inefficiency equals one (honey market completely inefficient) against the alternative that it is less than one.

From Mansfield (1991), the test statistic is $PI_t = (PI - 1) + s/\sqrt{n}$ with PI_t being standardized value of the computed pricing inefficiency exceeded with a probability of α . PI is the mean pricing inefficiency of the sampled traders, s is the sample standard deviation and n is the sample size. The null hypothesis is rejected if computed pricing inefficiency exceeds the critical value obtained from the statistical table of t-distribution.

Data analysis was carried out using the following variables:

Characteristics of traders

Age. Age categories were used to classify different traders. It is assumed that age adds to the human capital that a trader brings into the business and thus could have a bearing on trading performance.

¹³ Rationality implies that the trader seeks to maximize revenues over costs incurred

¹⁴ The procedure tests whether the mean of a single variable differs from a specified constant. And is represented thus, $t = (\bar{x} - \mu_0) + s/\sqrt{n}$ - SPSS for windows help on one-sample T Test

Education. The number of years that a trader has gone to school was used to determine the education level. Adding to the human capital and thus capability of the trader, education can also have an important effect on trader performance.

Sex. It has been hypothesised that the sex of a trader, either male or female, can influence the performance of a trader as it can have significant effects on social capital. Females are likely to have more relationships/friendships than males denoting higher social capital.

Years in Honey Trade. Obtained from the total number of years in which the trader has been involved in the honey trade, is an indicator of the level of human capital brought into the business through experience. This can potentially have an effect on the performance of the business.

Working Capital Source. This demonstrates the source of capital that the traders use in the business. The source of capital has an effect on the amount that a trader can access and thus the level of trading activity. This can also indicate whether there are financial problems and possible areas of interventions.

Scale of Operations. By the classification of the trader as either retailers or wholesalers, it would be possible to delineate the various marketing channels and specific tasks handled by respective groups.

Trading activities and marketing costs:

Honey Quantities Purchased and Sold. Although collected in the form of gallons, the values were converted to kilograms. Quantities were also estimated from the average monthly purchase / sales values and the average price.

Value per unit of Last Purchase and Sale. Collected in terms of Kenya shillings indicated the amount that the trader used to purchase and sell the last consignment of honey handled after ascertaining that there were no payments in kind.

Information Source and Sharing. This mainly involved enquiring on whether traders did share information on quantities available in the market and pricing details. Further to this, analysis tried to probe on the reason why this information was shared.

Pricing methods. Included details of how prices were arrived at in the market. Identified methods were important in the evaluation of collusion and or joint action by honey traders. Of keen interest was how the producer price was determined in market.

Marketing Costs. This included costs of transporting honey from the source to the destination market, cost of packaging i.e. the amount used in obtaining gallons or buckets used to pack honey including detergents for cleaning the same, the cost of personal travel which is the amount paid by the trader to and from the market as fare and that used for meals, amount paid to store honey, the amount paid at the market as fees during market days. Other marketing costs collected included estimates of telephone, brokers fees, value lost through theft and Taxes.

Kähkönen and Howard (1999) observe that transaction costs have an important effect on the accuracy of evaluating the efficiency of the market. Transaction costs¹¹ incurred in honey trade are thus also important in evaluating pricing efficiency of the honey traders. However, since that most of the transaction costs are encapsulated in the brokers' fees, specific costing of individual transaction costs was not done.

¹¹ Transaction costs arise in the course of market exchange and involve the costs of information, search, negotiation, screening, monitoring, coordination, and enforcement.

CHAPTER 4

RESULTS AND DISCUSSIONS

4.0 INTRODUCTION

This chapter presents the results of the study and the discussions. Section 4.1 considers the distribution of honey traders in the honey market and their general characteristics. Section 4.2 presents results on the honey market structure. The last section, 4.3 presents results of the analysis of pricing efficiency.

4.1 HONEY TRADERS AND THEIR CHARACTERISTICS

4.1.1 NUMBER OF HONEY TRADERS

The honey market in the pastoral areas of Baringo was found to have a few traders. On a typical market day, the number of traders in the market averaged five. Nevertheless, honey traders were found to be mobile with most of them often visiting more than one market in a week.

Table 4-1 Number of honey traders by market and division

		Division				Total
		Nginya'ng	Kolloa	Tangulbei	Border of Kipsaraman, Nginya'ng and Tangulbei	
Market	Kolloa		5			5
	Kokwototo			1		1
	Loruk				7	7
	Nginya'ng	11				11
	Tangulbei			7		7
	Yalya				4	4
	Chepkelacha			2		2
	Marigat				2	2
Total		11	5	10	11	39

Source: Survey results, 2003

As table 4-1 shows, Nginyang market had the highest number of traders surveyed followed by Tangulbei and Loruk. Chepkelacha and Kokwototo markets recorded the least numbers of traders who were surveyed. It is important to note that Marigat town was included at this point to capture the element of pure retailers. Therefore, although not falling within the actual study area it provides invaluable information on the overall performance of the honey market in the pastoral areas of Baringo. Nginyang market was found to be the convergence point for those travelling out of the sub-district. It is an important assembly market and probably the reason why there were many traders. Also, the high number of traders recorded in Loruk market could be attributed to the tarmac

road leading out of the area. Honey from Kolloa market leaves the district through, Tot-Biretwo road in Marakwet district despite recurrent insecurity caused by clashes between the Pokot and the Marakwet. The other outlet is through West Pokot. Kerio Valley Development Authority (KVDA) has two processing stations, one situated along the Tot road and the other in West Pokot district both of which act as collection points. Observed low number of traders in some markets (except Marigat) is a pointer to the existence of some barrier to enter honey trade imposed mainly by remoteness.

4.1.2 CHARACTERISTICS OF HONEY TRADERS

As already mentioned in the previous section, several traders were interviewed on more than one occasion albeit in different markets. Thus, in this section, individual honey traders were considered as a distinct entities irrespective of the number of interviews they granted. Consequently, eighteen individual traders' characteristics are considered henceforth.

4.1.2.1 Age and Sex of honey traders

A compact presentation of trader characteristics follow;

Table 4-2 Cross-tabulation of the trader's age group by sex

Age	Sex		Total
	Male	Female	
Under 30 years	4		4
31 to 40 years	9	2	11
41 to 50 years	1	2	3
Total	14	4	

Source: Survey results, 2003

Majority of the traders, sixty one per cent, fall within the 31 to 40 age group. Overall, most of the traders fall within the older age group of 31 to 50 years. That twenty two per

cent of the traders are aged 30 years or below could be an indicator of the emerging trend where young people have started to engage in honey trade. Honey trade is dominated by males, Fourteen traders (seventy seven per cent) compared to four female traders (twenty three per cent) female. To shed more light on the sex of the traders, a cross-tabulation with their origin was carried out as table 4-3 shows:

Table 4-3 Cross tabulation of the Traders Sex by their Origin

Sex	Origin		Total
	Within the study area	Outside the study area	
Male	13	1	14
Female	1	3	4

Source: Survey results, 2003

As table 4-3 show, only one male trader originated outside the study area. Similarly, only one female trader originated within the study area. These results show the possibility of cultural barrier to enter into the business for those not from the study area in case of males and for those from the study area for females. According to the culture of the people within the area, females are generally excluded from resource ownership thus their few numbers. Males from the outside are often viewed suspiciously and thus might not be able to enter the business easily.

4.1.2.2 Years in honey trade and formal education

The experience of the traders was evaluated from the number of years they had actually undertaken the business while their education was evaluated from the total number of years spent in formal education. Table 4-4 shows the experience of the traders by sex.

Table 4-4 Trader experience by sex

	Sex of trader	
	Female	Male
Below 4 years		6
Between 5 and 9 years	3	4
Between 10 and 14 years	1	3
Above 15 years		1

Source: Survey results, 2003

Majority of the traders had a more than nine years experience in honey trade with the bulk having between five and nine years of experience. Only twenty seven per cent had been trading for over ten years. Females were found to have more experience compared to males. Table 4-4 also shows that the traders with the least experience had been in the business for four years.

Table 4-5 Number of years in formal schooling

	Sex of trader	
	Female	Male
No schooling	1	4
Between 1 and 7 years		4
Between 8 and 12	3	4
Above 13 years		2

Source: Survey results, 2003

As table 4-5 show, most of the interviewed honey traders had formal education with fifty per cent having post primary school education. Only twenty seven per cent of the traders lacked any formal education. Education appears to be important in honey trade. This is possibly due to the fact that honey trade involves interactions with different types of clients. It is also possible that a second language is necessary for business interactions.

4.1.2.3 Categories of traders

Three categories of traders emerged from the study, pure wholesalers, pure retailers and wholesalers-cum retailers. The pure wholesalers purchase and sell crude honey in bulk quantities mainly to brewers. Pure retailers on the other hand purchase semi-refined honey, repackage in small bottles and containers for sale to consumers. On their part, wholesalers-cum retailers buy and sell crude and semi refined honey in bulk or small quantities depending on the availability of customers. They are predominantly wholesalers though. Due to the absence of pure retailers within the study area, Marigat town was considered as the area from where a few pure retailers would be studied. This is one of the major towns in the wider pastoral area of Baringo.

Table 4-6 Distribution of the different categories of honey traders interviewed

Category	Number of traders	Percentage
Wholesalers	3	16.7
Retailers	2	11.1
Wholesalers-cum Retailers	13	72.2
Total	18	100.0

Source: Survey results, 2003

As table 4-6 shows, honey trade in the pastoral areas of Baringo is dominated by wholesalers-cum retailers. Seventy two per cent of all the surveyed traders indicated that they were wholesalers-cum retailers while 16.7 per cent of the traders indicated that they were specialized wholesalers.

Table 4-7 Number and percentage of traders by origin and category

Origin	Category			Total
	Wholesalers	Retailers	Wholesalers cum retailers	
Within the study area	3		11	14
Outside the study area		2	2	4

Source: Survey results, 2003

Table 4-7 shows the relationship between trader category and origin. Apparently, all the pure wholesalers originate from within the study area while all the pure retailers from outside the area (the reason why Marigat town was included in the study). Although the retailers' results can be easily explained by the fact that very few pastoralists within the study area would be willing to commit resources to purchase honey which they can gather from the wild or obtain as gift, the origin of the pure wholesalers could be pointing to the ease of obtaining large supply volumes. There is a high probability that the origin of the wholesalers gives them an advantage when it comes to acquiring adequate supplies of honey.

In terms of the reasons for trading in the identified category, traders identified customers, honey supply in the market or their general specialization as motivating their choice of trading category.

Table 4-8 Determinants of honey trader category

	Category		Total
	Wholesalers	Wholesalers cum retailers	
Determined by availability of customers		9	9
Determined by quantity of honey available in the market		1	1
Is a specialized honey trader	1	3	4
Determined by availability of customer and quantity of honey available in the market		2	2

Source: Survey results, 2003

Table 4-8 shows that availability of customers was the most important determinant of the category in which the honey trader operated. Being a specialized trader also seems to be important though not very clear from the wholesaler-cum retailers' point of view. Other traders identified additional activities that they undertake concurrently as including livestock trade, sale of second hand clothes etc.

4.2 HONEY MARKETING SYSTEM

4.2.1 HONEY SOURCES AND MARKETING CHANNELS

The main sources of honey in the pastoral areas of Baringo are Kositei, Ribkwo, Silale and Loiyamorok locations. In terms of quantities, the estimated honey production in 2003/2004 production season is presented in table 4-9.

Table 4-9 Honey production in the pastoral areas of Baringo in 2003

	Quantity of honey in kg	Percentage
Other pastoral areas in the district	77,190	30 per cent
Study area	120,550	47 per cent
Other areas in the district	61,600	23 per cent
District Total	259,340	100 per cent

Source: Baringo District Livestock Department 2003 Annual Report

A previous survey of the producers estimated that approximately eighty seven per cent of all the honey produced is sold (JICA and GoK, 2001). Virtually all the honey handled by traders is crude with a small amount being semi refined. Although honey is a homogeneous product, sale of honey dew (sourced from underground) occur and this is treated as a different product which fetches a premium price. However, this only occurs on very few occasions and the quantities are insignificant. The flow of the product from the producers to various consumers is shown in figure 3. Although it was not possible to determine the approximate quantities handled through different channels, the survey determined that the traders constituted the major outlet of honey from the study area. Direct sales to consumers were minimal and restricted to few farmers carrying small quantities when travelling to town centres for other reasons and to consumers who happened to visit these areas. Although KVDA had started a new concept of using agents to purchase honey from pastoral areas, these agents also doubled up as honey traders. However, little information was available on the new concept.

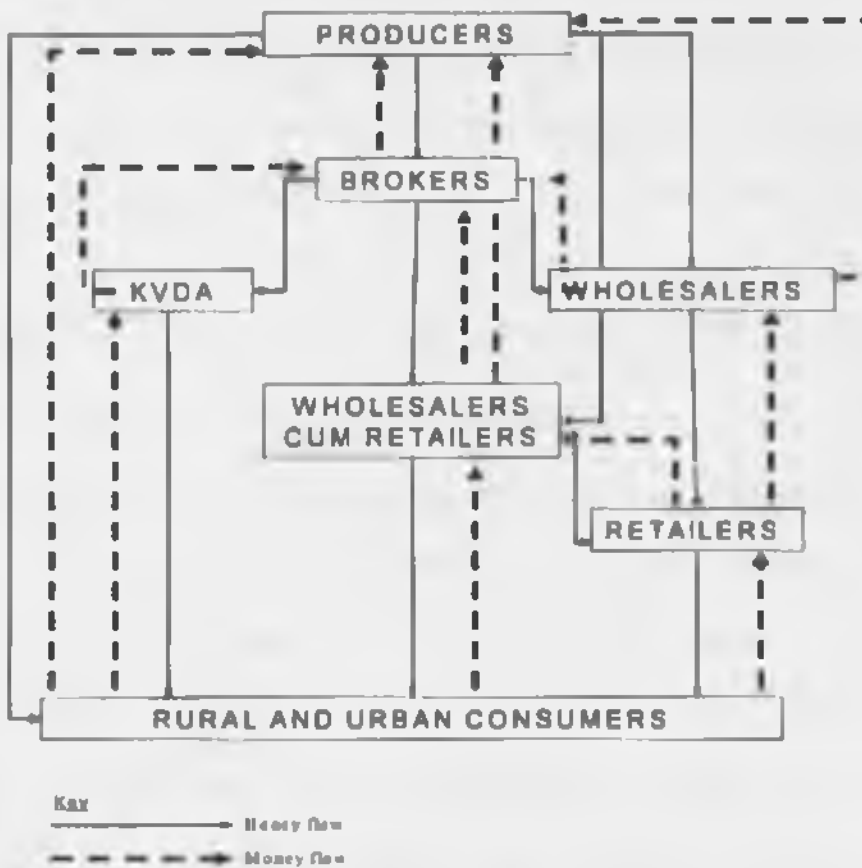


Figure 3 Honey marketing channel in the pastoral areas of Bariga
 Source: Survey results, 2003

Generally, the honey marketing system was found to be poorly organised. However, wholesalers-cum retailers' controlled the largest market share of eighty per cent followed by wholesalers who controlled seventeen per cent and the retailers who controlled only 3 per cent of the total honey in the market.

4.2.2 MARKET STRUCTURE

4.2.2.1 Degree of market concentration

Based on the estimated value of honey purchased monthly and the last transaction the trader engaged in, the three smallest traders were found to control about 3.7 per cent of

the honey market while the four biggest traders controlled 39.7 per cent of the honey market. The eleven middle sized traders seem to have the largest share of the market totalling 56.7 per cent. In terms of trader category, the wholesalers cum retailers controlled the largest share of the market at 81.3 per cent. However, there were wide variations in the quantities each individual trader controlled. A single wholesaler appearing in the highest quartile emerged as the single biggest trader surveyed with a market share of 4.7 per cent monthly (see appendix 2).

In terms of the value of last honey purchase, the four largest traders controlled over 50 per cent of the total market, while the four smallest traders share did not change significantly. The wholesalers cum retailers continued to appear as the most important players in the market. Overall, the mean value of honey purchased last by three wholesalers surpassed that of thirteen wholesalers cum retailers. The high standard deviation of the wholesalers-cum retailers shows that there were some with very small and others with very large figures. The case of a single wholesaler appearing in the highest quartile continues when the value of last purchase was used to evaluate market shares. In this instance, the trader was controlling 10 per cent of the honey market share (see appendix 3). In terms of the origin of the trader, and the value of last honey purchase, those from within the study area appeared to control the largest market share exceeding 80 per cent. Traders from outside the study area controlled only 18 per cent of the market and seemed to fall in the small size quartiles save for the single trader who was among the four biggest traders (see appendix 4).

The individual market share based on the average monthly purchases and the value of the last purchase for each trader was computed (see results in appendix 5). These results were

then used to evaluate the concentration of the market using the Hirschman Herfindahl Index (HHI) which measures the sum of the traders' market share squared.

Based on the average monthly trader honey purchase value,

$$HHI = \sum S_i^2 = 0.0796$$

Whereas, based on the quantity of honey last purchased by the traders,

$$HHI = \sum S_i^2 = 0.1005$$

In both cases, the computed HHI is small at 0.0796 and 0.1005 for monthly average and quantity of honey last purchased respectively. The test of the hypothesis that the honey market structure is not competitive,

$$H_0 : n = 1$$

Where n is the number equivalent of traders in the honey market is carried out after taking the reciprocals of the computed HHI. Thus,

Based on the average monthly purchase, $n = \frac{1}{0.0796} = 12.56 \approx 13$ equally sized traders.

While, based on the quantity last purchases, $n = \frac{1}{0.1005} = 9.95 \approx 10$ equally sized

traders.

These results show that the honey market in Baringo is composed of an equivalent of between 10 and 13 equally sized traders. The computed number equivalent of traders in honey market is between 50 per cent and 70 per cent of all the traders' surveyed showing high competition. However, the fact that the average number of traders in the market at any given market day was five, pointed to an Oligopsonistic market structure.

4.2.2.2 Product differentiation

The product traded in the honey market can be described as generally homogeneous even though a few variations based on processing exist. Traders mainly deal in crude honey. However, this is divided into two main categories. The first is predominantly honeycombs with the other liquid honey. The first category is the favourite of the wholesalers and is preferred by the traditional brewers. The mellifera taste of the honey has contributed significantly to the preference of Baringo honey for brewing local traditional liquor. Brewers are not concerned very much with the content of liquid honey and thus do not mind purchasing this category. The predominantly liquid crude honey is the favourite of the retailers.

Still based on the liquid honey content, the product is further differentiated into two packaging categories mainly, four litre tins and seventeen kilogram buckets. Although not important, colour and density of the honey is sometimes used to differentiate the product in the study area.

As an indicator of product differentiation, advertising is virtually nonexistent. The only trader, who mentioned advertising, did so in the context of informing producers of the intention to purchase honey.

4.2.2.3 Barriers to enter honey trade

Although some form of barrier to enter honey trade was presumed given the few number of traders in certain markets, this can only be conclusively determined by evaluating the ease of starting the trade. This approach as opposed to determining whether it is difficult

to enter the trade was taken because the sample considered was that of honey traders and it was not possible to identify another sample which does not engage in beekeeping.

The traders identified starting ease, hive ownership, honey supply and profitability as the main reasons that motivated them to start the trade.

Table 4-10 Reason for starting honey trade

	Category			Total
	Wholesalers	Retailers	Wholesalers -cum retailer	
Starting and operating business easy	2		6	8
The business is highly profitable			5	5
Own hives and honey quantity is high	1		1	2
Its easy to start and operate and the business is highly profitable		2	1	3

Source: Survey results, 2003.

Table 4-10 shows the reasons that motivated the traders into starting the business. Forty four per cent of the traders cited the ease of starting and operating the business as a main motivator. Twenty eight per cent felt that the business was highly profitable motivating them to enter honey trade. Several traders further identified a combination of factors i.e. hive ownership and high supply, and starting ease and high profits as having influenced their decision to start the business.

Figure 4 show that sixty one per cent of the traders felt that it was easy to start the honey trade business.

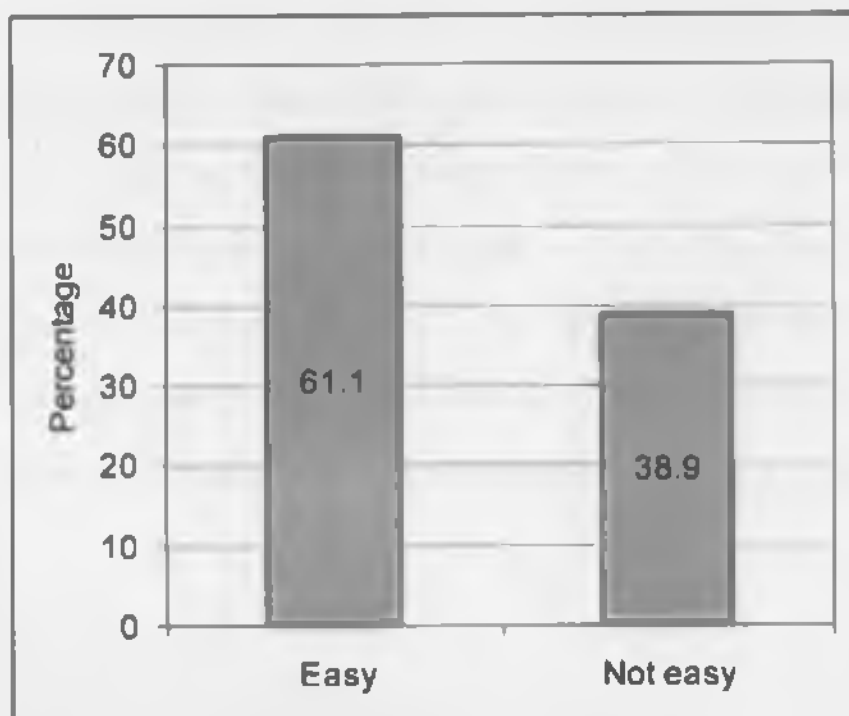


Figure 4 Ease of starting honey trade

Source: Survey results, 2003

When the ease of starting the business was evaluated by trader category and origin, the following emerged:

Table 4-11 Ease of starting honey trade by trader category and Origin (N=18)

Origin	Category	Starting honey trade	
		Easy	Not easy
Within study area	Wholesalers	3	
	Wholesalers-cum retailers	7	4
	Total	10	4
Outside study area	Retailers		2
	Wholesalers-cum retailers	1	1
	Total	1	3

Source: Survey results, 2003

Table 4-11 shows that traders who originate from the study area felt that it was easy to start the business compared to those from outside. Among the factors identified as easing the start of honey business included availability of outlet markets, ownership of hives, low starting capital requirement, management difficulties, lack of transport, difficulty in sourcing the right quality and quantity of honey, abundance of honey, high price fluctuation, receipt of financial assistance and lack of adequate capital.

Table 4-12 Reasons explaining the ease of starting honey trade (N=18)

	Was it easy to start honey trade	
	Yes	No
Low starting capital	1	
Honey abundant	2	
Outlet market available and honey is abundant	1	
Own hives, outlet market available and honey is abundant	1	
Own hives, Low starting capital and received financial assistance	2	
Own hives and received financial assistance	1	
Own hives, Low starting capital and honey is abundant	2	
Low starting capital and honey is abundant	1	
Slight difficulty in initial management		1
Difficulty in sourcing enough quantity and the right quality		1
Lack of transport		1
Lack of adequate capital		2
Lack of capital and difficulty sourcing enough quantity		1
Lack transport, difficulty sourcing enough quantity and high price fluctuation		1

Source: Survey results, 2003

Table 4-12 show the reasons traders gave as influencing the start of honey trade. Over seventy per cent of the traders who felt that it was easy to start the trade identified a combination of reasons as influencing their perception. However, amongst these, abundance of honey and low starting capital required dominated. Hive ownership alone did not seem to influence the ease of starting the business but was significant in

combination with other reasons. Traders who felt that it was not easy to start the business identify lack of transport and adequate capital as their main reason.

The traders identified their sources of working capital as personal savings, assistance from friends and other sources.

Table 4-13 Sources of financial capital

	Category of the trader			Total
	Wholesalers	Retailers	Wholesalers-cum Retailers	
Personal savings	2	2	10	14
Personal Savings and Other sources			3	3
Personal savings and relatives	1			1

Source: Survey results, 2003

Table 4-13 show that all traders used their personal savings to start the business. Only four traders identified additional sources. Income from other businesses, livestock sales and previous employment were identified as the major sources of personal savings. The 'other' sources included donations and loans from micro enterprise institutions.

4.2.2.4 Degree of Vertical Integration

Some traders said that they started the trade because they owned beehives raising the possibility of vertical integration. Subsequent analysis of information sharing, preference for long term relationships, use of agreements and any indication of joint handling further provide evidence of vertical integration.

Results of an evaluation of the ease of sharing market information among traders is shown in figure 5.

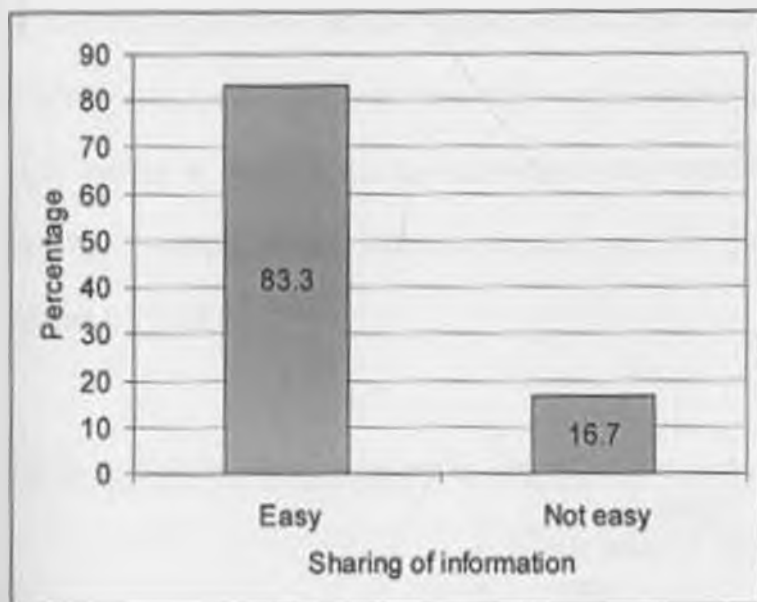


Figure 5 Ease of sharing information on prices and quantities of honey among the traders
Source: Survey results, 2003

Over eighty three per cent of the traders alluded to easily share information on quantities and prices while only sixteen per cent said they did not share this kind of information easily. The traders further identify the need to discover prices, location of traders and number of traders as the reasons that influence information sharing.

Table 4-14 Sharing of information among the honey traders and the reasons

	Share information		Total
	Yes	No	
To agree on and stabilize market prices	10		10
Because we are located at the same place	2		2
Because we have to walk to discover prices		1	1
We are few and not competing seriously	2		2
To agree on buying price and because there is little competition	1		1
Knows how to bargain		2	2

Source: Survey results, 2003

As table 4-14 shows, price discovery and influencing appeared to be the main reason for sharing information according to fifty per cent of the traders. This information was shared at the point of purchase mainly to agree on the same price that was to be offered to honey sellers and in the words of other traders, 'to stabilize the market'. The fact that the traders were located at one place in the market was also identified as encouraging information sharing. Those not sharing information easily said that they discovered prices by walking around the market.

Table 4-15 Methods traders use to contact sellers and obtain their supplies

	Origin		Frequency
	Within study area	Outside study area	
At the market	6	3	9
At agreed meeting points	3	1	4
At the traders house	1		1
Market and agreed meeting points	1		1
Market and trader's home	1		1
Market and producer's home	1		1
All methods combined	1		1

Source: Survey results, 2003

Table 4-15 show the methods used by the traders to contact bee keepers. The market was identified as the major source of honey supply. However, traders originating within the study area appeared to have more methods of obtaining their honey supplies. Mutually agreed meeting points were identified as key to obtaining honey supplies. These points include specific shops in the trading centres, specific road junctions among other locations. Table 4-15 further shows that fifty per cent of the traders had some form of understanding / relationship with sellers to ensure good honey supply. These arrangements / agreements were based on mutual understanding and trust. Loyalty

between the two agreeing parties was also identified as necessary for the success of those relationships. To further understand the nature of competition within the honey market, table 4-16 show competition strategies used by the traders.

Table 4-16 Competition strategies employed by honey traders

	Category of the trader			Total
	Wholesalers	Retailers	Wholesalers-cum Retailers	
Good bargaining skills			1	1
Hire brokers			2	2
Punctuality in the market			2	2
There is little competition	1			1
Improve quality		1		1
Increase size of package		1		1
Manipulate price			2	2
Hire brokers and Manipulate price			2	2
Good bargaining skills and Manipulate price			3	3
Punctuality in the market and competition is little	2			2
Good bargaining skills and relationship with producer			1	1

Source: Survey results, 2003

While wholesalers and wholesalers-cum-retailers concentrated on strategies related to honey price, place of trading and "promotion", the retailers' strategies were product-based. However, manipulation of honey price either on its own or in combination with hiring of brokers or good bargaining skills was identified as the major strategy for . Also, good bargaining skills and hiring brokers were identified as significant strategies. Brokers were often used when there was scarcity of honey or when supplies dwindle. The brokers mainly waited for the pastoralists beekeepers outside the market especially on road junctions. They also acted as assemblers of the honey collected from different sellers to make a debe (17 kg used plastic cooking fat container used for packaging). The brokers were paid a commission for each debe or gallon (4 litre used paint tin also used

for packaging) by the trader. Brokers' commission thus generally encapsulate the cost of searching, assembling and negotiating that the traders would incur while making honey purchase.

According to twenty two percent of the traders, punctuality in the market constituted an additional competition strategy. This was considered significant because of the short duration of honey trade in the pastoral market. In order to be punctual, some traders had to travel and stay overnight in the market for the following day's trading. To reduce lodging expenses, some traders rented sleeping places which they used whenever they were in the market. Wholesalers generally felt that there was little competition in the market and only considered punctuality as their main strategy.

Retailers on the other hand strived to enhance the quality of honey after purchase to increase competitiveness. They generally add value by semi-refining the honey. They also used packaging size as another method of competing. Wholesalers-cum-retailers appeared to be the category of honey traders that competed fiercely given the numerous strategies they used either singly or in combination.

4.3 HONEY PRICING

4.3.1 HONEY PRICE DETERMINATION

As already mentioned, the large number of sellers in comparison to the traders' number reduces the bargaining power of the bee keepers. Further, one to one bargaining between the seller and the trader stifle free flow of information amongst the sellers since the trader has the hindsight of knowing the prices at the destination markets. This situation is more serious when the sellers are intercepted at junctions before they reach the market and thus

don't get the opportunity of knowing the day's prevailing market price. The very nature of the pastoral areas implies that markets are quite far from most of the bee keepers. Cases of people walking for two or three days to reach the market are not uncommon, thus most sellers do not have the opportunity of visiting the market in order to discover prices prior to making their sales. However, the quantity of honey available in the market is considered as the most important determinant of honey price..

Table 4-17 shows an evaluation of honey price determination and discovery in the market by trader category.

Table 4-17 Honey price determination

	Category of the trader			Total
	Wholesalers	Retailers	Wholesalers-cum Retailers	
Quantity available in the market			2	2
Destination market price			1	1
Traders agree on price			1	1
Quantity available in the market, number of buyers and traders agree on prices	1			1
Quantity available in the market and number of buyers and destination market price			2	2
Quantities available in the market and number of buyers	1	2	5	8
Quantity available in the market, traders agree on prices and destination market price	1			1
Quantity available in the market and destination market price			2	2

Source: Survey results, 2003

According to eighty nine per cent of the traders, the quantity of honey supplied in the market on its own or in combination with other factors was the major determinant of honey price. Across all trader categories, the quantity available in the market combined with the number of buyers in the market were also identified as determining honey price.

4.3.4 PRICING EFFICIENCY

The unit of analysis in this section is the transaction involving a honey trader. Therefore, even though several traders were interviewed more than once, the section on transactions and costs are considered as independent. All interviews (39) are considered in subsequent analysis.

Honey traders identified transport of product, storage, packaging, telephone and personal travel costs as important. Other identified costs included market and brokers fees. A summary of these costs is presented in table 4-19:

Table 4-18 Marketing costs per kilogram of honey in Ksh - 2003 (N=39)

Marketing cost	Wholesalers			Retailers			Wholesalers cum retailers			All traders combined		
	min	max	Mean (se*)	min	max	Mean (se)	min	max	Mean (se)	min	max	Mean (se)
Personal trader transport	1.31	20.00	7.43 (2.27)	.00	.00	.00 (0.00)	.00	35.29	8.12 (1.73)	.00	35.29	7.56 (1.34)
Telephone cost	.00	.00	.00 (0.00)	.00	.00	.00 (0.00)	.00	11.76	1.20 (0.44)	.00	11.76	0.89 (0.35)
Honey transport cost	.33	10.00	1.84 (1.19)	.00	2.94	1.47 (0.92)	.00	8.82	1.89 (0.33)	.00	10.00	2.27 (0.35)
Storage cost	.00	.10	0.01 (0.01)	.30	3.50	1.65 (0.99)	.00	5.88	1.16 (0.27)	.00	5.88	0.95 (0.22)
Market fees	.00	2.00	0.49 (0.23)	.25	0.59	0.59 (0.11)	.00	2.35	0.37 (0.08)	.00	2.35	0.40 (0.08)
Packaging cost	.00	1.00	0.13 (0.13)	11.76	35.29	23.53 (7.19)	.00	8.82	0.95 (0.37)	.00	35.29	1.94 (0.99)
Brokers fees	.00	7.50	3.75 (1.42)	.00	0.00	0.00 (0.00)	.00	7.50	5.69 (0.59)	.00	7.50	5.00 (0.55)
Total Marketing Costs			15.65			27.24			19.38			19.01

*Standard error of the mean

Source: Survey results, 2003

Table 4-18 presents the marketing costs that the traders incur. Minimum values of zero indicate none performance of the implied marketing function. For example a trader may not incur any personal transport costs because the market in which s/he is operating is

within s/her home area. Also, an instance may arise where the trader just purchases and sells within the same market without necessarily incurring honey transport costs. In the case of market fee which is not expected to have zero minimum, some traders admitted evasion.

The apparent high maximum values especially for personal transport and packaging was recorded when a trader travelled to a distant market but only got small quantities of honey. An example was a trader who on a particular market day, spent Ksh. 400/= on a return journey to the market only to get two seventeen kilogram (34 kg) of honey. In the case of packaging, the high costs are attributed to the purchase of used whiskey bottles and metal containers by pure retailers who sell honey in smaller quantities. A 250ml bottle costs Kshs. 10/=. Brokers are important in determining the quantity of honey a trader obtains during low season. The broker's fee is always paid at a fixed rate of Ksh. 30/= per 4 litre container.

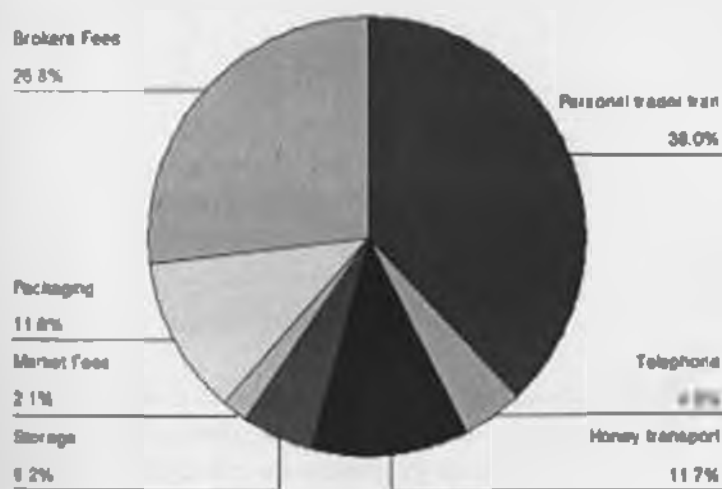


Figure 6 Composition of honey marketing costs

In figure 6, personal travel costs appear as the most important marketing costs incurred by honey traders at 38 per cent of total marketing costs. Combined with honey transport costs at 11.7 per cent of the marketing costs, transport costs emerge as contributing nearly half of all the honey marketing costs. This concurs with previous findings of high transport costs in sub Saharan Africa (Gersovitz 1992, Omamo 1998 cited by Fafchamps et al 2003). Brokers' fees are also an important component of honey marketing costs at 26.8 per cent. However, this needs to be considered carefully since it applies mostly off season. At 11.8 per cent packaging is another important honey marketing cost component.

Based on the purchase price, sales price and total marketing costs of honey, net marketing margins and mean revenues for different trader category was computed as follows:

Table 4-19 Analysis of the Honey traders marketing margins

Trader category	Marketing Margin (Mean)	Marketing costs (Mean)	Net ^a Margin (Mean)	Total Revenue (Mean)
Wholesalers	32.87	15.65	19.69	8854.29
Retailers	74.77	27.24	47.53	5650.00
Wholesalers-cum retailers	26.03	19.38	21.04	10293.54
All Traders	29.93	19.02	22.65	9760.18

Source: Survey results, 2003

^aThe net margin is computed as means for the specific trader category. This is the reason why it does not appear to be the difference between marketing margins and marketing costs both of which are also category means.

Retailers seem to incur the highest marketing costs but also have the highest mean net margins followed by wholesalers-cum retailers. Wholesalers cum retailers have the highest mean revenues. Wholesalers cum retailers earn about 42 per cent of the revenues

generated in the honey market compared to retailers who earn the least at 23 per cent. Overall, net margins are 76 per cent of marketing margins. However, wholesalers cum retailers have the highest net mean margins as a percentage of mean gross marketing margins at 80 per cent while the wholesalers have the least at 60 per cent. Further, marketing costs as a percentage of gross marketing margins are generally high at 64 per cent. The figure is lowest for retailers at 36 per cent and highest for wholesalers cum retailers at 75 per cent. Retailers seem to be performing better compared to the other two trader categories. Analysis of the honey marketing margins and costs for the different categories of traders follow.

Table 4-20 Analysis of wholesaler mean marketing margins and mean marketing costs per kg of honey handled.

<i>Item</i>	<i>Kshs/kg</i>	<i>Kshs/kg</i>
Trader Revenue		131.43
Cost of purchase		98.56
Honey Transport	3.84	
Storage	0.01	
Market Fees	0.49	
Packaging	0.13	
Telephone	0.00	
Brokers fees	3.75	
Personal Travel	7.43	
Total marketing costs		15.65
Sub-total		114.21

Traders Profit17.22

Source: Survey results, 2003

Return to trader's capital invested is 17.5 per cent. At 47 per cent, personal travel costs are the highest marketing costs incurred by wholesalers as seen in table 4-21 followed by honey transportation costs at 25 per cent and brokers' fee at 24 per cent. These three costs constitute 96 per cent of wholesalers' marketing costs.

Table 4-21 Analysis of Wholesalers-cum Retailers mean marketing margins and mean marketing costs per kg of honey handled.

<i>Item</i>	<i>Kshs/kg</i>	<i>Kshs/kg</i>
Trader Revenue		128.77
Cost of purchase		102.74
Honey Transport	1.89	
Storage	1.16	
Market Fees	0.37	
Packaging	0.95	
Telephone	1.20	
Brokers fees	5.69	
Personal Travel	8.12	
Total marketing costs		19.38
Sub-total		122.12
Traders Profit		6.65

Source: Survey results, 2003

Return to trader's capital invested is 6.5 per cent

Wholesalers cum retailers have the highest cost incidences with seven different types of costs. However, personal travel costs and brokers fees are the highest at 42 per cent and 29 per cent of the total marketing costs respectively. Despite having the highest mean of net margins as a percentage of gross margins and revenues (Table 4-20), the profitability of this category is low and their return to capital invested only 6.5 per cent.

Table 4-22 Analysis of retailers mean marketing margins and mean marketing costs per kg of honey handled.

<i>Item</i>	<i>Kshs/kg</i>	<i>Kshs/kg</i>
Trader Revenue		252.50
Cost of purchase		177.74
Honey Transport	1.47	
Storage	1.65	
Market Fees	0.59	
Packaging	23.53	
Telephone	0.00	
Brokers fees	0.00	
Personal Travel	0.00	
Total marketing costs		27.24
Sub-total		204.98
Traders Profit		47.52

Source: Survey results, 2003

Return to trader's capital invested is 27 per cent

Table 4-22 shows that about 86 per cent of honey marketing costs incurred by retailers are in packaging. Storage costs at 6 per cent and Transport costs at 5 per cent are also

important. Packaging materials purchased include different sizes of used whiskey bottles into which semi refined and refined honey is put. Ability to break bulk honey into small quantities desirable to a wide range of consumers is important given the equally diverse preferences.

Table 4-23 Analysis of all traders combined, mean marketing margins and mean marketing costs per kg of honey handled.

<i>Item</i>	<i>Kshs/kg</i>	<i>Kshs/kg</i>
Trader Revenue		135.66
Cost of purchase	105.73	
Honey Transport	2.27	
Storage	0.95	
Market Fees	0.40	
Packaging	1.94	
Telephone	0.89	
Brokers fees	5.00	
Personal Travel	7.56	
Total marketing costs	19.01	
Sub-total	124.73	
Traders Profit		10.92

Source: Survey results, 2003

Return to trader's capital invested is 10.3 per cent

Overall, personal transport, brokers' fees, honey transport and packaging costs appear to be most important to all traders as seen in table 4-24. As already observed, these findings

have important implications on the issue of transaction costs in general and search, screening and negotiating aspects in particular.

While identifying personal travel of the trader, honey transportation, brokers' fees and packaging costs as important components of the honey marketing costs, the results also provide an indication of the issues that are of importance to the different categories of traders in the honey market.

The high personal travel cost though attributable to the poor road network, also indicate scarcity of public or other appropriate means of transport to and from the pastoral areas of Baringo. This is in fact evidenced by the numerous cases of lift hiking on any vehicle that reaches these areas. These costs are further magnified when the trader get a small quantity of honey after travelling long distances. Travelling to the market in person is motivated by the desire to obtain the right quality and quantity of honey and further indicates difficulty of getting up to date marketing information. Even if the traders would have been willing to use the phone for market information, this would not be possible because the telecommunication infrastructure does not exist and where it does, it's unreliable. Generally, the pastoral areas of Baringo are not within the mobile telephone network.

Another implication of lack of market information is the high broker's fees. Although this is more important during off season, brokers are important in the process of searching, screening for quality and bargaining for the right prices with the pastoralists. This is particularly effective when the brokers intercept honey sellers before they reach the market. Brokers further assure the traders of adequate honey quantities.

The issue of packaging is also important not only from the cost point of view but the final product quality. Often the packaging material is not suitable especially in the case of used paint tins (often rusty).

While recognising that some traders made losses in their last transaction, evaluation of honey pricing efficiency was conducted for all traders minus extreme values. The explore function of the SPSS (statistical package for social scientists) program was used to identify and exclude outliers from the analysis. An additional advantage of using the procedure is that of ensuring that the pricing inefficiency distribution is normalized, an important requirement for statistical analysis and inference making.

Table 4-24 Honey Market Pricing Inefficiency by trader category

<u>Trader category</u>	<u>Mean Pricing Inefficiency</u>
Wholesalers	.55
Retailers	.36
Wholesalers cum retailers	.74
All Traders	.67
<u>N</u>	<u>35</u>

Source: Survey results, 2003

Retailers have the least mean price inefficiency implying that they have the highest pricing efficiency. Wholesalers cum retailers with the highest pricing inefficiency, is the least pricing efficient. Overall, the honey market has a pricing efficiency of 33 per cent. The statistical significance of this mean pricing inefficiency is evaluated using the student t-test. Consequently, the null hypothesis that honey pricing is not efficient is tested thus; Null hypothesis is $PI = 1$, the critical region for rejection of the hypothesis is determined

from the standard normal t-table²², at 0.05 significance level and 34 degrees of freedom to be 1.691. Thus the null hypothesis that honey pricing is not efficient will be rejected if computed pricing inefficiency is less than 1.691 i.e.

$$(PI_i < 1.691)$$

Using SPSS to evaluate the significance of the computed mean pricing inefficiency of the honey market returns the following results:

Table 4-25 Test of the significance of the honey pricing inefficiency

PI _i	Degrees of freedom	Significance	Mean difference	95per cent confidence interval of the difference	
				Lower	Upper
-3.313	34	.002	-.2838	-.4578	-.1097

Source: Survey results, 2003

From table 4-26, the computed PI_i is less than 1.691. Therefore, the null hypothesis that honey market is not pricing efficient is rejected for the alternative. Since the confidence interval for the mean difference does not include zero and statistical significance is small at 0.002, it is concluded that the mean pricing inefficiency of the sample differs significantly from one with the conclusion being that the honey market is not completely pricing inefficient. The honey market is evaluated to be 33 per cent pricing efficient²³.

For better understanding of the results in table 4-26, see footnote²⁴.

²² In this case, the distribution used is from Mansfield (1990) 4th ed.

²³ Computed from $(1 - 0.67)$ - the results in table 4-25.

²⁴ 1. A low significance value indicates that the difference between the test value and the observed mean is highly significant

2. A confidence interval for the mean difference that does not contain zero also indicates a significant difference between the test value and observed mean.

3. If the sig value is high and the confidence interval for the mean difference contains zero, then it is not possible to conclude that the difference between the test value and the observed mean is significant.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 SUMMARY

Honey Market. There are nine major markets in the pastoral areas of Baringo where honey trade is actively conducted. These markets are widely dispersed geographically and are characterised by high remoteness. From the sampled markets, Nginyang market with 28 per cent of honey traders is the most important. Although distant markets appear to have a small number of traders on any given market day, on average, there are five honey traders doing business in any single market.

Trader Characteristics. Honey trade is dominated by males who make up seventy seven per cent of all the traders. Generally middle aged, sixty one per cent of honey traders' fall in the 31 – 40 years age bracket and only twenty two per cent are below the age of 30 years. In terms of trader's origin, ninety three per cent of the males come from within the study area while seventy five per cent of the female traders come from outside the study area. The traders are highly experience with sixty seven per cent having more than five years trading experience. Over fifty per cent of the traders have post primary level of education indicating a high level of education. Of the traders interviewed, seventy two per cent were wholesalers cum retailers, sixteen per cent wholesalers and eleven per cent retailers. Wholesalers mainly purchase bulk crude honey without much quality considerations, and sell in bulk. Their main market is the brewing industry in Nakuru district. Wholesalers-cum retailers purchase both crude and semi refined honey in bulk and sell either in bulk or in small quantities depending on customer availability. Retailers

mainly purchase semi refined honey which they repackage and sell directly to consumers in small quantities. Sixty nine per cent of the traders singled out availability of customers as the most important determinant of the category in which they operated. All the wholesalers interviewed originate within the study area. Pure retailing is not carried out within the study area and the interviewed traders were purposively sampled from Marigat town excluding honey hawkers.

Market Concentration. Based on the value of honey last purchased, the four largest traders control about fifty five per cent of the market with the three smallest traders controlling only four per cent. All the traders in the smallest group are wholesalers-cum-retailers who originate from within the study area while the four largest traders include one pure wholesaler who originates from outside the study area. A trader with eighteen per cent market share is the single largest trader based on the value of honey last purchased. In terms of number equivalent of equally sized traders, the honey market in the pastoral areas of Baringo has an equivalent of about ten active traders.

Product Differentiation. Product differentiation is significant in the case of pure retailers and the wholesalers-cum-retailers group with emphasis on product quality and packaging. The main types of product by quality are, crude and semi refined honey. In terms of packaging, the product is differentiated into different types based on size from 17 kg containers to 250 ml bottles. Honey is packaged in recycled bottles and other containers some of which affect the final quality. The effect on quality is especially critical when rusted metal tins are used for packaging.

Barriers to entry and exit. All the traders identified personal savings as the main source of financial capital they used in starting the business which sixty one per cents felt was

easy to do. Seventy one per cent of those who felt that it was easy to start the business come from within the study area. Among those who felt that it was not easy to start the trade, seventy five per cent are from outside the study area. Abundance of honey according to thirty nine per cent, hive ownership for thirty three per cent and low starting capital for twenty eight per cent of the traders were identified as the factors that ease the starting of the business. However, these factors occur jointly in various combinations. Among others, lack of transport and difficulty in sourcing the right quality and enough quantity were identified as the reasons which made it difficult to start honey trade according to 16 per cent of the traders.

Degree of Vertical integration. About seventy two per cent of all the interviewed traders belong to the wholesalers cum retailers' trader category. A further eleven per cent also noted that they owned personal hives indicating control of marketing functions in subsequent stages of honey marketing process.

Eighty three per cent of the traders alluded to easily sharing marketing information with sixty per cent identifying that the need to agree on buying prices as the main impetus.

Although the market is the most important place through which exchange takes place according to seventy six per cent of the traders, evidence of some form of relationship through which exchange takes place was observed with fifty per cent of traders saying they have agreements with bee keepers on how to obtain honey supplies.

Wholesalers and wholesalers-cum-retailers mainly use price, place and 'promotion' as the main strategies for competition within the honey market. Retailers on the other hand use the product as the basis for their competition strategies. Both individually and in combination with other factors, honey pricing is the most important competition strategy

in the market according to thirty nine per cent of the traders. Other important competition strategies include good bargaining skills for twenty eight per cent, hire of brokers for twenty two per cent and punctuality in the market for seventeen per cent of the traders.

Honey pricing. According to eighty nine per cent of the traders, quantity available in the market is the most important determinant of honey price. However, this is mostly in combination with several other variables including the number of traders in the market and destination market prices among others. Sixty one per cent further identified the number of buyers in the market as the second most important determinant of honey price in the pastoral areas of Baringo.

Honey marketing costs. Although individual figures of marketing costs incurred by traders vary widely, personal transport at thirty eight per cent, brokers' fees at twenty six per cent, packaging costs at eleven per cent and honey transport at eleven per cent of the total marketing costs are most important. For the wholesalers, significant contributions to total marketing costs are personal transport at forty seven per cent, honey transport at twenty five per cent and brokers' fees at twenty four per cent. For retailers, packaging costs makes up eighty six per cent of the total marketing costs while for wholesalers cum retailers, personal travel at forty two per cent and brokers' fees at twenty nine per cent are significant. The wholesalers cum retailers are the only trader category which incurs all the seven costs incidences.

Honey marketing margins Retailers have the highest mean net margins followed by wholesalers cum retailers and lastly wholesalers. However, mean net margins as a percentage of mean gross marketing margins are highest for wholesalers cum retailers at 80 per cent. This category of traders also records the highest mean revenues from honey

sales. However, they have the least profits. Retailers have the highest profits at Kshs. 47.52 followed by wholesalers with Kshs. 17.22 and wholesalers cum retailers with Kshs. 6.65 per kilogram of honey. Overall, profits from honey trade for all traders average Kshs. 10.92 per kilogram of honey. The overall return to trader capital invested is six per cent. In terms of returns to capital invested, retailers return the highest figure at twenty seven per cent, wholesalers at seventeen per cent while wholesalers cum retailers have the least return on capital invested at six per cent

Honey Pricing Efficiency Overall, the honey market is thirty three per cent pricing efficient. Retailers are the most pricing efficient at sixty four per cent while wholesalers and wholesalers cum retailers are only forty five per cent and twenty six per cent pricing efficient respectively.

5.2 CONCLUSIONS

First, the findings clearly indicate that the honey market in the pastoral areas of Baringo has a few active traders dealing in a basically homogeneous product. Entry to honey trade is partially blocked due poor infrastructure. The tendency of traders to agree on purchase price as the impetus for information sharing depicts collusive behaviour and presence of a single trader with the largest market share points to the existence of a dominant player in the honey market. From the foregoing, it can be concluded that the honey market structure in the pastoral areas of Baringo can be described as organised collusive oligopsony.

Secondly, a high degree of vertical integration and a substantial number of traders who incurred losses in their last transaction depict honey trade as fairly risky. However, low

profits of traders who are vertically integrated are a result of their business practice where they often combine honey trade with other activities like livestock trade, selling of second hand clothes among others, and thus visits markets not only to engage in honey trade but other activities also. This phenomenon is attributable to the poorly organised honey marketing chain as there are no clear linkages between the nodes of the marketing chain. Marketing costs are generally high at sixty four per cent of the mean gross marketing margins. Further, most of the marketing costs are variable. It is estimated that the pricing efficiency of the honey market is thirty three per cent. The low competitiveness of the structure of the honey market is the most plausible explanation for this low efficiency. Finally, it is worth noting that the findings match economic theory that high efficiency is contingent on a highly competitive market structure.

5.3 RECOMMENDATIONS

1. There is need to promote beekeeping and honey trade so as to increase competitiveness on the honey market. This can be done through the promotion of collective action among beekeepers so that they can enter into contractual marketing arrangements.
2. There is need to train honey traders on micro and small business management skills to enable them improve their record keeping. The training should focus on basic record/ book-keeping, market identification and general management of small businesses. This would enable them be able to separate different trade activities, and monitor profitability more closely. Through this training, it is anticipated that the traders would obtain enough information to enable them decide on whether to continue with honey trade or voluntarily withdraw. As a

result, this would enhance specialization and ultimately, better organization of the honey marketing chain. In addition to enhancing pricing efficiency, this would also improve competitiveness.

3. There is need to promote direct vertical integration between beekeepers and high end markets e.g. processors as a means of organizing the market. Potential benefits of this form of market coordination include: enhancement of product standards in terms of quality and opening of an additional market for bees wax which is currently non existent in the pastoral areas of Baringo. This would also lead to an increase in the efficiency of honey market.
4. A simple marketing information system that provides indicative prices for bee keepers and traders also needs to be put in place. Currently, there is no honey price reference point.
5. Given the potential importance of beekeeping in the livelihoods of most pastoral and agro pastoral rural communities, a study on the marketing other beekeeping products like beeswax, propolis and bee venom is necessary.

BIBLIOGRAPHY

- Abbott, J.C.**, (1968). "The Development of Marketing Institutions In Agricultural Development and Economic Growth." Ed H. M. Southworth and B. F. Johnston (Eds), Cornell University Press. Ithaca, New York.
- Abbott, J.C. and J.P. Makeham.** (1981). "Agricultural Economics and Marketing in the Tropics." Wing Tai Cheung Printing Co. Ltd, Rome.
- Abila, R. O.**, (1995). "Structure Conduct and Performance of Kisumu Fish Marketing System." Unpublished MSc Thesis, University of Nairobi, Kenya
- Ainebyona, W.M.**, (1988). "The Structure and Conduct of the Market for cooking Bananas in Kampala City, Uganda." Unpublished MSc Thesis, University of Nairobi, Kenya
- Aklilu, Y., and Wekesa, M.**, (2002). "Drought, livestock and livelihoods: lessons from the 1999-2001 emergency response in the pastoral sector in Kenya." Humanitarian practice network paper no 40. ODI.
- Anrooy, R. E.**, (2003). "Vertical Cooperation: opportunities for chain marketing in the Vietnamese fisheries sector." Madison University, USA.
- Bain J.S.**, (1959). "Industrial Organization." New York, USA. Wiley.
- Baines, P., R. Brennan, and J. Egan.** (2002). "Structure and Strategy in Political Markets." Submission to Middlesex University Discussion Paper Series.
- Barrett, C.B.** (2001). "Measuring Integration and Efficiency In International Agricultural Markets." In Review of Agricultural Economics Vol 23, No. 1 pg 19-23.
- Barrett, C.B., J.R. Lee and D. Bailey.**, (2000). "Factor and Product Market Tradability and Equilibrium in Pacific Rim Pork Industries." Journal of Agricultural Resource Economics 25(July): 68-87.
- Behnke R and Kerven, C.**, (1994). "Redesigning for risk: tracking and buffering environmental variability in Africa's rangelands." Natural Resource Perspectives, No.1. Overseas Development Institute
- Bekure, S. and Tilahun, N.**, (1982). "Livestock marketing studies."
<http://www.fao.org/wairdocs/ilri/x5542b/x5542b0i.htm#introduction>

- Bird, K. and A., Shepherd.** (2003). "Chronic poverty in semi-arid Zimbabwe." CPRC Working Paper No 18. ODI
- Blyn, G.,** (1973). "Price Correlation as a Measure of Market Integration." *Indian Journal of Agricultural Economics* 28(2): 56-59.
- Bravo-Ureta, E. B., and A. E. Pinheiro.** (1997). "Technical, Economic, and Allocative Efficiency in Peasant Farming: Evidence from the Dominican Republic." In *The Developing Economies*, XXXV-1 (March 1997): 48-67.
- Carney, D.** (1999). "Sustainable Livelihoods Approaches: Progress and Possibilities for Change." DFID.
- Casley, D.J. and D. A. Lury.,** (1985). "Monitoring and evaluation of Agriculture and Rural Development Projects" The John Hopkins University Press. Baltimore Maryland 21211, USA.
- Cramer, G. L. and Jensen, W.,** (1982). "Agricultural Economics and Agribusiness." 2nd Edition. McGraw Hill Book Company, USA.
- Dessaegn, G., T.S. Jayne and J.D. Shaffer.,** (1998). "Market Structure, Conduct, And Performance: Constraints On Performance Of Ethiopian Grain Markets " Working paper 8 Grain market research project Ministry of economic development and cooperation Addis Ababa
- Dittoh, S.,** (1992). "Market Integration: The Case of Dry Season Vegetables in Nigeria." In *Issues In African Rural Development 2-African Rural Social Sciences Research Networks*. Winrock International Institute for Agricultural Development
- Duyu, J.J.,** (2003). "Determination and Documentation of Bee and Poultry Production/Marketing Systems in RRC Perkerra Mandate Districts." In Centre research Advisory Committee (CRAC) Document. CRAC-RREAC Meeting. Kenya Agricultural Research Institute Regional Research Centre Perkerra, Marigat.
- Eckert, F. E., and Leftwich, D. M.,** Tenth Edition "The Price System and Resource Allocation." The Dryden Press, New York, USA.
- Ficher, C. K. and D.C. Baker** (1982). "Research on Agricultural Development in Sub-Saharan Africa: A Critical Survey." MSU International Development Papers No. 1. Department of Agricultural Economics. East Lansing: Michigan State University.
- Fafchamps, M., and B. Minten.** (1998). "Returns To Social Capital Among Traders." Market, Trade and Institution Division, Discussion Paper No. 23 of IFPRI.

- Fafchamps, M., E. Gabre-Madhin, and B. Minten, (2003)** "Increasing Returns and Market Efficiency In Agricultural Trade." Market, Trade and Institution division, Discussion Paper No. 60 of IFPRI.
- Fischer, C. C., (1997).** "What Can Economics Learn From Marketing's Market Structure Analysis?" <http://www.westga.edu/~bquest/1997/econmkt.html>
- Gersovitz, M., (1992).** "Transportation, State Marketing, and the Taxation of the Agricultural Hinterland." *Journal of Political Economy* 97:1113-1137.
- Gormsen, E., (1985).** "The Role of Marketplaces in Developing Countries." In ICRISAT. 1985. *Agricultural Markets in the Semi-arid tropics. Proceedings of the international workshop. 24-28 October 1983, ICRISAT Center, India Patancheru, A.P. 502324, India: ICRISAT.*
- GoK, (2001).** "Baringo District Development Plan." Ministry of Planning. Baringo District, Kenya.
- GoK, (2002).** "Annual Report." Ministry of Agriculture Livestock Development. Baringo District, Kenya.
- GoK, (2003).** "Economic Recovery Strategy for Wealth and Employment Creation." Ministry of Planning, Kenya.
- GoK, (2004).** "Strategy for Revitalizing Agriculture: 2004 – 2014." Ministry of Agriculture, Kenya.
- Gura, S., and LPP, (2003).** "Losing Livestock, Losing Livelihoods" In *Seedling: Biodiversity, Rights and Livelihoods*. GRAIN publication Girona 25. Pral, Barcelona 08010, Spain.
- Hays, H., (1975).** "The Marketing and Storage of Food Grains in Northern Nigeria." *Miscellaneous Papers no. 50, Ahmadu Bello University, Zaria, Nigeria.*
- Hardwick, P., B. Khan, and J. Langmead., Fourth Edition (1994).** "An Introduction to Modern Economics." ELBS / Longman.
- Heffernan, C., L. Nielsen and F. Misureli, (2001).** "Restocking and Poverty Alleviation: Perceptions and Realities of Livestock-Keeping Among Poor Pastoralists in Kenya." DFID, Livestock Production Programme Study R7401: *The Development of Decision Support Tools for Restocking Projects.*
- Hogg, R., (1985).** "Re-Stocking Pastoralists in Kenya: A Strategy for Relief and Rehabilitation." Paper 19c of the Pastoral Development Network. ODI

- Hogg, R., (1997).** "Drought Contingency To Support Pastoralists Livelihoods in Ethiopia." UNDP Emergency Unit for Ethiopia.
- Hughes, P. J., (1997).** "Measuring the Efficiency when Market Prices Are Subject to Adverse Selection." Paper prepared for the Conference on – The Microeconomics of Financial Intermediation – at the University of Venice, January 9-10, 1998.
- Islam, M.S., Miab, T.H. and Haque, M. M., (2001).** Marketing system of marine fish in Bangladesh. *Bangladesh J. of Agric. Economics.* 24(1 and 2):127-142.
- JICA and GoK, (2001).** "The Study on the Integrated Rural Development Project in the Baringo Semi Arid Land Area (Marigat and Mukutani Divisions) in the Republic of Kenya." Sanyu Consultants, Tokyo, Japan.
- Jones, W.O., (1968).** "The Structure of Staple Food Marketing in Nigeria as Revealed by Price Analysis." *Food Research Institute studies* 8(2): 95-123.
- Jones, W.O., (1972).** "Marketing Staple Foods in Tropical Africa." Ithaca: Cornell University Press.
- Jones, W.O., (1980).** "Agricultural Trade Within Tropical Africa: Achievements and Difficulties." in Bates and Lofchie, eds. *Agricultural Development in Africa: Issues of Public Policy.* New York: Praeger, pp. 311-348.
- Kagio, S. M., and Njoka, E.N., (2002).** "Challenges of Beekeeping in Drought Prone Areas." In *The Challenges of Drought to Livestock Production in Kenya: Proceedings of Animal Production Society of Kenya 2001 Annual Symposium held on 7-8 March at Egerton University, Njoro, Kenya.* APSK, Nairobi.
- Kähkönen, S., and H. Leathers (1999).** "Transaction Costs Analysis of Maize and Cotton Marketing in Zambia and Tanzania." Agriculture, Natural Resources and rural Enterprises Office of Sustainable Development Bureau for Africa. USAID, Technical Paper No. 105.
- Karugia, J. T., (1990).** "Competition and Efficiency In Beef Retailing in a Metropolitan Area: Case of the City of Nairobi." Unpublished MSc Thesis, University of Nairobi, Kenya.
- Kherallah, M. and J. Kirsten. (2001).** "The New Institutional Economics: Applications for Agricultural Policy Research in Developing Countries." Markets and Structural Studies Division. II'PRI. Washington, USA.
- Kodhek, G.A., (1999).** "Contemporary Issues Determining the Future of Kenyan Agriculture: An Agenda for Policy and Research." In Egerton University, PAM Project, Proceedings of the Conference, Nairobi, Kenya.

- Kohl, R.L. and Uhl, J.N., (1985).** "Marketing of Agricultural Products." 5th Edition, Collier Macmillan, USA
- Kotler, P. and Armstrong, G., (2003).** "Principles of Marketing." 10th Edition. Hall of India Pvt. Ltd., New Delhi.
- Krell, R., (1996).** "Value Added Products from Beekeeping." FAO Agricultural Services Bulletin 124, Rome, Italy.
- Kuttner, R., (1997).** "Everything For Sale", p.24-28.
<http://www.rohan.sdsu.edu/~rbutler/kuttner.htm>
- Lele, A.D. and Jain, M. K., (1997).** "Fundamentals of Marketing." Shree Publication, New Delhi.
- Meijer, P.W.M., (1994).** "The Function of Maize Market in Benin." Bert Broundjin, Benin. pp. 11-32.
- Majale, M., and M. Albu, (2001)** "Livelihoods among the roofing construction sub sector in Nakuru, Kenya." <http://www.itdg.org>
- Mansfield, E., Fourth Edition (1991).** "Statistics for Business and Economics." W.W. Norton and Company. USA.
- Martin, S., (2001).** "Industrial Organisation: A European Perspective."
<http://www.oup.co.uk/pdf/ht/martin/sample/ch01.pdf>
- Martin, S., (2003).** "Globalization and the Natural Limits of Competition."
<http://www.oup.co.uk/pdf/ht/martin/>
- Matsaert, H., (2002)** Institutional analysis in natural resources research. Socio-economic Methodologies for Natural Resources Research Best Practice Guidelines. Chatham, UK: Natural Resources Institute.
- Moris, R. J., (1988)** "Oxfam's Kenya Restocking Projects." Paper 26c. ODI
- Morton, J. and N. Meadows, (2000).** "Pastoralism and Sustainable Livelihoods: an Emerging Agenda." NRI Policy Series 11 University of Greenwich.
- Meulenbergh, M.T.G. and M. Kool, (1994).** "Chain marketing of agricultural products." Wageningen Agricultural University, Netherlands.
- Mueller, C. D. and B. Raunig (1998).** "Heterogeneities Within Industries and Structure – Performance Models." Oesterreichische Nationalbank, Wien, Austria.
http://www.ocnb.co.at/workpaper_pubwork.htm

- Nduati, G. J., (1993).** "Structure Conduct and Performance of the Marketing System for Cut Flowers in Kenya: Case of Statice Flowers." Unpublished MSc Thesis, University of Nairobi, Kenya.
- Ngumi, P.D., (1976).** "Investigations on Seasonal Supply Patterns and Pricing Efficiency for Slaughter Cattle in Kenya with Particular reference to Kajiado and Nakuru Districts." Unpublished MSc Thesis, University of Nairobi, Kenya.
- Ngigi, M. W., (1988).** "Structure Conduct and Performance of Egg Marketing Between Kiambu and Nairobi." Unpublished MSc Thesis, University of Nairobi, Kenya.
- Omamo, S.W., (1998).** "Transport Costs and Smallholder Cropping Choices: An Application to Siaya District, Kenya." *American Journal of Agricultural Economics* 80:116-123.
- Omiti, J., and P. Irungu, (2002).** "Institutional and Policy Issues Relevant To Pastoral Development In Kenya." IPAR Discussion papers series No. 031/2002.
- Pingali, P., Y. Bigot, and H. Binswanger., (1987).** "Agricultural Mechanization and the Evolution of Farming Systems in Sub-Saharan Africa." Baltimore: Johns Hopkins.
- Roehner, M. B., (1995).** "Theory of Markets. Trade and Space-time Patterns of Price Fluctuations. A study in Analytical Economics." Springer-Verlag Berlin-Heidelberg, Germany.
- Scarborough, V. and Kydd, J., (1992).** "Economic Analysis of Agricultural Markets: A Manual." Chatham, U.K. Natural Resources Institute.
- Scoones, I., (1995).** "New directions in pastoral development in Africa." In: Scoones (ed.) *Living with Uncertainty*. IIED, London
- Scott, G. J. (Ed) (1995).** "Prices, Products, and People: Analyzing Agricultural Markets in Developing Countries." Lynne Rienner Publishers. Boulder, London.
- Serem, A. K., (1994).** "Beef Cattle Marketing In Baringo District, Kenya." Unpublished MSc Thesis, University of Nairobi, Kenya.
- Shaffer, J. D., M.T. Weber, H.M. Riley, and J. Stantz. (1985).** "Designing Market Systems to Promote Development in the Third World Countries." In ICRISAT, *Agricultural Markets in the Semi-arid tropics. Proceedings of the international workshop. 24-28 October 1983, ICRISAT Center, India Patancheru, A.P. 502324, India: ICRISAT.*

- Shaffer, J. D., M.T. Weber, H.M. Riley, and J. Stantz, (1987).** "Influencing the Design of Marketing Systems to Promote Development in Third World Countries." MSU International Development Papers, Department of Agricultural Economics – Agriculture Hall, Michigan state University. East Lansing, Michigan. USA.
- Shrivastava, R.S., and M. Ranadhir, (1995).** "Efficiency of Fish Marketing at Bhubaneshwar city of Orissa (India): Some Policy Implications." In Bangladesh Journal of Agricultural Economics XVIII, 1, pgs 89-97.
- Siamwalla, A., (1993).** "Farmers and Middlemen: Aspects of Agricultural Marketing in Thailand." In Agricultural and Food Marketing in Developing Countries: Selected Readings. C.A.B International in Association with Technical Centre for Agriculture and Rural Co-operation (ACP-EEC), Abbott, J. (Ed.)
- Smith, A. (1776).** "An Inquiry into the Nature and Causes of The Wealth of Nations." <http://www.econlib.org/library/smith/smwn12.html>
- Swift, J., (1988).** "Major Issues in Pastoral Development with Special Emphasis on Selected African Countries." Rome: FAO.
- Tao, Z., P. Goldsmith, and G. H. Coffin, (1996).** "Pricing Efficiency Analysis, An Extensive Approach: The Case of The Quebec Feed Ingredient Market." pgoldsmi@uiuc.edu
- Thirlwall, A. P., Fourth Edition (1989).** "Growth and Development: With special Reference to developing Economics." FLBS / Macmillan.
- Todaro, M. P. and S. C. Smith, (2003).** "Economic Development." 8th Edition, Pearson Education (Singapore).
- Udry, C., (1996).** "Efficiency and Market Structure: Testing for Profit Maximization in African Agriculture." <http://www.econ.nwu.edu/faculty/udry/>.
- Waswa-Wangia, C. W., (1977).** "Competition And Efficiency of Food Retailing To The Low Income Consumers In Nairobi." Unpublished MSc Thesis, University of Nairobi, Kenya.
- Wiggins, R. R., (1997).** "Sustaining Competitive Advantage: Temporal Dynamics and the Rarity of Persistent Superior Economic Performance." Version presented at the Academy of Management 1997 Annual Meeting BPS Division.
- Williamson, O.E., (1996).** The Mechanisms of Governance. Oxford University Press, New York.
- Wysocki, A.F., (1999).** "Determinants of firm level coordination strategy in a changing agri-food system." Michigan State University, USA.

Yeh, C. and S. Chen (2001). "Market Diversity and Market Efficiency: The Approach Based on Genetic Programming." *AISB Journal* 1 (1).
<http://www.aisb.org.uk>

Yotopoulos, P.A., and L.J. Lau, (1973). "A Test For Relative Economic Efficiency : Some Further Results." In *The American Economic Review* LXIII (1).

Zanden, J. L., (2003). "On the efficiency of markets for agricultural products: Rice prices and capital markets in 19th century Java." IISG, NL.

APPENDICES

Appendix 1: Questionnaire

HONEY MARKET STRUCTURE AND PRICING EFFICIENCY IN THE PASTORAL AREAS OF BARINGO DISTRICT, KENYA.

Interviewer's name	Trader's name
Market	Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female
Division	Age category (years)
Date	Under 30 <input type="checkbox"/> 31 – 40 <input type="checkbox"/> 41 – 50 <input type="checkbox"/>
Interview number	51 – 60 <input type="checkbox"/> Above 60 <input type="checkbox"/>
	Years of schooling
	Where do you come from

1. How long have you been in this honey business?
2. Why did you decide to start this business?
3. What category of the following do you put yourself?
Wholesaler Retailer Other (Specify))
4. How did you raise the capital to start this business?
Personal savings From Relatives From Friends Other
(Specify)
5. Was it easy to start this business? Yes No (Explain
.....
.....)
6. How does your supply reach you?
Delivered by farmer I go to farms (How far away? km)

7. How do you contact and agree with your supplier?
-
8. What quantity of honey did you purchase last?
9. What was the unit price of your last purchase?
10. What was the unit price of your last sales?
11. What type of honey did you purchase?
- Crude Semi refined Refined Other
12. How important are the following in purchasing honey from farmers?

	Very important	Important	Neutral	Unimportant	Very unimportant
Honey quality					
Honey price					
Relationship with farmer					
Quantity the farmer has					
Transport availability					
Destination market					
Packaging					

13. Is information on quantities and prices easily shared amongst traders?
- Yes No (Explain))
14. How is price determined in the market?
-
15. How do you respond to price changes?
- a. Price increase
- b. Price reduction

16. What is the value of your honey purchase in a month on average?
17. What is the value of your sales in a month on average?
18. What do you do to outdo your competitors?
19. Which of the following marketing costs do you incur in a day (amount)

Cost of honey purchased	
Transportation cost	
Personal travelling cost	
Storage (space) cost	
Market fees	
Packaging	
Spoilage	
Others (specify)	

20. Which other costs amongst these do you incur (and amount per month)?

Rent	
Electricity	
Telephone	
Wages and salaries	
Theft	
Taxes	
Other (Specify)	

21. Have you received any form of training?

Yes No (Specify

22. What are the problems that you experience in the business?

.....

23. How can these problems be solved?

.....

Appendix 2: Market share quartiles by trader Origin from the value of last honey purchase

Value of last honey purchase

Quartile	Home of trader	Kah	N	Std Deviation	% of Total Sum
1	Within the study area	4925.00	3	696.87	4.3%
	Total	4925.00	3	696.87	4.3%
2	Within the study area	9300.00	3	3854.54	8.1%
	Outside the study area	6700.00	2	4688.90	3.9%
	Total	8260.00	5	3860.28	12.0%
3	Within the study area	18739.00	5	6692.94	27.3%
	Outside the study area	3500.00	1		1.0%
	Total	16199.17	6	8633.71	28.3%
4	Within the study area	48366.67	3	13800.48	42.2%
	Outside the study area	45200.00	1		13.2%
	Total	47575.00	4	11378.74	55.4%
Total	Within the study area	20105.00	14	17623.87	81.9%
	Outside the study area	15525.00	4	20022.88	18.1%
	Total	19087.22	18	17666.55	100.0%

Source: Survey results, 2003

Appendix 3: Market share quartiles by trader category from the average monthly honey purchase value

Average monthly honey purchase value

Quartiles	Category of the trader	Kah	N	Std. Deviation	% of Total Sum
1	Wholesaler cum Retailer	6708.33	3	2450.55	3.7%
	Total	6708.33	3	2450.55	3.7%
2	Pure Wholesaler	17250.00	1		3.2%
	Pure Retailer	18000.00	1		3.3%
	Wholesaler cum Retailer	17333.33	3	3055.05	9.5%
	Total	17450.00	5	2182.32	16.0%
3	Pure Wholesaler	22800.00	1		4.2%
	Pure Retailer	18500.00	1		3.4%
	Wholesaler cum Retailer	45242.50	4	6515.56	33.1%
	Total	37045.00	6	13733.10	40.7%
4	Pure Wholesaler	25875.00	1		4.7%
	Wholesaler cum Retailer	63666.67	3	6658.33	34.9%
	Total	54218.75	4	19862.35	39.7%
Total	Pure Wholesaler	21975.00	3	4371.28	12.1%
	Pure Retailer	18250.00	2	353.55	6.7%
	Wholesaler cum Retailer	34161.15	13	23202.21	81.3%
	Total	30362.22	18	20566.27	100.0%

Source: Survey results, 2003

Appendix 4: Market share quartiles by trader category from the value of last honey purchase

Value of last honey purchase

Quartile	Category of the trader	Ksh	N	Std. Deviation	% of Total Sum
1	Wholesaler cum Retailer	4925.00	3	696.87	4.3%
	Total	4925.00	3	696.87	4.3%
2	Pure Wholesaler	13400.00	1		3.9%
	Pure Retailer	3400.00	1		1.0%
	Wholesaler cum Retailer	8166.67	3	2184.22	7.1%
	Total	8260.00	5	3860.28	12.0%
3	Pure Wholesaler	18630.00	1		5.4%
	Pure Retailer	3500.00	1		1.0%
	Wholesaler cum Retailer	18766.25	4	7728.03	21.8%
	Total	16199.17	6	8633.71	28.3%
4	Pure Wholesaler	34500.00	1		10.0%
	Wholesaler cum Retailer	51933.33	3	8957.66	45.3%
	Total	47575.00	4	11378.74	55.4%
Total	Pure Wholesaler	22176.67	3	10888.02	19.4%
	Pure Retailer	3450.00	2	70.71	2.0%
	Wholesaler cum Retailer	20780.00	13	19385.15	78.6%
	Total	19087.22	18	17666.55	100.0%

Source: Survey results, 2003

Appendix 5: Computations of Trader share of the market

Case Summaries^a

	Trader share of the market based on average monthly purchase value	Trader share squared	Trader share of the market based on the value of last purchase	Trader share squared
1	1134	0129	1316	0173
2	0318	0010	1004	0101
3	0758	0058	0386	0015
4	0705	0050	0684	0047
5	0473	0022	0542	0028
6	0366	0013	0291	0008
7	0339	0011	0102	0001
8	0329	0011	0099	0001
9	0870	0094	0789	0062
10	0878	0077	1807	0327
11	0329	0011	0187	0003
12	1299	0189	1412	0199
13	0417	0017	0390	0015
14	1061	0113	0328	0011
15	0165	0003	0157	0002
16	0256	0007	0153	0002
17	0075	0001	0120	0001
18	0128	0002	0255	0008
Total	N	18	18	18
	Sum	1 0000	0796	1 0000
	Std Deviation	3 76313E-02	6 12096E-03	6 14205E-02
				9 01230E-03

^a Limited to first 100 cases

Source: Survey results, 2003