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**EVALUATION OF FACTORS INFLUENCING VALUE ADDITION BY BUTCHERY  
AGRIBUSINESSES IN IGEMBE NORTH DISTRICT, KENYA**

**PATRICK MUTHEE NGORE**

**A Thesis Submitted to the Graduate School in Partial Fulfillment of the Requirements for  
the Award of Master of Science Degree in Agricultural and Applied Economics**

**EGERTON UNIVERSITY**

**August, 2010**

## DECLARATION AND APPROVAL

### Declaration

I declare that this thesis is my original work and has never been submitted in this or any other university for the award of a degree.

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Signature

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Date

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KM17/2063/08

### Approval

This thesis has been submitted with our approval as University supervisors.

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## **DEDICATION**

I dedicate this work to my parents, siblings and relatives.

## **ACKNOWLEDGEMENTS**

Many individuals have contributed to the success of this work. First I wish to sincerely thank my supervisors Dr Patience M. Mshenga and Dr George Owuor for their guidance, support and advice from the inception to the conclusion of this work.

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Lastly I thank my parents and siblings for being the source of my strength and motivation.

## **ABSTRACT**

Igembe north is categorized as a semi arid agricultural district, with high unemployment, low incomes and dense population. Agriculture is dogged with uncertainty due to turbulent input and output prices, weather dependency and non linear relationship between inputs and outputs; hence financiers have considered the sector as unbankable. Agribusiness has emerged as a feasible way to channel credit to agriculture because it is less susceptible to the foresaid risks than farming. Value addition has the ability to create employment, absorb excess labour from agriculture, enable rural residents to capture more margins from agriculture, hence raising rural income levels. Despite the existence of microfinance and promotion of value addition, there is limited value addition and hence producers in the area receive less return from agriculture. Despite the benefits associated with value addition, what hinders butcheries in Igembe north district from adding value to their products is not known. This study established whether and why butcheries in the district add value to their products, characterized and described the systems of value addition among butchery agribusinesses, determined the socio-economic factors influencing value addition by butchery agribusinesses, and determined the influence of access to credit on value addition by butcheries in the district. A census survey of the butchery operators was done. Data collected was analyzed using descriptive methods, probit and ordered logit models. These models were achieved through STATA and SPSS statistical packages. The results revealed that value addition was significantly influenced by age, show coefficients and level of significance you are alluding to so that the results are verifiable and quantifiable credit use, education and household size. There is need to review and strengthen policies that will improve access to and use of credit and educate the society on the importance of agribusiness as a tool for poverty reduction, employment creation and economic development.

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## **LIST OF ABBREVIATIONS**

GDP	-	Gross domestic product
MFI	-	Microfinance institutions
ASALs	-	Arid and semi-arid lands
IFPR	-	International Foundation for Production Research
OLM	-	Ordered logit model
MNL	-	Multinomial logit

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background**

Like most other countries in the sub-Saharan Africa, Kenyan economy is predominantly agricultural. The sector accounts for 24.2% of the GDP, over 60% of exports, 75% of the total labour force and over 80% of industrial raw materials (Owuor 2009). Therefore agricultural productivity remains crucial to the nation's economic development and welfare of her people. Due to this, agricultural and financial sectors were identified as twin engines for economic growth in the national vision 2030 (GoK 2007) which aims at transforming the economy to a newly industrialized economy by the year 2030. This national development plan emphasizes linkages between these two sectors.

Although agriculture is the mainstay of the Kenyan economy, it has experienced low productivity over the years. One of the contributing factors to low productivity is poor agricultural finance. This is because most financiers shy away from lending to the sector due to the covariant risks related to rain-fed agriculture, non-linear relationship between inputs and outputs and turbulent input and output prices (Nyikal 2007, Simtowe and Zeller 2007, Kibaara and Nyoro 2007). In Addition, agriculture also experiences low returns due to labour underemployment in the sector and low value commodity output; since more than optimal number of people are involved in the production process and the fact that output is marketed in commodity form. This attracts low prices due to price depression actions of middlemen and processors, high supply during harvest time when most peasant farmers sell their produce and low demand especially for starchy cereals (Bozic *et al.* 2009).

Historically much of the effort has been focused on increasing agricultural productivity. However, productivity is looked at in terms of physical output rather than the monetary value. In looking at monetary value, focus will shift from extractive activities to post harvest (marketing) activities like transport, storage, breaking bulk and transformation to consumable products. Due to this shift in focus, agribusiness and value addition have gained more importance as a way of fighting rural poverty.

Agribusiness enables rural residents to capture more margins from their farm produce, however, this is only possible if the credit and other constraints are resolved (Stanton 2000). Stanton

revealed that ‘it is imperative that both the productivity and market difficulties experienced by smallholder agriculture be considered in an overall strategy for increasing rural incomes. A study by Owuor and Bebe (2009) recommended that linkage between farmers and urban agribusinesses should be established in order to minimize farm gate and urban livestock price differentials.

Omitti *et al.* (2007) and Okello *et al.* (2009) have argued that value addition (among other things) in rural agriculture should be enhanced in order to promote market oriented smallholder agriculture in the developing countries. As such, there is need to finance the lumpy investments needed to help Kenyan farmers meet the required safety standards in order to access high value market chains. Therefore there is need to finance addition of value to agricultural output, and agribusiness has been identified as the best avenue to channel credit into agriculture, and hence promote value addition (Stanton 2000).

Kohl (2001) observed that several important factors are impacting the global agri-food industry. These factors include the growing trade of processed foods, changing consumer needs, rising disposable income, improved diets in many areas, industry consolidation, and increasing food demand in developing countries. According to IFPR, meat demand will be strongest in China, Latin America, and developed countries. As a result of economic and population dynamics, value added in global agribusiness will continue to shift towards the end product; traceability will gain more importance in marketing. Food preparation time at home has been reduced from 2.5 hours in 1930s to less than 8 minutes in 2010. He observed that over the next 10 years, food distribution sectors will observe the great debate over farm vs rural policy and domestic vs global policy.

Admassu (2007) found that consumers’ decision on beef consumption was heavily influenced by quality and safety attributes. The significant attributes were found to be fat content, freshness, neatness of butchery and personnel, abattoir stamp and price. Some other attributes like gender were found to be insignificant. Social economic characteristics of the consumers were found to significantly influence amount of meat demanded by the households.

Consumers are becoming more aware of the relationship between diet and health and this has increased consumer interest in nutritional value of foods. This is impacting on demand for foods

which contain functional components that play important roles in health maintenance and disease prevention. For beef, much attention has been given to lipids. It is evident that opportunities exist to enhance the content of health promoting fatty acids in beef and beef products offering opportunities to add value and contribute to market differentiation. However it is imperative that these approaches to deliver “functional” attributes do not compromise on the health value or the taste of the beef products (Scollan *et.al* 2006).

## **1.2 Statement of the problem**

In Kenya, 70% of small scale enterprises are located in the rural areas and they have a high potential of contributing to rural development. In spite of the existence of micro finance and promotion of value addition, butcheries in Igembe north carry out limited value addition and hence lose margins and jobs that could be created if they added value to their products. Whilst government has emphasized a linkage between credit and agribusiness sectors as a way of overcoming one of the constraints to value addition by agribusinesses, what still hinders agribusinesses like butcheries in Igembe north from exploiting this link to improve value addition to their products is not clear. Also the other factors that hinder value addition to beef and beef products need to be determined in order to comprehensively address constraints to value addition and hence spur rural development.

## **1.3 Objectives**

### **1.3.1 Main objective**

To evaluate the factors influencing value addition by butchery agribusinesses in Igembe north district

### **1.3.2 Specific objectives**

1. To establish whether butcheries in Igembe north add value to their products.
2. To determine the reasons for value addition by butcheries in Igembe North.
3. To characterize and describe the systems of value addition among butchery agribusinesses in Igembe north district.
4. To determine the socio-economic factors influencing the decision by butchery agribusinesses to add value.

5. To determine the influence of access to credit on value addition activities by butchery agribusinesses. 1.4 Research questions

1. Do butchery agribusinesses in Igembe North add value to their products?
2. What motivates butchery operators to practice value addition?
3. What are the different systems of value addition among butchery operators in Igembe north district?
4. Which socio-economic factors influence the decision by butchery agribusinesses to add value to their products?
5. Does access to credit influence the level of value addition by butchery agribusinesses?

### **1.5 Justification**

This study aimed to establish whether butcheries in Igembe north add value, the driving force behind value addition and describe the systems of value addition practiced by butchery operators in the district. This would help to focus the efforts to promote value addition to areas that entrepreneurs consider to be important. By determining factors influencing value addition, and influence of credit on value addition, the study exposes the constraints that need to be addressed to facilitate value addition and blend and partner the agricultural and the financial sectors in order to help the rural entrepreneurs benefit from the synergies of the two economic sectors, thus enable them to capture greater margins by shortening the value chain as well as creating employment opportunities. Raising rural incomes and employment creation is part of the government's long term development plan as well as the global millennium development goals.

### **1.6 Scope and limitations**

This study only covered a sample of 120 respondents in Igembe district. Few financial institutions are present in the district and they are mostly based at the trading centers. The study used butchery agribusinesses as a proxy for other agribusinesses due to the problem of lumping together the diverse range of products handled by most other agribusinesses for value addition analysis. The study used information on household, social, institutional, economic and other factors influencing value addition among agribusinesses; this was collected using a structured questionnaire. The accuracy of such information depended on the recalling ability of the



respondent. The study was also constrained by immeasurability of some variables and failure of the farmers to give correct and sufficient information.

### **1.7 Definition of terms**

**Agribusiness** - Agribusiness includes all those business and management activities performed by firms that provide inputs to the farm sector, produce farm products, and/or process, transport, finance, handle or market farm products (Edwards and Shultz, 2005). This study will look at agribusiness as any enterprise whose primary raw materials come directly from the farm and provides its products to the final consumer.

**Credit** – for the purpose of this study, credit is any borrowed capital that has to be repaid.

**Value addition** – value addition is any act that takes a (raw) product a step closer to the form in which it can conveniently meet the need(s) of the user(s). This study will consider value addition to be any improvement made to agricultural produce to bring it to a form in which the consumer wants it.

**Butchery**- any business enterprise whose main product (75%) is meat its products

### **1.8 Expected output**

This study will lead to a masters degree thesis, a journal paper and its results are expected to feed into policy recommendations on how to finance value addition in agriculture as a way of improving rural incomes.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Agriculture and agribusiness**

According to the World Bank (2007), “agriculture has features that make it a unique instrument for development”, it “can work in concert with other sectors to produce faster growth, reduce poverty, and sustain the environment”. Boehlje *et al.* (2002) described the critical success factors in the agribusiness sector, they considered that globalization, adding value, achieving profitability, defining organizational capabilities, adapting to change, dealing with technological innovation, securing competence and intellectual capital, and achieving organizational transformation are the key factors that will influence the agribusiness sector in future. They found that value added is a very crucial aspect of agriculture today. Producers are now focusing on downstream activities and attempting to form producer alliances and value added cooperatives to capture some of the margin from further processing, this is because value addition has turned out to be the only way to participate in ‘new agriculture’.

Ghandhi *et al.* (2001) pointed out that one of the constraints to agro industry development is lack of finance. Financial institutions are mainly geared to lending for fixed capital needs, while agro industries, have a large requirement of working capital. Banks lend working capital, if at all, at higher interest rates than other capital loans.

Edwards and Shultz (2005) discussed the forces driving shift of agribusiness from farm to the market centric. The framework below represents the factors that they said drive the shift.

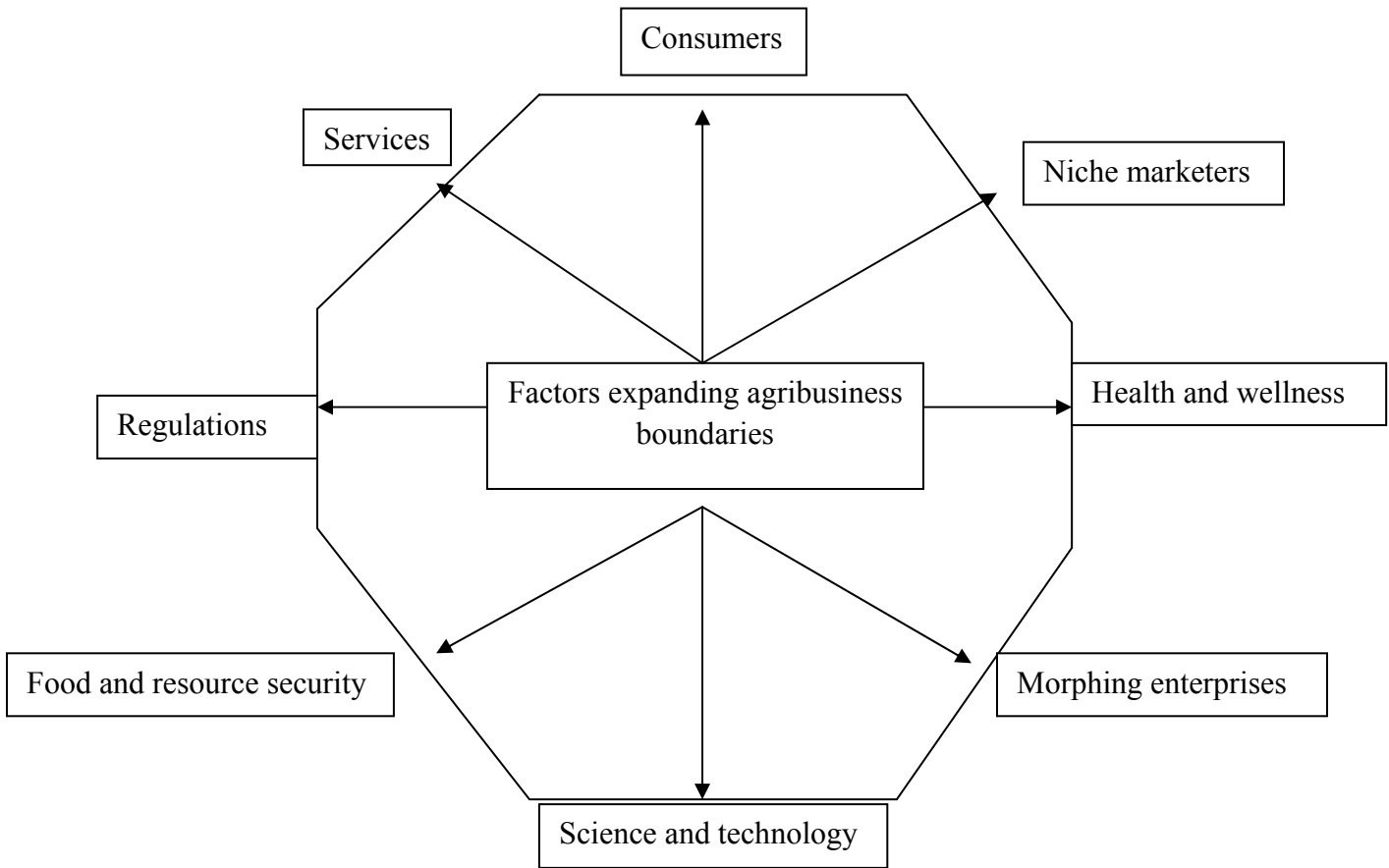


Figure 1: Factors driving shift of agribusiness from farm to market centric

Source: adapted from Edwards and Shultz (2009)

## 2.2 Rural credit markets

Kibaara and Nyoro (2007) did a comparative analysis of emerging models of agricultural finance that have expanded the agricultural finance frontier to the smallholder farmers. They found that agricultural finance is very important because farming credit takes the highest proportion of rural credit needs. They also revealed that state run model of agricultural finance was the least sustainable while community based models were the most likely drivers of change in rural agricultural finance.

Mushoff *et al.* (2009) surveyed 73 farms in northern Germany and used the data to evaluate the role of bounded rationality in farm financing decisions using regression analysis. In their discussion they argued that farmers consider the following factors in their decision to switch banks. First they fear that the bank could hoodwink them and offer them loans in future at unusual rates, secondly they don't want to incur the cost of searching information on the bank

and preparing fresh accounts to present to the bank, thirdly they lack a realistic assessment of switching costs because they had not switched before, finally it's an issue of tradition as a result of the comfort of familiarity with your bankers. They concluded that farmers are reluctant to switch from their house bank to other banks even if the competing banks offer better conditions, due to the transaction costs involved in the switching, and the bounded rationality of the borrowers. Farmers greatly underestimate the monetary disadvantages caused by higher interest rates for loans from their house bank. They do not switch banks even if their perceived transaction costs are covered by the low interest rates offered by the alternative bank.

Hartarska (2009) investigated the existence and the magnitude of scope economies in lending and collecting deposits among MFIs. They used the largest publicly available dataset of 2800 annual observations from MFIs across the world and did estimations using semi parametric smooth coefficient model. They estimated two versions of the cost functions: a typical cost function where outputs are measured in volumes of loans and deposits and a modified version to account for the outreach mission of MFIs where outputs are measured by the number of borrowers and savers. They found that scope economies are substantial among MFIs and they are due to shared fixed costs and that MFIs could not profitably use information collected from savers to improve their lending products and vice versa. In fact he found negative cost complementarities. Using modified cost function he found that rural banks and cooperatives have larger economies than other banks and financial institutions.

Owuor (2009) applied propensity score matching method to find out if microfinance is achieving its goals in Africa. He found that participation in microfinance credit improves incomes by a range between 200 and 260 US dollars in a single production period. However participation was constrained by the illiteracy, gender based asset differentials and poor infrastructure. He recommended that institutions need to innovate different kinds of credit for consumption and production to curb the fungibility of funds.

Petracco and Pender (2009) evaluated the impact of land tenure and titling on access to credit in Uganda. They used kernel propensity score matching method, and they found a positive impact on access to credit of households with freehold without title over customary holders without a certificate. This implied that tenure and not title to those rights affect credit access for rural

households in Uganda. The fact that access to informal credit was increased by freehold tenure status even without title suggests that informal lenders use the tenure status as a screening device rather than as recoverable collateral. They also argued that there is limited supply of and access to formal credit to rural areas. Turvey (2009) studied economics of informal credit in rural china using general likelihood method and logistic regressions. He used a sample of 1500 respondents and he found evidence of small firm bias in the use of informal credit. He suggested that this was because informal funds could be easily fungible between consumption and production without the risk of penalties.

Briggeman *et al.*, (2008) investigated the existence, determinants, and implications of credit constraints among US farm and non-farm sole proprietorships. They used propensity score matching estimator method to measure the impacts of being denied credit and found that the value of production is significantly lower for credit constrained sole proprietorships; decline in productivity is higher for non-farm than the farm sole proprietorships.

Kiiru *et al.*, (2007) evaluated whether participation in microfinance programmes improved household incomes. They applied the village level fixed effects method on primary data collected in three cross sections done after every six months for 18 months in Makueni district in Kenya. They used 200 treatment and 200 control households in every cross section. Their cross sectional analysis fails to show any significant positive impact of microfinance on poverty reduction. Only after the inclusion of time dynamics in the study are they able to find a weak positive significance of microfinance on household incomes, they suggest that it takes quite a long time for microfinance to positively affect household incomes.

Berhane *et al.* (2009) investigated the long-term impact of microfinance from the intensity of participation in borrowing, using a four round panel data set on 351 farm households that had access to microfinance from 1997-2006. They used annual consumption and housing improvements as poverty indicators. They used fixed-effects model and innovatively modeled it to account for potential selection bias due to both time-invariant and time-varying unobserved individual household heterogeneities. Results showed that microfinance borrowing indeed causally increased consumption and housing improvements. They concluded that although the results of the fixed-effect and trend models deviate somewhat, due to different assumptions,

specifications and estimation techniques, they all strongly suggest that microfinance in this part of Africa has been useful in terms of measured outcomes.

Wolday (2002) evaluated the role of microfinance in alleviation of rural poverty in Ethiopia; he found that MFIs have succeeded in addressing the financial needs of the rural poor. He suggested that MFIs should focus on the responsiveness of their products to their client's needs. Zaccherini (2002) argued that in order to serve the rural poor, a credit programme must be complete with capacity-building activities for the beneficiaries. Integrated forms of support should be developed for groups/individuals participating in a credit program to enable them reap benefits from such programs. Otherwise, a credit programme that is solely providing credit facilities serves only those who already have capabilities, experience, skills and, often, resources to run a business on their own. Gallagher (2001) found that experience of both the agribusiness manager and the lender significantly influences success of agribusiness loans

### **2.3 Non credit services offered by banks**

Otieno *et al*, (2007) studied the implications of non-credit services of joint liability credit institutions on smallholder women beekeepers income in ASALs of Kenya. The study used cross-sectional data from Makueni district of Kenya. He used linear regression model to analyse data from a sample of 62 women beekeepers. The sample was selected using random systematic sampling procedure from a list of members of beekeeping women groups within three purposively selected administrative divisions of the District. His results indicated that the number of enterprise development related trainings, a proxy variable for non-credit services accessed by the beekeepers' from the joint-liability credit institutions, is positively and significantly related to honey income at 10% level of significance. He concluded that, positive effect of resource poor women's access to non-credit services on agricultural income indicates that provision of non-credit services to rural smallholder women agricultural entrepreneurs is an effective tool for improving their incomes.

Arndt *et al*. (2001) investigated how credit market failure can lead to large welfare losses in grain markets by inducing increased transport for seasonal storage in areas with low credit costs. They found that availability of low cost credit enhances efficiency and equity in the society

through low food prices, and that value addition activities like storage are better done on-farm or at the lowest locales to minimize welfare losses. Finally, they suggested that rural credit markets need to be researched further.

#### **2.4 Value addition**

Madevu (2006) studied the nature and magnitude of competition between supermarkets, green grocers and hawkers in the fresh produce markets of South Africa and ways of improving the value chain. He used the value chain analysis method and found that the value chain can be improved in four ways: processes, product, functional and chain upgrading. He also found that low income areas were dominated by informal traders while the supermarkets dominated the high income areas. He recommended empirical testing of the effect of value addition on profitability, sales and competitiveness for further study.

Brewin *et al* (2009), examined the adoption of product and process innovations in the Canadian food processing industry using multivariate probit model. Their findings suggest that firms that conduct both process and product innovations in-house are better able to enjoy complementarities that arise in the discovery process. They also found that firms were more likely to innovate in response to keeping pace with competitors.

Roheim *et al*, (2007) analyzed the value of brands and other value addition activities meant to target specific segments in the frozen fish market. They used purchased retail point scanner data of 687 frozen fish products, collected weekly over three years (2002-2005). The sales data included quantities sold and prices by brand, package size, and product promotions. The data was analyzed using hedonic pricing model and results appeared to indicate that consumers preferred “natural” fish that was less processed and less value added, and they were ready to pay a premium for that. This is to be expected in markets where health and wellness concern override other factors influencing demand. The other observation is that traceability is gaining more value among dealers because quality of their products has a direct impact on their reputation.

Karantininis *et al*. (2008) investigated what determines innovation in the agro-food industry. They used the number of products launched (zero inflated Poisson model) and investments in innovation as a percentage of sales (heckman sample selection model) as proxies for innovation

activity of the firm. They noted that number of products launched is a misleading indicator as it is heavily influenced by product proliferation and not innovation. They concluded that organization, stage in the value chain and market power are important to innovation, and that Wholesalers and retailers tend to have a larger number of new products (Model I), whereas manufacturing firms tend to invest more in research and development.

Mitcheels and Gow (2008) used a structural equation model for beef producers to explore the importance of a producer's market orientation on their subjective performance within agricultural commodity markets. They found that market oriented firms are highly innovative and achieve superior performance.

Punjabi (2007) observed that it has become clear worldwide that the most rapid growth in agriculture has been occurring on the part of post-production activities. This is being driven by growth of middle income consumers even in low income countries and their demands for better quality value added products. Absence of agro-industry and agribusiness resulting in low levels of value addition of agricultural commodities has been one of the main causes of stagnation in rural incomes. A substantial agribusiness sector generating a high outflow of value added commodities is always correlated with high agricultural GDP and high rural incomes.

Mapiye *et al.* (2007) analyzed the potential for value addition of Nguni cattle products in the communal areas of South Africa. They concluded that development and research programmes aimed at reintroducing the Nguni breed in the rural areas should take a holistic and participatory approach in agro-processing and value-addition of Nguni cattle products. Increased value-addition can be achieved by provision of appropriate incentives for the establishment of agro-processing industries in the rural areas and promotion of partnerships between communal farmers and agribusiness.

McEachern and Schroeder (2004) observed that superior knowledge of customers' perceptions of value is recognized as a crucial success factor in today's competitive market place. Despite this, the voice of the consumer is often poorly integrated in the value chain. Few studies have assessed value created for consumers. The study evaluated the main attitudes driving consumer



purchases of fresh meat bearing value based labels. Market potential for further differentiation was also examined.

Ward *et.al* (2008) Found that, across all beef products sampled, the location of the retail outlet significantly influenced variation in product prices. The product name or cut significantly influenced beef retail price. Special and other brands were priced higher than unbranded or generic beef.

## 2.5 Theoretical and conceptual framework

### 2.5.1 Theoretical framework

In this study it is assumed that the decision to add value is influenced by expected utility, which will be higher if one adds value to his produce. Therefore this decision is considered under the general framework of utility maximization. The outcome of the decision to add value will be reflected in the welfare of a household. Agribusiness entrepreneurs are expected to add value only when they perceive the net benefits from value addition to be greater than is the case without it. Because utility cannot be observed directly, it can be deduced from the choices economic agents make. In this case the decision will be to add value or not

Suppose that  $U_i$  and  $U_k$  represent a household's utility for two choices namely to add value (i) and not to add value (k), the linear random utility model for the two options will be,

$$U_i = \beta_i X_i + \varepsilon_i \quad \text{And} \quad U_k = \beta_k X_k + \varepsilon_k \quad 2.1$$

Where  $U_i$  and  $U_k$  are expected utility from value addition choices i, and k,  $\beta_i$  and  $\beta_k$  are parameters to be estimated, and  $\varepsilon_i$  and  $\varepsilon_k$  are error terms assumed to be independently identically distributed. If the household chooses to follow option i, it follows that the perceived utility is from option i is greater than utility from competing options (like k) illustrated as:

$$U_i[(\beta_i X_i + \varepsilon_i) > U_k(\beta_k X_k + \varepsilon_k)] \quad 2.2$$

The probability that a household will choose to add value, that is option i can be illustrated as,

$$\begin{aligned} P(Y = 1|X) &= P(U_i > U_k) \\ P(\beta_i X_i + \varepsilon_i - \beta_k X_k + \varepsilon_k > 0|X) \\ P(\beta_i X_i - \beta_k X_k + \varepsilon_i - \varepsilon_k > 0|X) & \quad 2.3 \\ P(X^T \beta - X_k^T \beta_k + \varepsilon^T > 0|X) &= F(\beta^T * X_i) \end{aligned}$$

Where  $P$  is the probability function,  $U_i$  and  $U_k$  are as defined above,  $\varepsilon^* = \varepsilon_i - \varepsilon_k$  is a random error term,  $\beta'$  is a vector of unknown parameters that can be interpreted as the net influence of the independent variables on the decision to add value, and  $F(\beta'X_i)$  is a cumulative distribution function of  $\varepsilon^*$  evaluated at  $\beta'X_i$ . The exact distribution of  $F$  depends on the distribution of the random error term. Depending on this distribution of the error term, several qualitative choice models can be estimated (Green 2002). This theoretical framework explains household choice decisions and implementation has been conceptualized as follows.

### **2.5.2 Conceptual framework**

The conceptual framework in figure 2 illustrates the interrelationships in the study, the key variables involved and how they are interrelated. Value addition is influenced by, socio-economic, market and product factors as well as business strategic goals. Business strategic goals that the operator wishes to achieve through value addition. Socio-economic factors are background factors that result from influences exerted on the business by other activities, responsibilities as well as inbuilt human characters of the entrepreneur. Market factors are characteristics of the local or the wider meat market and other markets (like credit) that are beyond the control of the entrepreneur and affect his agribusiness. Finally value addition activities depend on the nature and other product specific factors. These four categories of factors interact to influence whether the operator adds value and the level of value addition. Access to credit as well as decision to use credit is also influenced by market factors and the operator's socio-economic characteristics. If one adds value it is expected that his level of income will improve.

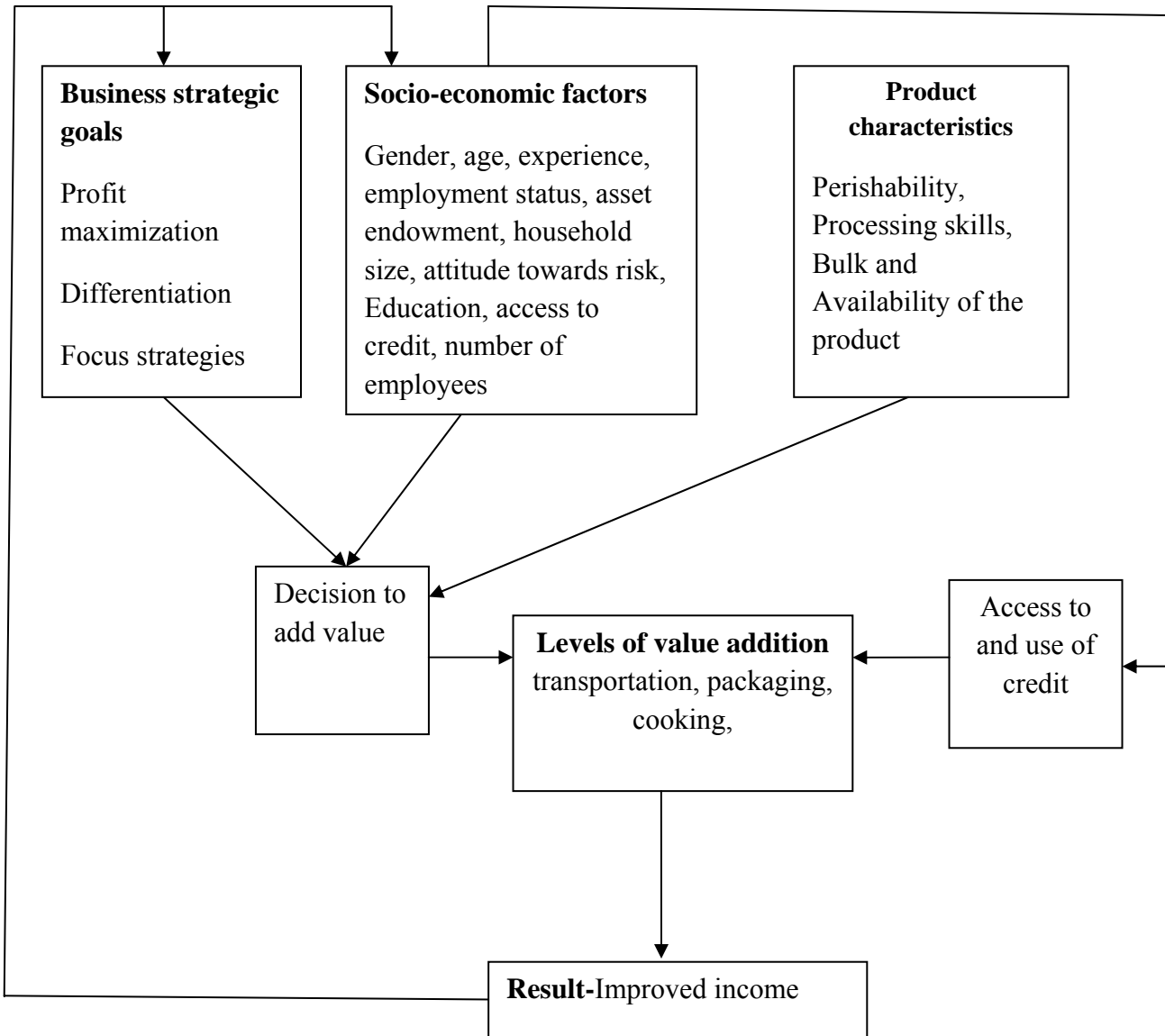


Figure 2: Conceptual framework

Source: own conceptualization

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Study area**

Igembe north is one of the 209 districts in Kenya, and consists of three divisions and nine locations. It borders Igembe south district to the west and south, Isiolo district to the north and the east, and Meru national park to the south east. The district covers an area of approximately 1200 sq.km. With a population of 176909, 56% of which was projected to be living below the poverty line as per 1999 census. The district is one of the semi arid districts in Kenya and it experiences bi-modal rainfall with long rains starting from March to July while short rains begin in mid October and end in late December. The main agricultural activity in the district is cultivation of khat, otherwise known as miraa. Cattle herding takes place in the drier and less fertile areas of the district, especially those bordering Isiolo district. The district is also provides a major market for livestock from the predominantly pastoral boran and Somali communities living in Isiolo district, while the pastoralists also consume a substantial part of farm produce from Igembe north.

There is a presence of a number of financial institutions in the area, though most of them are based at Maua municipality which served as the headquarters for the former district Meru North. Agribusinesses in the district range from cereal distributors, miraa traders, butcheries and hotels. Economic activity in the district fluctuates with the price of Miraa which is the major source of income in the district. Igembe north was chosen as the study area because trade in meat and meat products is well developed due to high economic activity, that ensures that most people eat out. Also there is high supply of animals from the surrounding arid areas where pastoralism is the main economic activity.

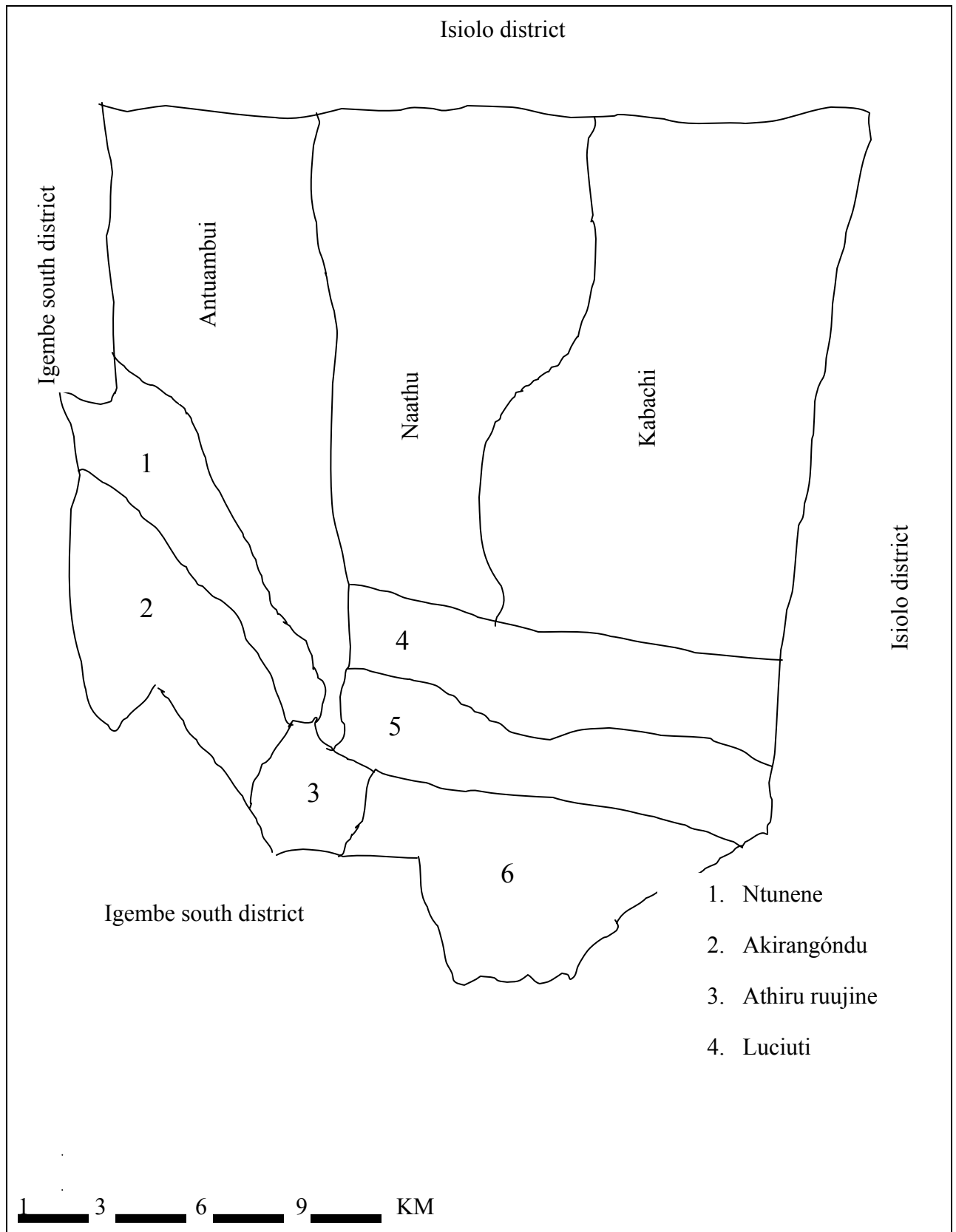


Figure 3: Igembe north district map

### **3.2 Sampling and data collection**

There were 127 butchery agribusinesses in the district, a list of the businesses and their location was obtained from the district public health office. A census of all the butchery operators was conducted and data collected using a structured questionnaire.

### **3.3 Analytical Techniques**

The study used descriptive statistics like mean, frequencies and percentages to address objectives one, two and three. In doing this, the study evaluated whether the entrepreneurs engaged in value addition activities, the motivating factors for engaging in value addition, and finally the value addition systems were characterized and described. Information was collected from the butchers on the form in which they dispensed their products (meat) and all the other related services that accompanied the sale for example slicing the meat, transporting, packaging, branding, deboning and others were also considered as they are all just different ways of adding value to meat. The quantities of meat that goes to each form of value addition/after sale service were also noted, because enterprises can be doing more than one form of value addition simultaneously. The intended goal for value addition was given by the butcher and his perception on whether it was achieved or not.

To determine the factors influencing the decision to engage in value addition, objective four, a probit model will be used. The decision to use probit is based on the fact that the decision to add value is discrete and dichotomous (one either adds value or not), discrete decisions are analyzed using qualitative response models one of which is probit. The other qualitative response models are logit and linear probability model (LPM). Logit models are used to analyze data that has a logistic cumulative distribution function while LPM has a number of shortcomings that make it unsuitable; it can generate probability values that lie below zero or above one, which would be unrealistic. LPM also leads to questionable values of R<sup>2</sup> as a measure of goodness of fit (Gujarati, 2004). This study assumes a normal cumulative distribution function and hence the choice of probit.

An entrepreneur's decision to add value to his produce depends on an unobservable utility index  $u_i$  (expected utility) which is determined by the socio-economic characteristics of his/her

household. The larger the utility index  $\rho_i$  the higher the probability of the entrepreneur adding value. The index is expressed as

$$\rho_i = \beta_1 + \beta_2 X_{i2} + \dots + \beta_n X_{in} \quad 3.1$$

To show the relationship between the utility index and the decision to add value, it is assumed that  $Y=1$  if the entrepreneur adds value and  $Y=0$  if he does not. It is reasonable to assume that there is a critical level of utility (like  $\rho^*$ ) such that if utility exceeds  $\rho^*$  then the entrepreneur will engage in value addition (i.e  $Y=1$ ), otherwise he will not, this threshold is appropriately zero (if expected utility is less than the critical threshold, he will not practice value addition, and vice versa). This threshold is not observable, but it is assumed that it is normally distributed with the same mean and variance. Therefore

$$Y=1 \text{ if } \rho^* > 0 \text{ and } Y=0 \text{ if } \rho^* \leq 0 \quad 3.2$$

Empirically the model is presented as follows:

$$Y = \alpha_1 + \beta_1 age + \beta_2 HHsize + \beta_3 experience + \beta_4 HHEduc + \beta_5 Opeduc + \beta_6 credit + \beta_7 freq + \beta_8 ATrisk + \beta_9 employees + \beta_{10} profit + \varepsilon_1 \quad 3.3$$

$Y$ = if the operator adds value or not,  $\alpha_1$ = constant,  $\beta_i$  = Coefficient of influence,  $\varepsilon_i$  = Error term

Table 1: Description and measurement of variables to be used in the probit model

Variable	Description	Unit of measurement	Apriori assumption
<b>Dependent:</b> value addition	Whether the operator adds value or not	Dummy 1=adds value, 0= does not add value	
<b>Independent variables</b>			
Age	Age of the business operator	Number of years lived	–
Household size	Number of household members.	Number of members	–
Experience	Number of years in butchery business by the business operator.	Number of years	+

Household head education	Number of completed years in school by the household head	Number of completed years	+
Operator education	Number of completed years in school by the operator	Number of completed years	+
Credit use	If the operator used credit in the business or not	Dummy (1= yes), (0= no)	+
Frequency of slaughter	Average number of slaughter times per week	Number of slaughter times per week	+
Attitude towards risk	Operator's attitude towards risk	Dummy (0= risk averse), (1= risk neutral), (2= risk preferer)	+
Number of employees	Number of employees in the butchery	Number of employees	+
Profit	Average butchery profit per day	Average amount earned per day	+

To tackle objective five which is to determine the influence of credit on the level of value addition activities of butchery agribusinesses, ordered logit model was used. Butchery operators who added the least value were given code zero, while those who added more value were ranked from level one upwards depending on the levels of value addition they practice. This model was chosen because the choices on the levels of value addition by the butchery operators are ordered or ranked. Multinomial logit is also appropriate for multiple choice analyses but only in situations where the choices are diverse and not ordered; therefore OLM is the most appropriate for this case. Although the outcome for this objective is discrete, MNL or probit would fail to account for the ordinal nature of the dependent variable. A regression would treat different ranks as completely different variables, while in true sense they are closely related. Codes were allocated to butcheries depending on the level of value addition that they undertook. OLM is based on latent regression just like a probit model, as shown below;



$Y^* = \beta X_1 + \varepsilon$  (Green 2002)      Where  $Y^*$  is unobserved

What is observed is     $Y^* = 0$  if bulk is broken and meat is packaged

$Y^* = 1$  if meat is cooked in addition to level 0

$Y^* = 2$  if in addition to levels 0 and 1, some of the meat is sold in bulk.

It was assumed that the error terms had a logistic cumulative distribution function across observations. The general model is presented as shown below.

$$Y^* = \alpha_1 + \beta_1 \text{age} + \beta_2 \text{household size} + \beta_3 \text{employment status} + \beta_4 \text{experience} \\ + \beta_5 \text{OPgender} + \beta_6 \text{OPeduc} + \beta_7 \text{credit use} + \beta_8 \text{freq of slaughter} \\ + \beta_9 \text{value of assets} + \beta_{10} \text{household income} + \beta_{11} \text{employees} + \beta_{12} \text{profit} \\ + \beta_{13} \text{complementary buz} + \varepsilon_i$$

$Y^*$ = level of value addition,  $\alpha$  = constant,  $\beta$ =Coefficient of influence,  $\varepsilon$ = error term

Table 2: Description and measurement of variables to be used in the logit model

Variable	Description	Unit of measurement	Apriori assumption
<b>Dependent:</b> level of value addition	Levels of value addition practiced by the agribusiness	Proportion of meat subjected to each form of value addition (transported, cooked/ processed, packaged,) per day.	
<b>Independent variables</b>			
Age	Age of the business operator	Number of years lived	-,+
Household size	Number of household members.	Number of members	-
Employment status	Employment status of the operator	Dummy (1=formal) (0= self)	-
Experience	Number of years in butchery business by the business operator.	Number of years	+
Gender	Gender of the business operator	Number of years in beef industry	+
Operator education	Number of years completed in school by the operator	Schooling years	+
Credit use	Whether one used credit in to finance value addition	Dummy (0 = not used) (1 = used)	+
Frequency of slaughter	Average slaughter times per week	Times per week	+
Value of assets	Value of assets used in the business	Kshs	+
Household expenditure	Approximate total household expenditure per year	Kenya shillings	+
Employees	Number of employees in the butchery	Number of employees	+
Profit	Average butchery profit per day	Average amount earned per day	+

## **CHAPTER FOUR**

### **RESULTS AND DISCUSSION**

#### **4.1 Socioeconomic characteristics of butchery operators**

As revealed in table 3 below, approximately 81% of the butchery operators were male with only 19% percent being women. This is could be attributed to the male dominance in the area that hinders participation of women in income generation activities, in fact majority of the women involved in butchery were either single or separated with their husbands through death or divorce. The absence of a breadwinner in the household could have forced single women into income generating activities. Sutter *et al.* (2009) found that uneducated and financially weaker women had low influence in joint decision making in the household.

Most of the respondents had butchery as their main occupation although they also had miraa trading and/or farming as part-time activities. Also a combined total of 32.5% of the respondents were in formal or informal employment. Involvement of the respondents in more than one job could be attributed to the need to subsidize income from employment, and to insulate the households from the shocks resulting from prevalent business cycles related to turbulent prices of miraa which is the main cash crop for the area, and also to shield the households from the risks facing agriculture which employs majority of the respondents either directly or indirectly.

Only 36% of the respondents owned the premises in which the business was housed, 55% was rented and 9% used premises owned by operators' parents or other members of the family apart from themselves. This indicates that most butchery operators are resource constrained, and also that they can make limited investments since the premises do not belong to them.

Table 3: Results for Gender, Marital status, Occupation, Training and Ownership of premises

Characteristic	Frequency	Percentage
Gender		
Female	23	19.2
Male	97	80.8
Marital status		
Single	11	9.2
Married	94	78.3
Separated	15	12.5
Occupation		
Butcher	81	67.5
Govt worker	14	11.7
Social worker	8	6.7
Other self employment	17	14.1
Ownership of premises		
Owned	43	35.8
Rented	66	55
Other	11	9.2
Training		
Untrained	105	87.5
Trained	15	12.5

Source: survey data, 2010.

As shown in table 4 below, the mean number of years completed in school by the household head is higher than that of the actual butchery operators indicating that in most of the cases the owner of the business is different from the one who runs it day by day (operator). In most of the cases it was found that the businesses were run by the less educated members of the household or employees. This is because butchery business is perceived as a menial job meant for the uneducated or the unemployed. This makes the business to suffer from mismanagement because education level has been found to be directly proportional to management skills (Robinson and sexton, 1994). Also related to this is the finding that nearly 90% of the operators have not had any formal business training.

The average age of the operators was found to be 45.3 years and this indicates that those involved in butchery business are active and energetic members of the society. The average number of household members is 6.19 which is slightly above the national average of 5 members (KNBS, 2007). The average years of experience is 6.9 and this indicates that most of the operators have in the business for a long time, and with the absence of formal training this could

be an indicator that the operators spent some time under-studying their mentors in butchery business.

Table 4: Results for Age of operator, Household size, Experience and Education level of the household head and the operator

Variables	Minimum	Maximum	Mean	Std. Deviation
Age of the operator	24	72	45.29	9.617
Total number of household members	1	13	6.19	2.555
Number of years in business	1	21	6.92	4.559
Household head number of years in school	0	18	8.78	3.699
Education level of the business operator	1	14	7.21	3.167

*Source:* survey data, 2010.

#### **4.2 Characterization of value addition systems**

A number of approaches have been used to characterize value addition systems as found in literature (Kruska *et al*, 2003) however there is unanimity in the fact that value addition is influenced by resource availability, labour availability, technology used, customer needs, infrastructure available and equipment employed. In this study, value addition systems were characterized on the basis of assets employed to support the value addition. Data was collected on the value of five classes of assets employed in value addition, namely; kitchenware, mechanical implements, electronic equipment, furniture and other high value assets employed. The mean value of assets was found to be 33,324 Kenya shillings. The butchery businesses were classified as either small or large depending on whether the value of their assets was below or above that mean. The characteristics of butcheries under the two different systems of value addition are shown in table 5 below.

Table 5: Characteristics of butcheries under different systems of value addition

Characteristic	Mean for small scale butcheries	Mean for large scale butcheries	Mean difference	t-value	Sig(2-tailed)
Age of the operator	43.67	49.75	-6.08	-3.177	0.002
Household size	5.85	7.13	-1.27	-2.464	0.015
Employment status	1.77	1.75	0.02	0.228	0.82
Experience	6.19	8.91	-2.71	-2.977	0.004
Premises ownership	1.81	1.53	0.28	2.194	0.03
Gender of the operator	0.6	0.56	0.04	0.389	0.698
Operator's level of education	6.73	8.53	-1.8	-2.84	0.005
Animal	2.59	1.84	0.75	3.153	0.002
Household expenses	160239.77	208093	-47853.98	-2.07	0.041
Household income	182022.73	267075	-85052.27	-2.665	0.009
Profit	234.09	360	-125.91	-6.301	0
Employee number	1.65	3.16	-1.51	-8.859	0

*Source:* Survey data, 2010.

results were generated under the assumption of equal variances

\*the small scale system had 88 respondents while the large scale system had 32 respondents.

Results show that there was a statistically significant difference in age, household size, number of years of experience, premises ownership, operator's level of education and the animal handled by the business between the two systems of value addition. Mean age of the operators in the two systems is significant at 99% confidence level; from the results above we find that the small scale system is dominated by younger members of the society who could be resource poor hence low capitalized, while the converse applies to the large scale system. The difference in household size is also significantly different at 95% confidence level, with large scale system having a higher mean; and this can be explained by the difference in age between the operators of the two systems. Years of experience are also significantly different at 99% confidence level. The large scale system has a larger mean and this can also be attributed to the difference in age, this indicates that members of the large scale system have been in business for long and this could be one of the reasons for high capitalization.

The mean level of education of the operators was higher in the large scale system than the small scale system. The difference was statistically significant at 99% confidence level. This difference can be attributed to the ability of the large butcheries to attract more educated staff due to their ability to offer better salaries and better working conditions because they are more profitable as indicated in the table above. Larger butcheries are also more established and hence they offer a sense of job security to the employees. Education is important and it has been found to influence other factors because, although butchery business does not strictly require formal education since skills can be passed on informally from older experienced operators, formal education helps one to grasp issues better, anticipate, appreciate and respond to market needs. Education has also been found to enhance ability to manage risk and uncertainty, and capital mobilization skills. Therefore the operators have the ability to appropriately choose the animals to trade in, have an optimum number of employees, and therefore secure higher profits.

Mean household income is higher in the large scale system; this can be due to higher average profits earned from butchery business. High income directly influences welfare as proxied through household expenditure which is higher for the large scale system and statistically significant at 95% confidence level. The mean number of employees is higher in for the large scale than the small scale system. This is because there are more activities in the larger butcheries which warrant for more employees. Average profit is also high in the large scale system than in the small scale system. This can be attributed to the benefits accruing to the business due to large scale operations and better management practices due to more educated operators.

The difference between the means for premises ownership is statistically significant at 95% confidence level. The mean for small scale butcheries is 1.81 while that of large scale butcheries is 1.53, this could be interpreted to mean that the younger generation (which dominates the small scale sector) is more interested in making long-term investments like premises, which indicates that they approach the business with a longer term strategy than the older members of the large scale system. It is also imperative to mention that some members especially in the small scale system had access to premises owned by their parents, this means they had procession and not ownership; but this was taken to mean ownership as they could make investments and improvements in anticipation of ownership in future, furthermore they hardly paid rent for the

premises. This could have tilted ownership in favour of the small scale system. Another possible cause is that most large scale businesses are located in the large urban centers, and here most of the premises owners fetch quite high amounts in rent collections, and hence they either participate in the ‘prestigious’ businesses or they just live on the rent.

### 4.3 Current status of value addition by butcheries

Of the 120 butcheries surveyed, 72.5% of them engage in value addition albeit at different levels. Value addition is any act by the trader that takes his product a step closer to the form in which the consumer desires it. There are five conventional forms of utility; time, space, form, task and possession utility. The butchery business is entirely a process of value addition because slaughtering an animal itself adds some form utility. For the purpose of this study, as will be shown later in this chapter, value addition will be categorized into cooking, packaging and transportation. The other 27.5% of the butcheries sell raw meat over the counter and this study deems them not to add any value to their meat.

### 4.4 Drivers of value addition

Four key drivers of value addition were revealed by the value adders, as shown in table 6 below.

Table 6: Revealed reasons for engaging in value addition

Motive	Frequency	Percent
Profit	31	25.8
Boost sales	44	36.7
Due to demand	8	6.7
Competitive advantage	4	3.3
Total	87	72.5
Non value adders	33	27.5
Total	120	100

*Source:* Survey data, 2010.

The need to boost sales and profits are the dominant factors influencing value addition. The influence of profit is attributed to the fact that most people in the district eat out during daytime and they are willing to pay a premium for value added. Table 7 below shows that two thirds of the traders perceived trading in beef as more profitable than the other meat types; this is probably due to the influence of economies of large scale operations. Despite this, only 37% of the butcheries trade in beef, and this could be because the traders had to put other factors like the



size of the market demand, and consumer tastes and preferences into consideration. Also the short shelf life of meat influences the need to seek ways of improving sales for those who do not have access to modern storage equipment. These same factors also influence the choice of animal to be slaughtered. The entrepreneurs with a small market demand and no access to storage facilities tend to trade in small ruminants like goats and sheep to avoid losses related with perishability. Also there is a stronger preference for goat than other animal meat in the study area. This preference could be attributed to taste and other perceived quality aspects like less fat content and softness. The results in table 7 also show the distribution of traders handling various meat types in the district. It is worth noting that nearly a half of the operators traded in goat meat.

Table 7: Animals traded and profitability perception by respondents

Animal	Frequency	Percent	Percentage of traders perceiving animal as most profitable
Cattle	44	36.7	66.7
Chicken	7	5.8	17.5
Goats	51	42.5	15.8
Sheep	14	11.7	0
Pigs	4	3.3	0
Total	120	100	100

*Source:* Survey data, 2010.

#### 4.5 Socio-economic factors influencing value addition by butchery agribusinesses

Survey findings revealed that butchery agribusinesses in the study area can be classified into two classes; value adders and non value adders. A probit regression was used to determine the factors that influence the decision to add value among agribusiness operators.

Table 8: Probit results

Variable	Coefficient	Std error	P> z	Marginal effects
Age	0.0608**	0.0286	0.034	0.0157
Household size	-0.0705	0.1036	0.496	-0.0182
Years of experience	0.0327	0.0439	0.456	0.0085
Household head education level	-0.1056*	0.0542	0.051	-0.0273
Operator education	0.2752***	0.0734	0.000	0.0710
Credit use	1.3790***	0.4082	0.001	0.3023
Slaughter times/week	0.0274	0.1556	0.860	0.0071
Attitude towards risk	-0.3135	0.2210	0.156	-0.0809

Number of employees	0.1324	0.2768	0.632	0.0342
Profit per day	-0.0020	0.0023	0.394	-0.0005

\*significant at 90% confidence level, \*\* significant at 95% confidence level, \*\*\*significant at 99% confidence level

*Source:* Survey data, 2010.

Table 8 shows estimates of the probit model for the factors influencing value addition among the respondents of the study. Marginal effects indicate the effects of one unit change in an exogenous variable on the probability that an operator adds value to his product. Marginal effects of continuous variables only were considered since marginal effects may not be meaningful for binary variables (Green, 1990).

An increase in the age of the operator by one year increases the probability of adding value by 0.0157 units. This is because access to resources increases with age especially in a traditional society where resources are passed on through inheritance. Also responsibilities and tend to follow a sigmoid curve and this leaves more time and resources for investment in value addition as one advances in age. The influence of age on value addition is statistically significant at 95% confidence level.

The level of education of the operator is statistically significant at 99% confidence level and if it increases by one year, the probability of adding value increases by 7.1%. This indicates that it is a key factor because it has been found to influence even other factors like management skills, household income, household size and access to capital, which would all have a positive effect on value addition. Illiteracy levels are quite high due to high school drop out in the study area; this is because the youth value participation in miraa trading over attending school and the traditional beliefs that discourage investment in education especially for the girl child. Therefore marginal returns to education are still quite high in the study area.

The level of education of the household head affects the probability of adding value negatively. This could be attributed to the fact that the learned members of the society perceive butchery business as a menial job, meant for the illiterate or the poor in the society; this could also be attributed to the high premiums to education in other sectors due to high illiteracy level in the

area. It should be noted that there is a distinction between the business operator and the household head, although in some cases these roles fell on the same person.

Use of credit is statistically significant at 99% confidence level, and increase in the amount of credit used by one unit raises the probability of adding value by 0.3 units. This could be attributed to the fact that most of the operators are resource poor and have constrained access to credit. Credit use enables the operator to procure more efficient equipment that help to reduce the cost of operation and helping to attract customers. And therefore credit has an enormous ability to unlock and spur value addition to a great extent. Access to credit has been constrained by lack of collateral, low levels of awareness and unfavourable terms imposed by the lenders.

#### **4.6 Factors influencing the level of value addition**

To determine the influence of access to credit on value addition activities, value addition activities were classified into the following levels

Level	activity
0	breaking bulk and packaging
1	breaking bulk, packaging and cooking
2	breaking bulk, packaging, cooking and transportation

Operators at level zero basically sold raw meat and their major clients were households who bought the meat to cook in their own homes. These businessmen sold the meat in small quantities of quarter, half, one or a few kilogrammes. The distinctive feature of this group was that they sold the meat in raw state and in relatively small quantities. For operators at level one, in addition to activities performed by those at level zero, they also cook part of their meat. The process of cooking was either through boiling, frying, roasting and mincing. And for those at level two, they satisfied the conditions of those at level one and also they served some large consumers like hospitals, schools and some big hotels, to whom they sold large quantities of meat and transported it to the buyer's premises.

Results indicate that increase in age negatively affects the level of value addition. This could be attributed to the fact that butchery business is practiced by the energetic and active members of the society. Therefore as one advance in age, his participation in value addition tends to reduce.

The influence is statistically significant at 95% confidence level. Also household size positively affects the level of value addition at 95% confidence level. This could be attributed to availability of a huge pool of family labour for the business to draw from. This can probably help reduce the cost of value addition and enable allocation of a bigger portion of profit for reinvestment into value addition.

Employment status was found to negatively influence the level of value addition. The effect is statistically significant at 95% confidence level. This could be attributed to the negative perception that the learned members of the society have towards jobs like butchery. They regard butchery business to be a preserve for the illiterate, poor or the unemployed members of the society. This finding is corroborated by the earlier finding that educated household heads reduce the probability of one engaging in value addition activities.

Access to credit negatively affects the level of value addition and this is significant at 99% confidence level. This indicates that due to low perception, those who can access resources may be opting for investment in other activities than improving butchery agribusinesses. One of the key drivers of diversification in the study area is likely to be the heavy dependence of the local economy on trade in *miraa* crop. This crop is susceptible to turbulent price movements depending on weather movements; therefore the businessmen try to diversify their portfolio in order to withstand economic shocks. This means that those who have access to credit (probably using their butchery business, or proceeds thereof as collateral) prefer to invest in sectors like farming, which perform well when there is a trough in the business cycle.

The frequency of slaughtering animals is negatively related to the level of value addition. The butchery operators who supply meat to large customers did it only on some specific days of the week and thus they slaughtered animals on a few days in a week. That is why operators in high levels of value addition had a low frequency of slaughter times, thus the inverse relationship. This effect was significant at 99% confidence level.

P-value results indicate that value of assets employed positively influenced the level of value addition at 90% confidence level. But the range of values can be as low as  $-1.43e-06$  and as high as  $.00001$ , this indicates that it can assume a value of zero and this fact renders the variable insignificant. The number of employees negatively affects the level of value addition probably

because as they increase in number they raise the cost of operation which reduces the amount of profits available for reinvestment into value addition. Lastly, the type of the complementary businesses positively affected value addition at 95% confidence interval. Labour has been generally found to improve the quality of service and its availability either from household members (as shown above) or other employees raises the level of value addition in the business.

Table 9: Ordered logit regression results

Variable	Coefficient	Std errors	p> z	95% conf	Interval
Age	-0.0859**	0.0435	0.048	-.1712	-.0006
Household size	0.3706**	0.1776	0.037	.0225	.7187
Employment status	-1.4578**	0.6521	0.025	-2.7359	-.1796
Years of experience	-0.0043	0.0716	0.952	-.1447	.1361
Operator gender	-0.1626	0.5711	0.776	-1.2819	.9568
Operator education	0.0144	0.0857	0.867	-.1537	.1824
Credit use	-2.0539***	0.5790	0.000	-3.1888	-.9190
Frequency of Slaughter	-0.7257***	0.2563	0.005	-1.2280	-.2234
Total value of assets	8.90E-06*	5.27E-06	0.091	-1.43e-06	.00001
Household expenses	-4.50E-06	3.59E-06	0.210	-.00001	2.53e-06
Number of Employees	-0.8144**	0.3808	0.032	-1.5607	-.0681
Profit	-0.0015	0.0042	0.720	-.0098	.0068
Complementary Business	0.8186**	0.3394	0.016	.1533	1.4838

\*significant at 90% confidence level, \*\* significant at 95% confidence level, \*\*\*significant at 99% confidence level

Source: Survey data, 2010.

## **CHAPTER FIVE**

### **CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Conclusions**

This study found that most of the respondents attempt to add value to meat, and that the need to boost sales in order to avoid losses arising from perishability of meat was the key driver of value addition among the butchery operators. We note that the respondents were very keen to spread their financial and economic risks, and this sometimes worked to the disadvantage of butchery agribusiness, because the short shelf life coupled with absence of storage facilities, of the products made the business prone to losses in case of low demand. Goat meat was the more preferred than other types of meat, whereas the operators preferred trading in beef because it was more profitable. Actually a higher percentage of the respondents traded in goat meat. Therefore it is concluded that consumer preference had greater influence on the meat type sold by the operator than the operator's own preferences. Kohl (2001) observed that consumer tastes and preferences will be a key factor driving food distribution systems in the 21<sup>st</sup> century.

Results suggest that the society in the study area is patriarchal and this hindered participation of women in business activities. It can also be concluded that there low formal and informal employment in the study area. It is observed that most of the operators did not own the business premises, this hindered procurement of long-term assets and other permanent investments. The respondents therefore could not freely develop their businesses.

Most of the butchery operators were young members of the society, employed by the actual owners and they had no formal business training as well as low level of formal schooling. This had a negative impact on business performance because training and education have been found to be positively correlated with business performance. Majority of the businesses were found to be small scale, their capitalization was less than the butchery industry average. This was concluded to be due to the low importance that the residents attach to the business due to their negative perception and the risky nature of the business.

Increase in age, education, and credit use raise the probability of one engaging in value addition. Despite this, increase in age, positive change in employment status, and access to credit negatively influence the change in level of value addition. Lastly increase in household

size, number of slaughter days per week and value of assets employed in value addition positively influence the level of value addition.

## **5.2 Recommendations**

Agribusiness operators and other members of the society should be educated through seminars and workshops on the importance of agribusiness as a tool for poverty reduction, employment creation and economic development. The butchery operators should also be informed of the benefits of developing the scale of their business to the optimal size. The youth and children should be encouraged to invest in education and training in order to build their capacity in business. They should be informed of the benefits of education. The society also needs to be educated on the need to free women and let them participate in the socio-economic activities just like men. Women also need to be sensitized on their rights. Access to credit should also be enhanced in order because it aids towards development of the society, policy makers should design ways of securitizing various assets and resources.

## **5.3 Suggestion for further research**

This study used butchery agribusiness as a proxy for other agribusinesses; it appreciates that the findings cannot be applied freely to other agribusinesses because the nature and constraints of various agribusinesses differ. Therefore the factors influencing value addition by other agribusinesses should be examined. This study also concentrated on the clients of credit and little emphasis was put on the supply side of credit. This should also be studied to present the challenges that lenders face in dealing with agribusiness operators.

## REFERENCES

- Admassu, S.A. (2007). An analysis of demand for beef with a focus on quality and safety in Addis Ababa city, Ethiopia. MSc. Thesis, University of Addis Ababa, Ethiopia
- Arndt, C., Schiller, R., Tarp, F., (2001). Grain transport and rural credit in Mozambique: solving the space–time problem, *Agricultural Economics* 25 (2001) 59-70.
- Berhane, G. and Gardebroek C., (2009). Does microfinance reduce rural poverty? Evidence based on household panel data from northern Ethiopia, contributed paper prepared for presentation at the international association of agricultural economists conference, Beijing, China, august 16-22, 2009.
- Boehlje, M.D., Akridge J.T., Kalaitzandonakes N.G., (2002). Preparing for success in the agribusiness market place, *Journal of Agribusiness* 20,1 spring (2002):31-39.
- Bozic, D., Muncan, P., Bogdanov, N., (2009). Credits for Serbian agriculture in the transition period, paper prepared for presentation at the 113<sup>th</sup>EAAE seminar, Belgrade, republic of Serbia Dec 9-11, 2009.
- Brewin, D.G., Monchuk, D.C., Partridge, M.D., (2009). Examining the adoption of product and process innovations in the Canadian food processing industry, *Canadian Journal of Agricultural Economics* 57 (2009) 75-97.
- Briggeman, B.C., Towe, A.C., Morehart, M.J., (2008). Credit constraints: their existence, determinants, and implications for U.S. farm and nonfarm sole proprietorships, *American Journal of Agricultural Economics*. Vol 91 (2009) pp 275-289.
- Edwards, M.R., and Shultz, C.J., (2005). Reframing agribusiness: moving from farm to market centric, *Journal of Agribusiness* 23,1 (spring 2005):57-73.
- Gallagher, R.L. (2001). Distinguishing characteristics of unsuccessful versus successful agribusiness loans, *Agricultural Finance Review*, spring 2001, vol 61, pp 20-35.
- Ghandhi, V., Kumar, G., Marsh, R., (2001). Agro industry for rural and small farmer development: issues and lessons from India, *International Food and Agribusiness Management Review*, 2(3/4): 331-344.
- Greene, W.H. 2002. *Econometric Analysis*, 5<sup>th</sup> Ed. New Jersey, Upper Saddle River, Prentice Hall
- Gujarati D. N. 2004. *Basic econometrics* 4<sup>th</sup> Ed. McGraw-hill companies 2004.



- Hartarska, V. and Parmeter, C. (2009). Scope economies of lending and collecting deposits in microfinance institutions, contributed paper prepared for presentation at the international association of agricultural economists conference, Beijing, China, August 16-22, 2009.
- International (P) Limited, Publishers
- Karantininis, K., Sauer, J., Furtan, W.H., (2008). Innovation, Integration and Product Proliferation- Empirical Evidence for the Agri-Food Industry Selected Paper for presentation at the American Agricultural Economics Association Annual Meeting, Orlando, FL, July 27-29, 2008.
- Kibaara, B. and Nyoro, J., (2007). Expanding the agricultural finance frontier: the Kenyan case, AAAE Conference Proceedings (2007) 287-290
- Kiiru, J.M. and Mburu, J., (2007). Does participation in microfinance programs improve household incomes: Empirical evidence from Makueni district, Kenya. AAAE Conference proceedings (2007) 405-410
- Kohl, D.M. (2001). Megatrends in Agriculture: implications for the food distribution system *Journal of food distribution research*. March 32(1) page 1-4.
- Kothari, C.R (2004) *Research Methodology: Methods and Techniques*. New Delhi: New Age
- Madevu, H. (2006). Competition in the tridimensional urban fresh produce retail market: the case of tswane metropolitan area, South Africa. Unpublished thesis, University of Pretoria
- Mapiye, C., Chimonyo, M., Muchenje, V., Dzama, K., Marufu, M.C., Raats, J.G., (2007), Potential for value-addition of Nguni cattle products in the communal areas of South Africa, *African Journal of Agricultural Research*, Vol 2(10) pp.488-495, oct 2007.
- McEachern, M.G. and Schroeder M.J.A. integrating the voice of the consumer within the value chain: a focus on value-based labeling communications in the fresh-meat sector. *Journal of consumer marketing*, Vol 21, issue 7, pp 497-509
- Mitcheels, E.T. and Gow, H.R., (2008). Market Orientation, Innovation and Entrepreneurship: An Empirical Examination of the Illinois Beef Industry, *International Food and Agribusiness Management Review*, volume 11, Issue 3, 2008.
- Mushoff, O., Hirschaeur, N., Wassmuss, H., (2009). The role of bounded rationality in farm financing decisions-first empirical evidence, contributed paper for presentation at the international association of agricultural economists conference, Beijing, China, august 16-22, 2009.

- Nyikal, R.A., (2007). Financing smallholder agricultural production in Kenya: production for the market as a gauge of effective demand for credit. AAAE conference proceedings (2007) 193-197
- Okello, J.J., Narrod, C., Roy, D., (2009). Why market institutions disfavour smallholder farmers' compliance with international food safety standards: Evidence from Kenya, Zambia and Ethiopia, contributed paper prepared for presentation at the International Association of Agricultural Economists conference, Beijing, China, August 16-22, 2009.
- Omitti, J., Otieno, D., McCulloch, E., Nyanamba, T., (2007). Strategies to Promote Market – oriented smallholder agriculture in developing countries: A case of Kenya, AAAE conference proceedings (2007) 259-264.
- Otieno, P.S., Nyikal, R.A., Muvigane, F.I., (2007). Non-credit services of group-based financial institutions: implications for smallholder women's honey income in arid and semi arid lands of Kenya. AAAE Conference proceedings (2007) 383-386
- Owuor, G. and Bebe, B. (2009). What influences price efficiency in indigenous chicken markets in Africa? Evidence from smallholder farmers in Kenya, 111 EAAE-IAAE seminar 'small farms: decline or persistence' University of Kent, Canterbury, UK 26<sup>th</sup> -27<sup>th</sup> June 2009.
- Owuor, G., (2007). Can group based credit uphold smallholder farmers productivity and reduce poverty in Africa? Empirical evidence from Kenya. Presented at 111<sup>th</sup> EAAE-IAAE seminar 'small firms decline or persistence' University of Kent, Canterbury, UK, June 26-27, 2009
- Owuor, G., (2009). Is micro-finance achieving its goal among smallholder farmers in Africa? Empirical evidence from Kenya using propensity score matching. Contributed paper prepared for presentation at the International Association of Agricultural Economists conference, Beijing, China, August 16-22, 2009.
- Petracco, C.K. and Pender, J., (2009). Evaluating the impact of land tenure and titling on the access to credit in Uganda, Contributed Paper prepared for presentation at the International Association of Agricultural Economists Conference, Beijing, China, August 16-22, 2009.

- Punjabi, M., (2007). Emerging environment for agribusiness and agro industry development in India: key issues in the way forward. Paper presented at the Asian workshop on enabling environments for agribusiness and agro industry development, 17-19 Sep 2007, Bangkok, Thailand.
- Roheim, C.A., Gardiner, L., Asche, F., (2007). Value of brands and other attributes: hedonic analysis of retail frozen fish in the UK, *Marine Resource Economics*, volume 22, pp. 239–253.
- RoK, (2007). *First medium term plan (2008-2012) Kenya vision 2030*, a prosperous and a competitive Kenya
- Santon, J.V., (2000). The role of agribusiness in development: replacing the diminished role of the government in raising rural incomes, *Journal of Agribusiness*, 18,2 (spring 2000):173-187.
- Scollan, N., Hocquette, J., Nuernberg, K., Dannenberger, D., Richardson, I., and Moloney, A. (2006). Innovations in beef production systems that enhance the nutritional and health of beef lipids value and their relationship with meat quality. *Meat science* Vol 74 issue 1 pp 17-33.
- Simtowe, F. and Zeller, M., (2007). The impact of access to credit on the adoption of hybrid maize in Malawi: An empirical test of an Agricultural Household Model under credit market failure. EAAE conference proceedings (2007) 131-145
- The World Bank, (2007), *World Development Report 2008, Agriculture for Development*, The International Bank for Reconstruction and Development, Washington, p. 2
- Turvey C.G., (2009). Borrowing amongst friends: The economics of informal credit in rural China, Paper presented at the International Association of Agricultural Economists Conference, Beijing, China, August 16-22, 2009
- Ward, C.E., Lusk, J.L. and Dutton J.M. (2008). Implicit value of retail beef product attributes. *Journal of agricultural and resource economics* 33(3) page 364-381.
- Wolday, A. (2002). The role of microfinance in poverty reduction in Ethiopia, paper presented during the IFAD/NGO workshop in Nairobi, Kenya on 6-9 may 2002.
- Zaccherini, E. (2002). Pro-poor rural financial services? or rural financial services? An experience in Kenya, paper presented during the IFAD/NGO workshop in Nairobi, Kenya on 6-9 may 2002.

Sutter, M. *et al.* (2009). Household decision making and the influence of spouses' income, education, and communist party membership: A field experiment in rural China. IZA discussion paper No. 4139 April 2009.

**APPENDIX 1: INTERVIEW QUESTIONNAIRE**

**EGERTON UNIVERSITY**

**BUTCHERY VALUE ADDITION SURVEY 2010**

**Introduction**

This survey has the objective of assessing factors influencing on value addition among butchery agribusinesses in Igembe north district. Respondents have been chosen randomly to participate in this survey and their **VOLUNTARY** participation in this survey will be highly appreciated. Information collected will be treated with strict **CONFIDENCE** and will be analyzed for academic purposes and to improve household welfare.

**SECTION A: GENERAL INFORMATION**

Questionnaire number.....

Division .....

Location .....

Sub-location .....

1. Gender of the business operator  (1=male, 0=female)

2. Age of the business operator .....years

3. Marital status  1) married    2) single    3) separated

4. Age of the household head.....years

5. Current occupation.....

6. Employment status.....

7. Social leadership position(s) held.....

8. Are you a member of any social group(s)? Yes/No

9. How many.....what are they based on

1) Self help 2) religious 3) gender 4) occupational 5) other (specify) .....

10. When did you start your business? Year.....month.....

11. Have you been in butchery business continuously since you started? Yes/No

12. If NO above, when did you break? Year.....month..... for how long.....

13. Have you received any business or catering training

14. Form of business premises ownership

Codes: 1=owned 2 = rented 3 = other (specify).....

15. Type of family housing

Codes: 1= brick walled 2= timber 3= mud 4= rented 5= other (specify).....

## SECTION B: DEMOGRAPHIC INFORMATION

Information of the household members

ID	Name	Age	Gender	R/ship to the head 1=head 2=spouse 3=child 4=parent 5=worker	Level of education	Marital status	Was the member involved in any Income generating activity in the last 12 months	No. of months living at home in the last 12 months
----	------	-----	--------	---	--------------------	----------------	---	--

				6=nephew /niece 7=other				
1								
2								
3								
4								
5								

**SECTION C: CREDIT INFORMATION**

- Did you attempt to seek credit in the last 12 months? Yes  No
- If no why? .....
- If No skip to section D,
- If yes, How much credit did you seek? .....
- What was it meant for? .....
- What is the name of the institution(s)? .....
- What were the terms of the loan?

Term	Value / No. Figure	Required 1= yes 0= No	Available 1= yes 0 = No

Repayment period			
Repayment amount			
Rate of interest			
Collateral required			
Guarantor			
Minimum deposit			
Other terms and conditions			

7. What was the outcome of the application? **Successful**  **Failed**

8. If failed, **why?** .....

If successful,

9. Did you get the full amount? **Yes**  **No**

If no, why? .....

10. What was the rate of interest? .....

**SECTION D: VALUE ADDITION INFORMATION**

1. Which animals do you handle in your business?

Codes: 1=cattle 2= chicken 3= goats 4= sheep 5= pigs 6=others.....

2. What are your three top classes of customers



Codes: 1= households 2=Institutions 3=hotels 4=regular visitors of the town 5= irregular visitors of the town 6= others .....

3. Do you add value to your meat products? **Yes**  **No**

4. If yes what is the main motive .....

5. If no, why? .....

6. What forms of value addition do you carry out for your meat?

Codes: 0 = none 1 = roasting 2 =frying 3 = mincing 4 = boiling 5 = other (specify).....

7. What motivated you to choose the form of value addition? .....

8. Which is the most popular form of value addition in this (local) area? .....

9. Fill the table below

Type of VA	Approx amount	Price	Customers category	Approx no of customers	After sale service
None					
Roasting					
Frying					
Mincing					
Boiling					
Other (specify)					

10 What assets do you use to add value?

Asset	Value	Activity

1. How did you acquire the trading assets?

Codes: 1 = loan financed 2 = inheritance 3 = credit purchase 4= leased 5 = other.....

2. What more assets do you need to advance your value addition? .....

3. What constraints do you face during value addition

.....  
 .....

**SECTION E: HOUSEHOLD ECONOMIC INFORMATION**

1. Probe for all business assets employed in agribusiness and any other business

ID	Asset name	No. owned	initial value	date of acquisition	mode of financing	current market value
1						
2						
3						
4						

5						
---	--	--	--	--	--	--

**2. Sources of household income in the last 12 months**

Source	Amount	Involved	No of times received	Annual total

**SECTION F: HOUSEHOLD EXPENSES**

Expenses	Approx yearly value
Food	
Clothing	
Education	
Medical	
Others	

3. Calculate annual household savings or deficit .....

4. If you expect a change in interest rate during the repayment period of a loan, would you go ahead and seek the loan if the rate is expected to rise?

1 = Yes 2= No 3= indifferent ....

## SECTION G: GENERAL MARKET AND BUSINESS INFORMATION

1. What is your source of energy? .....
2. Where is the abattoir? Name.....distance from premises.....
3. What do you use to transport your meat from the abattoir to the premises? .....
4. Where do you buy the animals for slaughter? .....How do you transport them? .....
5. How many employees do you have in the business?  how many work full time   
part time
6. How much profit do you make per day? .....
7. Which is the most profitable animal to handle? .....
8. Which is the most profitable form of value addition? .....
9. Do you operate a bank account? .....
10. How many credit agencies are in this town? .....
11. How do you perceive competition on this area.....
12. Which is the best way to compete in this area.....
13. If you were to be given a new value addition technique with 50-50 chance of success, would you invest your money in it?  1=Yes 2=No 3= Indifferent