FACTORS INFLUENCING COMMERCIALIZATION OF INDIGENOUS CHICKEN IN NJIRU AND KASARANI DISTRICTS IN NAIROBI COUNTY, KENYA

By

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DECLARATION

This research project report is my original work and has not been presented in any other university or institution for academic credit.

Signed..... Date 15/8/11

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L50/76741/2009

This research project report was submitted for academic credit with my approval as a university supervisor.

Signed..... Date 15/8/11

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DEDICATION

This research project is dedicated to my dear late father Sylvester Odenyo for instilling in me the values of a good education.

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ABBREVIATIONS

CIG	Common Interest Group
FAO	Food Agricultural Organization
MCT	Measure of Central Tendency
SEARCA	South East Asian Regional Center for Graduate Study and Research in Agriculture.
SPSS	Statistical Package for Social Sciences

ABSTRACT

The purpose of the study was to establish factors influencing commercialization of indigenous chicken. Commercialisation in the context of this study is the process of keeping indigenous chicken for sale. Indigenous chicken form the largest poultry flock in Africa. They are found in almost every homestead in Africa. Many produce them for home consumption, visitors, gifts and religious ceremonies. While in other parts of the world, especially in Asia, China, Thailand and Taiwan, not only are they kept for home consumption but are heavily commercialized to the level of broiler poultry production. Commercialization is known to improve incomes. For a continent therefore whose people are among the poorest in the world, commercialization of indigenous poultry would enhance food security and improve household incomes. The study was done in Njiru and Kasarani districts of Nairobi County, Kenya. These are peri urban districts adjacent to each other and whose population are engaged in urban farming including poultry keeping in addition to other forms of employment. The study sought to find whether farmer training, appropriate poultry rearing practices, farmer networks, resources and demand influence commercialization of indigenous chicken. The design of this research was descriptive correlation survey. The study population for the research was 260 indigenous poultry farmers in Njiru and Kasarani districts. A semi structured questionnaire was used to collect data from a sample population of 52 indigenous chicken farmers selected through stratified sampling technique. In addition, information was obtained from all the 62 chicken traders serving the study area to enhance the study. Data collected was analysed using descriptive statistics by means of the statistical package for social sciences (SPSS). The data analysed is in the form of frequencies, to determine number of farmers that embrace commercialisation and percentages, to determine the relationship of variables.

The study established that commercialization of indigenous chicken was taking place in Njiru and Kasarani with 67.3% of chicken farmers rearing indigenous chicken for sale. The study also found that 82.7% of the indigenous chicken farmers were trained; that majority had adopted appropriate poultry practices while 65.4% belonged to farmer group networks that offered varied benefits. On resources, farmers had sufficient space to expand their chicken farming and time to care for chicken. However, engaging hired labour to take care of chicken was minimal and was done by 19.2% of farmers. Most farmers also had financial challenges to buy inputs. On the other hand demand for indigenous chicken was indicated by 92.35 of farmers to be high, with most farmers saying they were able to sell more than half or all their chicken produced.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Poultry form the largest livestock group in the world (FAO, 1999). The majority of these poultry are indigenous chicken, most of which are found in the developing world. These birds are an important livestock asset in rural households in developing nations as a source of livelihoods in less favoured areas of Africa and disadvantaged groups (Gueye, 2007).

Currently individual farmers in Africa do not produce indigenous chicken on a scale that can be considered commercial as is the case with hybrid chicken. Traders participating in the indigenous trade market have to source from several farmers in order to get the required quantities for sale.

The idea behind commercialisation is to produce not only for home consumption as is mainly the case of indigenous chicken in Africa but for income generation purposes (Ugwu, 2009, Mathuva, 2005). Commercialisation of any livestock commodity depends on a number of factors and these factors ought to be what influences the producer make a decision to increase production in order to participate in the market (Grwambi, 2005). Therefore any factor that enhances farmer's capacity to produce for the market is in effect the driving force towards commercialisation.

Furthermore, as hindrances to commercialisation are addressed, the farmer ought to increasingly begin to keep indigenous chicken as a business, for income generation. In his baseline study of small and medium scale poultry production in Enugu and Lagos Nigeria,

Ugwu (2009) suggested several constraints that hold back commercialisation of the indigenous poultry industry in Nigeria. Among the constraints identified were; capacity building, technology, disease control, advisory services and management aspects. Others were accessibility to markets in the area of market information and access road networks to markets.

Also, Dana, Duguma, Teklewold and Aliye (2006) acknowledges the transfer of technology as a means of changing traditional approaches towards improving production of indigenous chicken in order to take advantage of commercialisation potentials in some areas of Ethiopia. It would seem therefore, that addressing these constraints may enhance commercialisation of the indigenous chicken.

Both local and commercial birds consisting of hybrid broilers and layers are kept at the periphery of main towns in Africa. There is noticeable activity towards commercialisation of indigenous poultry in Nairobi despite a well established commercial hybrid sub sector in the area. This study established some of the reasons for this.

1.2 Statement of the Problem

According to Gueye (2007) indigenous poultry constitute 80 % of Africa's poultry flock. In Kenya, indigenous chicken make up 81% of the total number of poultry in the country (Kenya census 2009). In Africa they are the poultry of choice in homes. Many in Africa produce them. According to Gueye (1998) every household in Africa has some indigenous chicken. They are well adapted to the local environment, and people love them for their taste and flavour, (Kingori, Wachira, Tuitoek, 2010). They are kept for home consumption, for visitors, gifts and for traditional ceremonies (Mailu , Wachira, 2009 & Dessie, 1996). However in Asia they are not only liked for home consumption but in countries like China,

Thailand and Taiwan they are heavily commercialized, to a level of broiler production (Hue-Shang Chang, 2004) but not so in Africa. In Kenya there seems to be some interest in keeping indigenous poultry for sale. The study sought to find out the factors influencing commercialization of indigenous chicken.

1.3 Purpose of the Study

The purpose of the study was to establish factors influencing commercialisation of indigenous chicken in Njiru and Kasarani districts in Nairobi County, Kenya.

1.4 Objectives of the Study

The research was guided by five objectives which are to:

i. Establish the influence of Farmer training on commercialization of indigenous chicken in Njiru and Kasarani districts in Nairobi County.
ii. Investigate the influence of use of appropriate poultry rearing practices on commercialization of indigenous chicken in Njiru and Kasarani districts in Nairobi County.
iii. Establish the influence of resources on commercialisation of indigenous chicken in Njiru and Kasarani districts in Nairobi County.
iv. Assess the influence of Farmers Networks on commercialisation of indigenous chicken production in Njiru and Kasarani districts in Nairobi County.
v. Examine the influence of demand for indigenous chicken on commercialization of indigenous chicken in Njiru and Kasarani districts in Nairobi County.

1.5 Research Questions

The research study sought to answer the research question through the following questions

i. How does farmer training influence commercialisation of indigenous chicken in Njiru and Kasarani districts in Nairobi County?

ii. How does use of appropriate poultry rearing practices influence commercialisation of indigenous chicken in Njiru and Kasarani districts in Nairobi County?

iii. How do resources influence commercialisation of indigenous chicken in Njiru and Kasarani districts in Nairobi County?

iv. How do farmer networks influence commercialisation of indigenous chicken in Njiru and Kasarani districts in Nairobi County?

v. How does demand for indigenous chicken influence commercialisation of indigenous chicken in Njiru and Kasarani districts in Nairobi County?

1.6 Significance of the Study

This study is in support of indigenous chicken farmers. If adopted it may enhance food security and increase incomes in a continent whose people are basically poor. The study will assist policy makers and government officials design appropriate policies towards increasing production for commercialisation of indigenous chicken. The study may also be used as reference material for researchers in this subject.

1.7 Limitations of the study

The limitations envisioned in this study were that it was not possible to reach and interview all indigenous chicken farmers in Njiru and Kasarani districts because of time and resource constraints. To overcome the limitation the scope of research was reduced to a representative sample of indigenous farmers in Njiru and Kasarani. Research assistants were also engaged and facilitated with transport and prepaid telephone cards to reach the entire sample

population of indigenous chicken farmers and chicken traders

1.8 Delimitations of the study

The study was conducted in two peri urban districts of Njiru and Kasarani, in Nairobi County, Kenya. It was concerned with commercialization of indigenous chicken in the two peri-urban districts. Both districts are adjacent to each other and therefore similar in nature. Additionally the study was delimited to indigenous chicken farmers and chicken traders serving the study area.

1.9 Basic Assumptions of the study

The study was carried out on the assumption that farmers would be available to provide reliable and valid data that could be used to make conclusions in relation to the study. The study also assumed that the intervening and the moderating variables remained constant and that the questionnaires would be duly completed and returned.

1.10 Definitions of significant terms

Appropriate poultry rearing practices:

refers to the application of poultry management practices that have traditionally not been in use for indigenous chicken production.

Chicken farmers: refers to farmers rearing indigenous chicken.

Chicken traders: refers to traders who buy chicken from farmers for sale at strategic locations within the study area.

Commercialisation of indigenous chicken:

refers to transition from subsistence to market - oriented patterns of production and input use. It is the process of keeping indigenous chicken for sale.

Demand: is the ability of the farmer to sell chicken. It represents the output sold to total output produced.

Exotic chicken: refers to imported breeds of chicken on which improvement by breeding and selection has been done.

Farmer Networks: refers to common interest groups formed by farmers to access public services, exchange of ideas, gain useful information for improvement.

Farmer Training: refers to knowledge and skills acquired through extension worker vists, workshops, demonstrations, Field days and agricultural shows.

Household: refers to family unit leaving in the same home

Indigenous chicken: refers to local chicken on which no improvement by breeding has been done.

Peri urban: refers to area on the out scats of the central business district.

Poultry: refers to domestic fowls, such as chickens, turkeys, ducks, or geese, raised for meat or eggs.

Resources: refers to factors of production, capital, land, labour and time.

Technology: refers to equipment, tool and knowledge that have traditionally not been in use for indigenous chicken production.

1.11 Organization of the Study

This report is organised in three chapters, chapter one is the introduction and gives the back ground of the study. Chapter two reviews the literature from global, Africa and Kenya perspective, while chapter three describes the research methodology of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the relevant literature on production and commercialization of indigenous chicken in various countries of the world including those in Africa. It also reviews such production and commercialization in Nairobi County. Finally, the chapter presents a conceptual framework on which the entire study revolves.

2.2 Importance of Indigenous Poultry

Poultry is the largest livestock species (FAO, 1999) and is found everywhere there is human settlement. Indigenous chicken are largely found in the developing world where you find the world's poorest. For example, in the developing countries, indigenous chicken form 77% of poultry (Sonaya, 2007). In Bangladesh they form 80 % of poultry population and are found almost in every rural homestead with each household keeping 6 to 12 chicken (Ershad, 2005 and Huque, 1999). In addition, the indigenous chicken are well adapted to the local environments in which they are found as compared to the hybrids that require intensive care to survive (Ainemesh and Yukinori,1997). According to Gueye, 2000 and 2007, and Ssewanyana (2008) they are the largest asset found with the less disadvantaged communities.

Indigenous chicken are important in providing income and food security to the resource poor small scale farmers who form the majority in the developing world. They play an important role in income generation and nutrition. For example in countries like Taiwan, China and Thailand indigenous chicken are commercialised on a large scale similar to that of broiler production (Hui-shang Chang, 2004). So from this, one may deduce that commercialisation of indigenous chicken is possible on a large scale but this is not so in Africa. The indigenous

chicken is therefore a sector that should not be ignored especially by countries that need to improve livelihoods, food security and incomes.

According to Ershad (2005), most indigenous chicken farmers pay little attention to their chicken. Birds are normally kept on free range and left to scavenge for their food. They are reared without any form of input and investment such as feed and vaccination or housing. Hui- Shang Chang (2004) also found that productivity of local chicken is low and is raised with minimal inputs and that price premiums reflected consumer preference for unique taste of the indigenous chicken (Tegemeo, 2009). The low productivity is attributed to inadequate management as the key factor. Other contributors to low productivity are availability of breeding stock and distance to the market that increases transactional costs. Many researchers are of the view that better management of these chicken is necessary in the quest to increase production. (Ershad, 2005 and Hui Shang Chang, 2004)

This study was intended to find out as to whether farmer training, appropriate poultry rearing practices, have any influence on commercialisation of indigenous chicken. Market accessibility through the demand variable was also investigated as to establish any relationship between demand and commercialisation.

2.3 Indigenous Chicken Production in Asia

According to Ershad (2005) in his study on performance of hybrid layers and native hens under farmer's management in selected areas of Bangladesh, he found nutrition has much more effect on production than the genetic influence for the improvement of poultry in scavenging birds and that native birds when given feed were more likely to perform better. According to Ershad (2005), if no feed was provided to the indigenous chicken and left to fend for themselves, scavenging for food, mortalities of birds became significantly high

especially in chicken kept by unskilled farmers. Therefore by providing feed, technology and preventing disease, improves chances of survival of indigenous chicken. With more birds surviving there is likelihood for the farmer to begin engaging in the market. By farmers going the extra mile of providing feed, getting the appropriate technology buying vaccine to control diseases the chances are that they are doing so in order to commercialise. Commercialisation is seen by (von Braun, 1995) relating to increased volumes of produce. In his book entitled Poultry for profit and pleasure, Alders (2004) states that the most cost effective way to improve production depends on feed, shelter, disease control and community collaboration or group formation of farmers. This study used some of these indices to find out if indeed they can lead to commercialisation of indigenous poultry.

According to Eyvind, Et al (2002), interventions that are needed in securing commercialisation of livestock production in the developing world are promotion of advisory services on particular problems and technologies related to small holder production. Similarly, according to the final report by South East Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA)., on Effects of trade liberalization on the Philippine livestock industry (SEARCA, 1999), characteristics of a commercial sector includes the use of vaccinations and drugs for disease control, use of advanced technologies in raising chicken and high production breeds. This suggests that with vaccinations, and use of value adding technologies to raise chicken would increase volume and as a result contribute to commercialisation of indigenous chicken.

While carrying out research on physiological limits to growth and related effects on meat quality, Webb, and Casey (2010) found that in the commercialisation of animal agriculture, production characteristics of livestock changes. There are certain changes that take place at the production level as commercialisation takes place. This view is emphasised by Daghir

(2008) in his book, Present status and future of poultry industry. According to Daghir (2008) the hybrid poultry industry is on the rise due to the spread of knowledge on poultry husbandry, care and breeding. This in turn has contributed to the practice of poultry as a business in the hybrid poultry industry.

2.4 Indigenous Chicken Production in Africa

In the developing countries, indigenous chicken form 80% of poultry (Gueye, 2007). The concern of this study is that Africa has been left behind in the commercialisation of indigenous chicken. The reasons for these have been suggested by a number of researchers while investigating other research problems (Ugwu, 2009 and Dana, et al, 2006). This study sought to investigate as to whether the interest that farmers seem to have developed in rearing indigenous chicken for sale in other words commercialisation after seemingly not having been doing so is being caused by some of these indices.

In their research work on transforming village poultry systems into small agro- business ventures Dana, et al (2006) addressed the problem of poverty. They worked in peri urban villages, trained and facilitated farmers by providing comprehensive packages of technologies to increase production and make use of commercialisation potential. Their findings were that by improving survival rates and lowering mortalities through appropriate poultry practices they increased productivity. With more chicken on their hands farmers engaged in chicken rearing as a business and selling the produce for income.

Further, Kefuni (2003) while addressing priority directions of the government food policy, suggests strengthening capacity, making inputs available, improving productivity and promotion of rural organisations as a means of realising commercialisation. In his research on Needs assessment study for market driven agricultural technology transfer and

commercialisation in Oyo state Nigeria, Korman (2002) noted that policy, access to market, productivity enhancing technologies, extension activities are some of the constraints to effective market driven agriculture technology transfer.

The concern of Jugessur and Pillay (2006), while looking at Family poultry production in Mauritius, were the poor husbandry practices and the apparent lack of measures to prevent and control diseases. They surveyed smallholder farms and found that there were inadequate extension and vet services, poor management and housing on farms. Extension services offer training, advice that is important in transferring appropriate technologies to farmers.

2.5 Poultry Production in Kenya

According to the 2009 census, Kenya has 32 million chicken. Out of this figure, 6 million are commercial hybrid chicken and the rest; 26 million are indigenous making 81% of the total poultry population. Indigenous chicken are widely kept except in the Northeastern where other forms of livestock are preferred and chicken kept for religious purposes (GOK, 2009). Other species like ducks, turkeys, pigeons, ostriches, guinea fowls and quails make up a paltry 2 % of the poultry population. (Mwanza, 2009)

Table: 2.1 Population and distribution of Poultry

County	Indigenous Chicken	Hybrid chicken	Total
Nairobi	280,400	340,800	621,200
Central	3,040,790	2,490,840	5,531,630
Coast	1,600,700	520,860	2,121,560
Eastern	4,100,620	540,800	4,641,420
North Eastern	420,890	71,300	492,190
Nyanza	5,600,480	500,060	6,100,540
Western	4,140,350	260,980	4,401,330
Rift Valley	6,560,260	1,340,400	7,900,660
TOTAL	25,744,490	6,066,040	31,810,530

Source: Kenya Census 2009 (figures have been rounded to the nearest ten)

N/B: Chicken therefore constitutes the most important class of poultry. Indigenous poultry is thus an important undertaking to Kenya's rural smallholder farmers as it contributes to their livelihoods.

2.6 Indigenous Chicken Production in Kenya

Historically, indigenous poultry were kept for pass time and stew of visitors but not for value or viability (Mathuva, 2005). Currently indigenous chicken are kept for home consumption and as security. The indigenous chicken is offloaded to the market during times of disease out break or hunger (Mathuva, 2005). Farmers keep an average of 13 birds per household but a few farmers have exceeded this average with some reaching 300 birds (Nyaga, 2007)

Mailu, et al (2009) found that a one unit increase in flock size increases the likely hood to participate in the market by 2.5%. They also found that if farmers doubled their flocks from 22 birds to 58 birds the odds of engaging in the market are 327 %.

Mathuva (2005) carried out research on value chain analysis of indigenous poultry sector in

Kilifi and Kwale districts in Kenya. The researcher's major concern was feasibility of the sub sector. Among the people interviewed were poultry breeders, and government officials. Among the researchers findings were that there was no feeding provided, disease management was lacking except use of traditional knowledge, that less than 5% had housing for chicken, and that farmers often offloaded poultry to the markets in times of stress. The researcher suggests proper housing and complimentary feeding, selective breeding, extension service, value adding services and maintaining market relationships as important in enhancing the status of indigenous poultry in Kenya. This study tested whether farmer training as a method used in acquisition of knowledge and skills, technology transfer, appropriate poultry practices, existence of farmer networks, demand and use of value adding services such as training and vaccinations are important for commercialisation of indigenous chicken.

Makhura, Goode and CoetZees (1996), in their research on indexing participation in the market economy through factor analysis and implication on food security, found that as farmers produced more they participated in the market economy. Their research was concerned with how to promote participation of previously excluded farmers into agricultural market economy.

Mailu, et al (2009), suggests that the decision to sell indigenous chicken is based on price offered at the market. If a farmer is offered premium price then they are likely to be willing to sell the indigenous chicken. If this is the case then farmers may find ways to increase production probably by acquiring some form of training in order to take advantage of premium price.

2.7 Indigenous poultry production in Nairobi

Indigenous chicken in Nairobi County have basically been kept for home consumption and the hybrid chicken for commercialisation. According to Atukunda (2000) the reason for engaging in urban agriculture was found to be commercial, food security and basic means of survival. Indigenous chicken is an asset to resource poor farmers and one of the nutritional sources for the rich (Huque, 1999). Urban centres have a high concentration of inhabitants of whom a significant number are in some form of employment and where you find some rich people that require high value food staffs including chicken.

The interest of this research was to find why the farmers have begun to produce more for the market. Factors that relate to increased productivity such as control of Newcastle disease, supplementary feeding that form improved management of the indigenous chicken if engaged into by farmers may be the factors that are leading to commercialisation of indigenous chicken.

2.8 Commercialization of indigenous chicken

Indigenous chicken commercialisation involves a transition from subsistence to market oriented patterns of production and input use (Haddad and Bouis, 1990., Gebreselassie and Luddite, 2008). Commercialisation, according to Haddad and Bouis (1990) refers to percentage value of marketed output to the total farm production. While researching on Factors affecting participation in main stream cattle markets by small scale cattle farmers in South Africa, Montshwe (2006) found that unit increase in herd size increased participation in the market of small holder cattle farmers. Mailu, et al (2010) while researching on the influence of prices on market participation decisions of indigenous chicken farmers in four Districts of Eastern County, Kenya, also found that flock endowment as well, improves

chances for farmers engagement in the market. In addition, the researchers established that prices have a positive relationship with the probability of a farmer engaging in a sale.

Sheryl and Msaki (2006) while investigating the impact of small holder commercialisation of organic crops on food consumption found that small holder involvement in commercial agriculture had a significant positive impact on food security and incomes through increased intensification. The researchers conclude that intensification require change in production characteristics. It is what drives these changes in the production characteristics that need investigating to see if indeed they contribute to commercialisation of indigenous poultry.

Though not much has been researched on commercialisation of indigenous chicken it is implied as either constraints that hinder productivity or market oriented activities. According to Mailu, et al (2009), there are very few empirical studies showing the association between factors that lead to farmers to make a decision to participate in the market.

2.9 Farmer training

Knowledge represents facts that form technical information that is passed on in the form of rules, concepts and general principals that later find meaning in their application. Knowledge can also be built by successive efforts to improve a particular situation. This may be procedures, practices or operations added to the way of doing things as greater experience is gained (McGinn, 1978).

Training is important in any undertaking. To be able to produce enough quantities not only for home consumption but increasingly for the market you need knowledge and skills.to manage the enterprise efficiently and effectively. Akter , Jabbar and Ehui (2003) show that better education of the farmer significantly reduced inefficiency in poultry production in North Vietnam. Also, Coelli and Battese (1996) found that education had a significant

positive effect on the technical efficiency of Indian farmers. Indeed it has been documented that poultry as a business was not known before the 20th century in Europe and America as it is today (Daghir, 2008). Commercial poultry production started after a book by Mailland detailing the management of poultry was published (Daghir, 2008). This level of commercialisation as seen in the developed world would not have been possible if farmers did not acquire the necessary knowledge to do so. Most households keeping indigenous chicken are not often interested in improving their poultry or interested in extension service or new technologies (Hui Shang Chang, 2004). Farmers have depended on their experience in keeping these birds.

In Kenya a book manual on indigenous poultry production was first published by Kenya Agricultural research institute in 2006. This for the first time gave the service providers the necessary Knowledge required on indigenous poultry production. Before this happened, books in use were on hybrid birds production. Therefore some of the reasons suggested for the indigenous chicken lagging behind in production are the limited knowledge and skills in management (Okitoi , Udo and Mukisira, 2006), disease prevention and feeding.

Farmers may be willing to commercialise indigenous poultry, what they need is awareness of opportunities. Montshwe (2006) while researching on factors affecting participation in main stream cattle markets by small scale cattle farmers in South Africa, found that, access to information and the use of that information led to increased participation in the market by small holder cattle farmers.

The awareness of opportunities may be acquired through training by extension agents. According to Montshwe (2006), training increased the participation of small holder cattle

farmers in the main stream cattle markets. The researcher concludes that this was expected as participation in market required knowledge in terms of product specification, price determination and timing (Montshwe, 2006). It is therefore in best interest of the country that wider availability of reliable advice to the farmer would be of enormous benefit in commercialising of indigenous poultry (Animesh et al, 1997) to take advantage of increasing population.

2.10: Appropriate Poultry Practices

According to Herschbach (1995), technology is knowledge that is organised and is associated with application of science to solutions to problems that are technical in nature. It is a systematic application of the art or skill based on the understanding that one knows that generates desired results. Appropriate poultry practices are poultry management practices that make use technologies to improve production.

It would seem therefore, acquisition of knowledge is not an end in itself. It is the use of this acquired knowledge that may turn resources into products that are economically viable quantities for sale. Iindigenous chicken production has traditionally been considered a side activity and has been ignored by breeders, service providers and policy makers. Without much motivation productivity of indigenous chicken is low due to poor housing, poor breeding management, poor feeding strategies as well as lack of vaccinations against newcastle disease. A deliberate use of appropriate poultry practices may indicate the beginning of commercialisation as farmers may begin to put extra effort in otherwise a largely uncared for enterprise to improve production.

Dana et al (2006) in their approach to transform village poultry into a viable commercial venture, used packaging of technologies as one of the approaches. The researcher concluded

that transformation of village poultry was expected to flourish provided farmers developed skills and capacities to modernise through appropriate poultry practices so as to intensify production to a market scale. One of the reasons suggested as to why productivity of indigenous chicken is low in Kenya, is low adoption of technologies (Kingori et al, 2010)

2.11 Farmer Networks

Networks act as forums for exchange of ideas, useful information for members belonging to same network. These kinds of networks are useful in lobbying and it is easier to deal with organised groups for delivery of certain services such as vaccination and training.

While studying the impact of skills development and human capital training on self help groups, Ranjula and Varghese (2009) found training to have a much higher impact when done in groups. Because the smallholder indigenous farmers have shown little interest in seeking for information, training can generally reverse the negative attitude of farmers towards commercialisation of indigenous chicken. According to Risse, Koelsch, Bland, Bird and Boss (2005) an outside coach or individual is needed to motivate farmers into taking advantage of existing opportunities.

Therefore networks may be important in sourcing for information, services needed at farm level to commercialise. Such networks are common interest groups formed by farmers to access public extension services. Other farmer forums may be put in place by private input suppliers in their bid to reach farmers. In their research on the impacts of collective action on smallholder commercialisation in dairy sector in Ethiopia, Francesconi and Ruerd (2007) found that collective action outperformed individual producers. They also observed that cooperate members seemed to increase their herd sizes.

Indigenous chicken farmers are known to have loosely organized groups that tend to be weak

with little or no impact on farmers livelihood. In order to move indigenous poultry production from subsistence to commercial activity, capacity building of these groups with skills that enable them to run their enterprise as a business may be necessary. Some of the interventions by government are formation of groups to promote economies of scale in production and bulk purchase of inputs and marketing of chicken and chicken products. Little effort is being placed on individual farmer commercialization (GOK, 2010).

2.12: Resources for indigenous chicken

According to Mathijs and Nivelin (2002), lack of resources hinders capacity to expanding farmer's activities towards increasing production for surplus for sale. The two researchers see lack of access to credit as one of the factors affecting commercialization of agriculture. These resources could be in the form of equity that is farmers own finances, credit from institutions including government Mathijs, et al (2002). The two researchers also found land ownership as being important to the increase of production from subsistence to that of producing for sale. They found that sellers had considerable larger land holdings than non sellers.

Bravo-Ureta and Pinheiro (1993) found that access to credit tends to increase farmers technical efficiency in many circumstances. In contrast, Akter, e.t. al. (2003) found that access to credit significantly reduced the efficiency of poultry production in North Vietnam. They argue that, normally, access to credit is expected to have a positive effect on farmer's efficiency; the opposite result may be due to the purpose for which the credit was used.

2.13 Demand for indigenous chicken

There is growing demand for indigenous chicken in the urban areas (Tegemeo, 2009). This offers an opportunity for farmers to generate more income from indigenous poultry. To do so, there has to be an efficient value chain that focuses on doing things right.

A study carried out by Tegemeo institute- Egerton University (2009) on competitive position of Kenya's indigenous chicken meat and egg product, looked at demand at the market level. Data was collected from traders, hotels and consumers. One of the findings was that direct consumers accounted for 80% of the total sales and hotels accounted for 15%. Another important finding of this study was that demand and supply did not coincide. Most of the supply came from the rural areas and high supply in the Nairobi markets coincided with the hunger months of the year as well as, school holidays and festive seasons. This supports the view by most researchers that indigenous birds were disposed off mainly in times of stress (Mailu, et al, 2009., and Mathuva, 2005).

Table 2.2 Proportion of traders classifying month as high supply or high demand

Month	Supply	Demand
January	51	0
February	50	50
March	39	100
April	51	45
May	49	49
June	48	49.5
July	62	42
August	61	99
September	62	49
October	39	52
November	14	57
December	15	0

Source: Tegemeo 2009 Information extrapolated from a graph

The fact that high supply and high demand months do not coincide suggests that, the farmer does not specifically produce for the market but disposes only when the need arises from the point of view of the farmer. The reasons for this indifference to produce for the market, needs to be understood in order to unlock the commercialisation potential of indigenous chicken.

2.14 Government Policy

According to Omiti, et al (2006), improvement in smallholder livelihoods requires feasible policy interventions that enhance progress in agricultural commercialisation.

2.15 Conceptual Framework

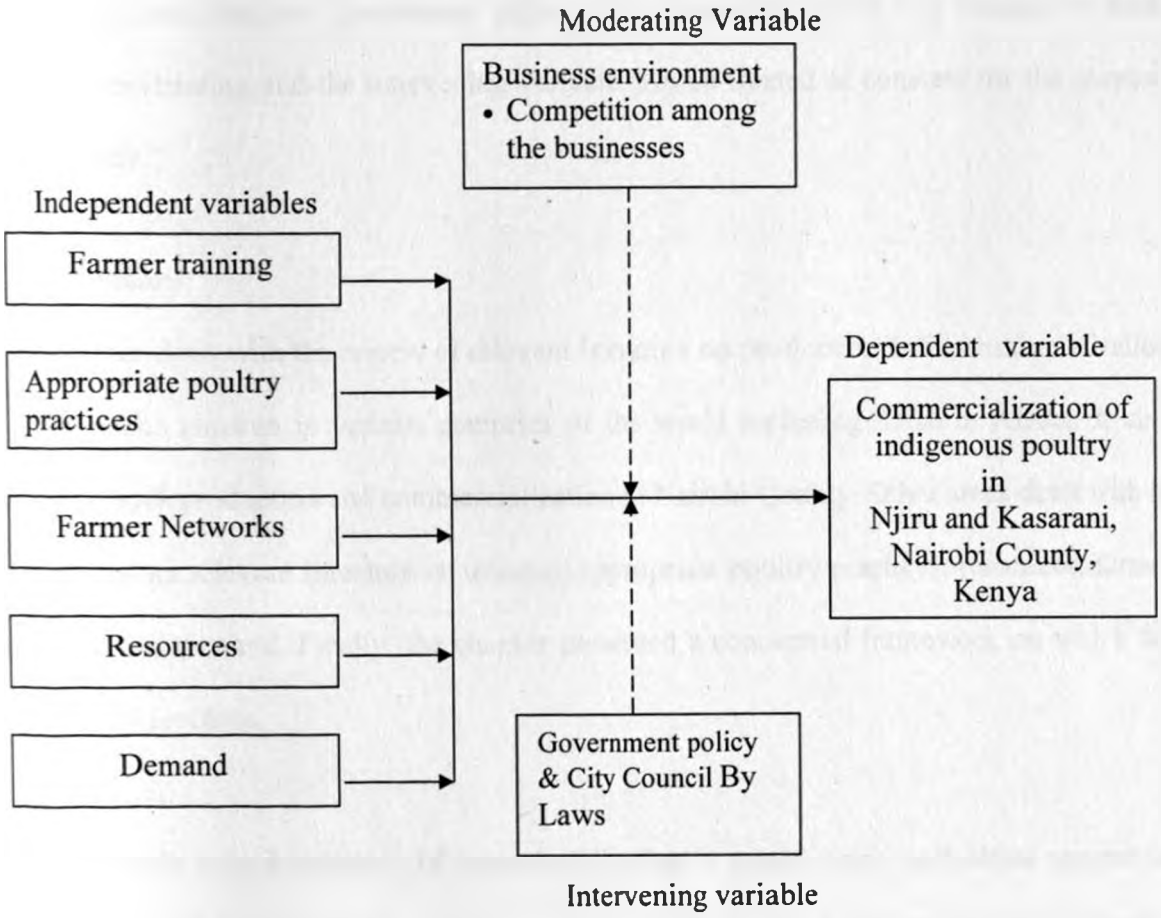

Figure 1: Conceptual Framework

The Conceptual Framework contains five independent variables, one dependent variable, one moderating variable and one intervening variable. The study was to establish how the independent variables acting as predictors influence the dependant variable. According to

Kothari 2004 and Mugenda 2009, independent variables are those that cause change in the dependant variable while the dependant variable is one whose outcome depends on manipulating the independent variables. The independent variables for the study are farmer training, appropriate poultry practices, farmer networks, resources and demand, while the dependent variable is commercialisation of indigenous chicken in Njiru and Kasarani districts. The moderating variable in the study is the business environment while the intervening variables are government policy and government policy city council by laws. Both the moderating and the intervening variable will be treated as constant for the purpose of this study.

2.16 Summary

This chapter dealt with the review of relevant literature on production and commercialization of indigenous chicken in various countries of the world including those in Africa. It also reviewed such production and commercialization in Nairobi County. Other areas dealt with in the chapter are relevant literature on training, appropriate poultry practices, resources, farmer networks and demand. Finally, the chapter presented a conceptual framework on which the entire study revolves.

From the review the importance of commercialization in transforming agriculture can not be overemphasized. However, it is evident researchers have mostly dealt with commercialization of crops, cattle, meat or the livestock sector. Most of the work on chicken is concerned with improving production. Commercialization of indigenous chicken has been dealt with on the basis of what drives a farmer make a decision to sell, and not from the angle of purposefully keeping indigenous chicken for sell, for example not for quick sale during emergency. This study deals with those factors that influence commercialization of indigenous chicken. That is the transformation from subsistence chicken farming to producing for the market.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives a detailed description of how the research was conducted. It contains the research design, sampling design, sampling procedure, data collection methods/ research instruments, validity and reliability of data collection instruments and methods of data analysis. It also gives a table showing the operationalization of variables.

3.2 Research Design

This is a quantitative research study. Therefore the research design adopted in this study is descriptive correlation survey. This method is preferred because it allows for comparisons of the research findings and is exploratory in nature (Kothari, 2004). The descriptive correlation survey seeks to establish factors that influence commercialisation of indigenous chicken. The study requires primary data to be collected for comparison. Descriptive correlation survey design enables the researcher to collect, summarise, present, evaluate and interpret the data in a simpler more understandable form (Kothari, 2004).

3.3 Target Population

A population is a group of units for which the study is intended to apply and the population to which the researcher wants to generalise the results of the study (Mugenda and Mugenda, 2003). The study population for this study are indigenous chicken farmers in Njiru and Kasarani districts, Nairobi County. The two districts are adjacent to each other and because the study was not testing for their differences, the two districts, Njiru and Kasarani were treated as one area for the purpose of the study. According to records from government officials working in the two districts they are 260 indigenous chicken farmers in the two

districts. These farmers were targeted because they have information on indigenous chicken production in Njiru and Kasarani. To enhance the study indigenous chicken traders for Njiru and Kasarani districts were studied to see whether there is any increase in market share of indigenous chicken for the study area. According to a head count carried out by the researcher, there are 62 traders in the two districts.

3.4 Sample size and Sampling Procedures

3.4.1 Sample size

A sample of 52 respondents (20 %) of the 260 indigenous chicken farmers was surveyed. According to Cochran (1977) a sample of 20% is sufficient for the purpose of the study. All the 62 indigenous chicken traders found in Njiru and Kasarani were studied as their population size was small. According to Kothari (2004), a researcher can study the entire population depending on size of the target population, time and resources involved. A sample is a group in a research study from which information is obtained (Kothari 2004).

3.4.2 Sampling Procedure

Sampling is the process of selecting some part of a study population or its entirety as a sample that would participate in the study for the purpose of generalisation to the entire population Kothari (2004). A sample of 52 respondents from 260 indigenous chicken farmers, were selected from two strata through a proportionate stratified random sampling technique. This allowed for proportionate and equitable representation as recommended by Mugenda (2008).

According to Nyaga (2007) the country's national average is 13 indigenous chicken per household. The study adopted Nyaga's observation as the basis for forming each stratum. One stratum consisted of those farmers with indigenous chicken equal to and below the

national average of 13 birds per household, while the other stratum was of farmers with more than 13 indigenous chicken. The farmers keeping indigenous chicken for commercial purposes were likely to be found in the strata that contains those farmers with more than thirteen indigenous chicken.

Within each stratum, 26 farmers were randomly selected to form a total of 52 sample units. From a head count conducted by the researcher, there were 62 chicken traders in the study area. Because this is a small population this research therefore studied the entire population of chicken traders in Njiru and Kasarani districts on aspects that enhance the study.

Table 3.1 Sample Size

Category of respondents	Population	Sample Size	Percentage
Indigenous poultry farmers	260	52	20%
Chicken traders	62	62	100%

3.5 Research Instruments

The study used a questionnaire to collect data in face to face interviews. The questionnaire had both structured and unstructured questions that were simple and easy to interpret. Structured questions saved time and facilitated easier data analysis of findings, while open ended unstructured questions was used to gain in depth information from respondents.

3.5.1 Validity of Research Instruments

According to Mugenda, et al (1999) validity is the degree to which results obtained from the analysis of the data actually represent the phenomenal under study. Validity therefore refers to the degree to which the instrument truly measures what it is intended to measure. In other words validity ensures content, construct and criterion related validity in the study. In this

research, content validity helped in ensuring that all content of the variables were included in the research questionnaire. Construct and criterion validity were ensured through formulating a questionnaire that was simple with precise questions that provided data that answered the research objectives adequately and helped in arriving at appropriate and meaningful conclusions on the topic of study. In addition, the researcher discussed meaning of terms in what was required to be studied with experts in the topic of study and with the supervisor.

3.5.2 Reliability of Research Instruments

Reliability is the degree to which research instrument consistently yields the same results after repeated trials (Mugenda, et al 1999). It is synonymous with the consistency of a test, survey, observation or other measuring device. This measure is important because it ensures data collected is consistent and is representative of what is required to be achieved from the research study. In this research study reliability was ensured by use of test retest to enable the researcher to test the consistency among answers in the questionnaires. According to Mugenda, et al (1999), a test retest method of assessing reliability involves administering the same instrument twice to the same group of subjects. Therefore a pre-testing of questionnaires was done in the neighbouring Makadara district which is outside the study area to detect confusing items within the questionnaires. This enabled the researcher to identify misunderstandings, ambiguities and inadequate items in the research instruments and make necessary adjustments so that the data collected is more reliable. As a result, relevant adjustments were made to the questionnaires before they were administered to the sample population. For instance the researcher found the respondents were not comfortable stating their age and so this was removed from the questionnaire. The scope of questions on the type of feeds and feeding was expanded to include a significant segment that had been left out of the questionnaire. On where the farmers sold their chicken, the researcher found neighbours and fellow farmers as a significant market for indigenous farmers. So therefore, fellow

farmers and neighbours were included in the questionnaire.

The pre-test and a re-test were done on a group of 5 farmers and 5 traders. Data collected from the retest was used to calculate coefficient of reliability by use of Reliability Coefficient Cronbach Alpha) formula as follows;

N/ (N-1) x (Total Variance- Sum of individual Variance)/ Total variance

Where:

N= Total questions administered

Variance= Square (Score-Average)

From the data collected;

Total questionnaires = 27

Total Variance= 22.0

Sum of individual Variance= 4.4

Alpha= (27/27-1) X (22..0 - 4.4)/22 = 0.83

Reliability coefficient= 0.83

The data demonstrated excellent test–retest reliability which is supported by Mugenda (2008) who says that reliability coefficient of 0.80 or more implies that there is a high degree of reliability of data.

3.6 Data Collection Procedures

After the research proposal was approved by the university panel and the supervisor, a research permit was obtained from the Ministry of Higher Education Science and technology. The researcher got further approval from the Director of Livestock Production, Ministry of Livestock development to go to Nairobi County and seek the assistance of some his officers to collect data. Thereafter the officer in charge of Njiru and Kasarani were contacted. A survey of all indigenous chicken farmers was done before the study to determine the number of indigenous chicken farmers had. The researcher and two assistants went through the

questionnaires before piloting. The researcher trained the assistance on how to administer the questionnaires and together with researcher piloted the questionnaires as part of further training for the assistants.

After piloting, corrections and adjustment to the questionnaire were made, 52 and 63 questionnaires for indigenous chicken farmers and traders were produced. Commencement and date for collecting the filled in questionnaires were agreed upon and follow up was done through telephone. The assistance was given transport and prepaid telephone cards to facilitate easy communication. The respondents were assured of full confidentiality of their identities by the researcher and the assistance. The responses from the respondents helped the researcher to obtain data for the research objectives

3.7 Data Analysis Techniques

The questionnaires was assembled and stored in a safe place where they were cleaned for vague responses and any information not relevant to the research question. Proof reading to ensure consistency in the data was done, followed by coding to give symbols to same/ similar responses. This assisted in the tabulation of cumulative frequency and percentage tables for each variable. Data was analysed using descriptive statistics. This enabled effective data description and analysis on areas of interest in the research study. Data analysis is in the form of, frequencies to determine number of farmers that embrace commercialisation and percentages to determine the relationship of variables. This was achieved through the use of statistical package for social sciences (SPSS).

3.9 Operational definition of variables

Table 3.3 highlights the objectives of the study, specifying their variables, indicators, and measurements, data collection methods and data analysis.

Table: 3.2 Operationalization of variables

	Objective	Variables	Indicator	Measurement	Scale	Data collection Method	Data analysis
1	To establish evidence of commercialization of indigenous chicken in Njiru and Kasarani Districts	**Dependent** Commercialization	1.Production for the market	Increased numbers of indigenous chicken at farm level	Ratio	survey	Measure of central Tendency and percentages
			2. Search and availability of the market	Demand and its satisfaction	Ratio	Survey	
			3. Profitability	Increased profits	Ratio	Survey	
			4. Market share	Increased Market share	Ratio	Survey	
2	To establish the influence of Farmer training on commercialization of indigenous chicken	**Independent** Farmer training for commercialization	Farmer training on poultry production	Evidence of attendance of Farmer training courses, field days, etc	Ratio	Survey	Measure of central tendencies , (MCT) and Percentages
				Contact with field extension officers	Ratio	Survey	
3	To investigate the influence of use of appropriate poultry practices on commercialization	**Independent** Use of Appropriate poultry practices for production	1. Feed supplementation	Provision of feed supplementation to chicken	Ratio	Survey	MCT, and percentages
			2. Separate housing for chicken	Evidence of separate housing for chicken	Ratio	Survey	
			3.Vaccinations	Evidence of use of NCD and other vaccination	Ratio	Survey	
			4. Hatching Methods	Use of surrogate mother hen; and incubators	Ratio	Survey	

	Objective	Variables	Indicator	Measurement	Scale	Data collection Method	Data analysis
4	To establish the influence of resources on commercialization of indigenous chicken	**Independent** Resources	1. Space	Availability of space for expansion	Ratio	Survey	MCT, and percentages
			2. Finance	Availability and sources of finances (own, loans, etc)	Ratio	Survey	
			3. Time	Availability of time to spent on Indigenous chicken activities	Ratio	Survey	
			4. Labour	Availability of hired personnel to care for the chicken; marketing	Ratio	Survey	
5	To assess the influence of farmers Net works on commercialization of indigenous chicken	**Independent** Farmer Networks	1. Membership to a Group	Access to extension services	Ratio	Survey	MCT, and percentages
				Access to input agents	Ratio	Survey	
				Access to markets	Ratio	Survey	
				Group encouragement	Ratio	Survey	
6	To examine the influence of demand for on commercialization of indigenous chicken	**Independent** Demand	.Customers	Level of demand	Ratio	Survey	MCT, and percentages
				Ability to sell all chicken produced	Ratio	Survey	
					Ratio	Survey	

3.10 Summary

The chapter dealt with research methodology giving detailed description of how the research will be conducted. The chapter contained, research design, sampling design, sampling procedure, data collection methods, validity and reliability of data collection instruments and methods of data analysis. It also contained a table showing the operation definition of variables. The study focused on indigenous poultry farmers in Njiru and Kasarani and sampling was done in such a way so as to have equal representation in the study.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents data analysis, presentation and interpretation in terms of tables and following the five objectives of the study.

4.1.2 Response Rate

The questionnaires were administered to 52 chicken farmers and 63 traders who all responded, which translates to 100% response rate. This was expected as the questionnaires were administered through face to face interviews and the research assistance was facilitated with transport and air time. The entire return rate is statistically representative, therefore, enhancing generalization of the research results. However, the statistical results were triangulated with extensive literature to draw lessons learnt from other similar research works on commercialization and chicken farming.

4.2 Demographic Characteristics of Respondents

This section describes the demographic characteristics of respondents who participated in this study. These characteristics include chicken farmer's gender and education level, chicken trader's place of residence and period of operation of their business.

4.2.1 Gender distribution of Chicken farmers

This section presents data on the gender of chicken farmers surveyed.

Table 4.1: Gender of chicken farmers

Gender	Frequency	Percent
Male	15	28.8
Female	37	71.2
Total	52	100.0

As shown in Table 4.1, of the 52 chicken farmers who participated in this study 37 of them, equal to 71.2%, were female while 15 (28.8%) were male.

4.2.2 Education level of chicken farmers

This section presents data on the education level of chicken farmers surveyed.

Table 4.2: Education level of chicken farmers

Education level	Frequency	Percent
Primary	9	17.3
Secondary	23	44.2
College	15	28.9
University	4	7.7
No formal education	1	1.9
Total	52	100.0

As shown in Table 4.2, of the 52 chicken farmers who participated in this study majority 23 of them, equal to 44.2% had secondary education, 15 of them (28.9%), had college education, 9 of them (17.3%) had primary education, 4 of them (7.7) had university education while one (1.9%) had no formal education at all. Therefore, of the 52 chicken farmers that participated in the survey 43 of them, equal to 82.7% had secondary education and above.

4.2.3 Chicken Traders Place of Residence

This section presents data on the place of residence by district of chicken traders surveyed.

Table 4.3: Place of Residence of Chicken Traders

District	Frequency	Percent
Kasarani	53	84.1
Njiru	10	15.9
Total	63	100.0

As shown in Table 4.3, of the 63 traders surveyed, majority 53 of them, equal to 84.1%, were from Kasarani while 10 (15.9%) were from Njiru.

4.2.4 Period of Operation of Businesses

This section presents data on the period the chicken traders surveyed, have been in the chicken business.

Table 4.4: Length of chicken business

Years	Frequency	Percent
Less than five years	27	42.9
More than five years	36	57.1
Total	63	100.0

As shown in Table 4.4 shows, of the 63 chicken traders 27 of them equal to 42.9% had been in operation for less than five years while the majority 36 of them (57.1%) had operated for more than five years.

4.3 Evidence of commercialization of indigenous chicken

This section presents data, on evidence of commercialization of indigenous chicken in the study area.

4.3.1 Number of indigenous chicken that farmers had initially

This section presents data on the number of indigenous chicken that farmers surveyed started with.

Table 4.5: Initial number of indigenous chicken

Number of indigenous chicken	Frequency	Percent
Less than 5 chicken	45	86.5
6-10 chicken	3	5.9
11-15 chicken	2	3.8
more than 16	2	3.8
Total	52	100.0

As shown in Table 4.5, of the 52 chicken farmers surveyed, 45 of them, equal to 86.5%, started with less than 5 chicken, 3 of them (5.9%) started with 6-10 chicken while 2 of them (3.8%) started 11-15. and 2 of them started with more than 16 chicken.

4.3.2 Number of indigenous chicken normally kept by farmers

This section presents data on the number of indigenous chicken, farmers surveyed usually keep.

Table 4.6: Number of indigenous chicken normally kept

Number of chicken	Frequency	Percent
Less than 5 chicken	1	1.9
6 - 10 chicken	7	13.5
11-15 chicken	9	17.3
16-20 chicken	7	13.5
21-25 chicken	1	1.9
26-30 chicken	3	5.8
31 -35 chicken	3	5.8
36- 40 chicken	1	1.9
46-50 chicken	8	15.4
Above 51chicken	12	23.1
Total	**52**	**100.0**

As shown in Table 4.6, of the 52 farmers surveyed, 12 of them, equal to 23.1%, keep above 51 chicken, ranging from 51 to 500 followed by 9 of them (17.3%) who keep in the range of 11-15 birds and 8 of them (15.4%) who had chicken raging from 46 – 50, while one of them equal to 1.9% kept less than 5 chicken. The study revealed that majority of the 52 farmers surveyed 51 of them (98.1%) keep more than 5 indigenous chicken with 27 of them (52%) keeping more than 25 indigenous chicken.

4.3.3 Reasons for rearing indigenous chicken

This section presents data on the main reasons farmers surveyed, are rearing indigenous chicken.

Table: 4.7 Main reasons for rearing indigenous chicken

Reason for rearing indigenous chicken	Frequency	Percent
For home consumption	17	32.7
For commercial purposes	33	67.3
Total	52	100.0

As shown in Table 4.7, of the 52 chicken farmers surveyed 33 of them equal to (67.3%), reared indigenous chicken for commercial purposes while 17 of them equal to 32.7%, rear them for home consumption.

4.3.4 Relationship between the number of indigenous chicken that farmers keep and commercialization.

This section presents data on the statistical relationship between commercialization of indigenous chicken and the number of indigenous chicken that farmers normally rear. ANOVA test was used to test the relationship. Relationship is statistically significant at $p = 0.05$ (or 95% confidence level).

Table 4.8: Flock size and commercialization relationship

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.280	1	1.280	4.780	.034[a]
	Residual	13.393	50	.268		
	Total	14.673	51			

a. Predictors: (Constant), How many indigenous chickens do you normally keep?

b. Dependent Variable: What is your main reason for rearing indigenous chicken?

As shown in Table 4.8, the analysis revealed that the number of chicken the farmers had, strongly influenced their reason for rearing indigenous chicken at P-value 0.34 which is less than 0.05 showing a strong relationship of variables.

4.4 Factors Influencing Commercialization of Indigenous Chicken

This section presents data on factors influencing commercialization of indigenous chicken. The factors in the study are, Farmer Training, Appropriate poultry practices, Resources, Farmer networks and Demand. The findings are described below.

4.4.1 Farmer Training

This section presents data on the number of farmers surveyed, that have received training on poultry, the form in which the training was received and the adequacy of that training on commercialization.

4.4.1.1 Access to training on poultry production

This section presents data on the number of chicken farmers that have received training on poultry production.

Table 4.9: Access to training on poultry production

Access to training	Frequency	Percent
Yes	43	82.7
No	9	17.3
Total	**52**	**100**

As shown in Table 4.9, of the 52 farmers surveyed, 43 of them equal to 82.7% had been trained on poultry production while 9 of them (17.3%) had not.

4.4.1.2 Influence of access to farmers training on commercialization

This section presents data on the statistical relationship between access to training and commercialization of indigenous chicken

Table 4.10: Training and Commercialization Relationship

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
Relationship between access to training on commercialization	.705(a)	.496	.345	.32775	.496	3.287	9	30	.007

As shown in Table 4.10, there was a relationship between access to training by farmers and commercialization of indigenous chicken at p-value 0.007 (<0.05), showing a strong relationship. The relationship is statistically significant at p = 0.05 (or 95% confidence level).

4.4.1.3 Form of Training

This section presents data on the form of training chicken farmers surveyed, accessed and the relationship between the form of training and commercialization.

Table 4.11: Form of Training

Form of Training	Yes		No		ANOVA:Sig.
	Frequency	%age	Frequency	%age	
Field day	42	97.2	1	2.8	.046
Workshop	27	63.5	16	36.5	0.321
Agricultural Shows	23	53.8	20	46.2	0.023
Farmers Demonstrations	25	57.7	18	42.3	0.663
Farmers Forums	29	67.3	14	32.7	0.009
Extension workers visits at home	24	55.8	19	44.2	0.013

As shown in Table 4.11, of the 43 chicken farmers that had received training 42 of them equal to 97.2%, had access to training through field days, followed by 29 of them (67.3%) who had accessed training using farmer's forums. 27 of them (63.5%) accessed through workshop, 23 of them (53.8%) agriculture shows while 27 of them (57.7%), farmers demonstrations and 24 of them (55.8%) received training from extension officers who visited their homes. As shown also in table 4.11, the media in which farmers access training influenced commercialization at different levels. Access to training through field days influence commercialization strongly at p-value 0.04 (<0.05), agricultural shows at p-value 0.02 (<0.05), farmers forums at (p-value 0.009 (<0.05) and extension services at (p-value 0.013 (<0.05), showing strong relationships of variables. The relationship is statistically significant at $p = 0.05$ (or 95% confidence level).

4.4.1.4 Adequacy of the training received on poultry production

This section presents data on the adequacy of training received by the chicken farmers surveyed on poultry production.

Table 4.12: Assessment of the training

	Frequency	Percent
Adequate	23	54.8
Fairly adequate	18	42.8
Not adequate	1	2.4
Total	42	100.0

As shown in Table 4.12, of the 42 chicken farmers surveyed, 23 of them equal to 54.8% found the training they got adequate while 18 of them (42.8%) found it fairly adequate. While one of them (2.4%), found the training not adequate.

4.4.2 Appropriate Poultry Practices (Technology adoption)

This section presents data on appropriate practices adopted by the chicken farmers surveyed. These appropriate practices include housing, feed supplementation, vaccination, chick hatching methods and the method of feeding indigenous chicken.

4.4.2.1 Housing, feed supplementation and vaccination

This subsection presents data on the number of chicken farmers surveyed that have separate housing for their chicken, give feed supplementation and vaccinate the chicken against newcastle, fowl pox and fowl typhoid diseases.

Table 4.13: Housing, feed supplementation and vaccination

Practice	frequency	Percent
Provision of separate housing	49	98.0
Provision of feed supplementation	49	98.0
Vaccination against Newcastle disease	45	86.5
Vaccination against Fowl pox	27	51.9
Vaccination against Fowl typhoid	25	48.1

As shown in Table 4.13, of the 52 farmers surveyed, 49 of them equal to 98.0%, provided separate housing for their chicken. Of the 52 farmers surveyed, 49 of them equal to 98.0% provided feed supplementation to chicken. Of the 52 farmers surveyed, 45 of them (86.5%) were vaccinating chicken against newcastle. Of the 52 farmers surveyed, 27 of them equal to 51.9% vaccinated against fowl pox and finally of the 52 farmers surveyed, 25 of them (48.1%) also vaccinated against fowl typhoid disease.

4.4.2.2 Chick hatching practices

This section presents data on the methods used by farmers, surveyed, to hatch chicks.

Table 4.14: Chick hatching practices

Chick hatching practice	Frequency	Percent
Mother hen	43	84.3
Surrogate mother hen	1	2.0
mother hen and surrogate mother hen	7	13.7
Total	51	100.0

As shown in Table 4.14, of the 51 chicken farmers surveyed 43 of them, equal to 84.3% used the mother hen for hatching chicks, one of them (2.0%) used surrogate mother hen while 7 of

them (13.7%) were using a mix of mother hen and surrogate hen. The table further shows, of the 51 chicken farmers surveyed, 8 of them equal to 15.7% used surrogate mother hen to synchronize chick hatching.

4.4.2.3 Feeding method for indigenous chicken

This section presents data on the feeding methods being used by chicken farmers surveyed.

Table 4.15: Feeding method

Feeding Method	Frequency	Percent
Left to Scavenge only	1	1.9
A mix of scavenging with feed supplementation	12	23.1
Compound feed only	4	7.7
Compound feed and grain	2	3.8
A mix of compound feed, grain, vegetables	33	63.5
Total	**52**	**100.0**

As shown in Table 4.15 of the 52 chicken farmers surveyed 33 of them, equal to 63.5% feed their chicken through a mix of compound feed, grain and vegetables. One of them (1.9%) lets chicken to scavenge while 12 of them (23.1%), mix scavenging with feed supplementation. 4 of them (7.7%) gave compound feed only while 2 of them (3.8%) use compound feed and grain.

4.4.3 Resources for indigenous chicken

This section presents data on resource available to chicken farmers surveyed. These resources include finance, space for future expansion, time to care for indigenous chicken and Labour.

4.4.3.1 Source of funding

This section presents data on sources of funding for chicken farmers surveyed.

Table 4.16: Source of finance

Source of Funds	Frequency	Percent
Own funds	43	82.7
Bank	1	1.9
Merry go round (Chama)	6	11.5
Grants from government	2	3.9
Total	52	100.0

As shown in Table 4.16, of the 52 chicken farmers surveyed, 43 of them equal to 82.7%, sourced their finance through personal savings, while one of them (1.9%) sourced finance from financial institutions. Merry go round (Chama) was source of start-up finance for 6 of them (11.5%) while 2 of them (3.9%) got grants from government.

4.4.3.2 Money for inputs as a challenge

This section presents data on the number of farmers surveyed that have financial difficulties in obtaining money to buy inputs.

Table 4.17: Money for inputs as a challenge

Money as a challenge	Frequency	Percent
Yes	34	65.4
No	18	34.6
Total	52	100.0

As shown in Table 4.17, of the52 chicken farmers surveyed 34 of them equal to 65.4% had financial challenges for purchase of inputs while 18 of them (34.6%) had none.

4.4.3.3 Availability of space for future expansion

This section presents data on the availability of space for future expansion, by chicken farmers surveyed.

Table 4.18: Availability of space

Availability of space	Frequency	Percent
Yes	49	96.1
No	2	3.9
Total	51	100.0

As shown in Table 4.18, of the 51 chicken farmers surveyed, 49 of them equal to 96.1% had enough space for expanding their indigenous chicken enterprises while 2 of them (3.9%) did not.

4.4.3.4 Time availability for indigenous chicken

This section presents data on whether chicken farmers surveyed have the time to care for their indigenous chicken.

Table 4.19: Time to take care for indigenous chicken

Time to take	Frequency	Percent
Yes	45	86.5
No	7	13.5
Total	52	100.0

As shown in Table 4.19, of the 52 chicken farmers surveyed 45 of them, equal to 86.5%, had time to care for their chicken while 7 of them (13.5%) did not.

4.4.3.5 Labour availability in indigenous chicken management

This section presents data on the type of labour engaged in chicken management by the chicken farmers surveyed.

Table 4.20: Labour availability

Labour in use	Frequency	Percent
I use family labour	18	34.6
I use hired labour	10	19.2
I do the work myself	12	23.1
I use family labour and my also do the work my self	12	23.1
Total	52	100.0

As shown in Table 4.20, of the 52 chicken farmers surveyed, 18 of them equal to 34.6% use family labour to care for their indigenous chicken, 10 of them (19.2%) use hired labour while 12 of them (23.1%), do the work themselves.

4.4.4 Farmer networks

This section presents data on farmer's membership of a chicken group and the benefits obtained through that membership.

4.4.4.1 Membership to farmer group

This section presents data on whether chicken farmers surveyed belonged to a chicken group.

Table 4. 21: Membership to farmer group

Membership	Frequency	Percent
Yes	34	65.4
No	18	34.6
Total	52	100.0

As shown in Table 4.21, of the 52 chicken farmers surveyed 34 of them, equal to 65.4% belonged to an indigenous chicken farmer groups while 18 of them (34.6%) did not.

4.4.4.2 Benefits of farmers groups

This section presents data on the benefits chicken farmers received by belonging to a chicken group.

Table 4.22: Benefits from group membership

Benefits	Frequency	Percent
Access to extension worker visits	27	51.9
Access to training	31	59.6
Access to inputs	16	30.8
Access to market	13	25.0
Group encouragement (synergy)	30	57.7

As shown in Table 4.22, of the 52 chicken farmers surveyed, majority 31 of them, equal to 59.69% benefited from access to training. 30 of them (57.7%) benefited from group encouragement, 27 of them (51.9%) from access to extension workers visits, 16 of them equal to 30.8% access to inputs while 13 (25.0%) benefited from access to market.

4.4.5 Demand for indigenous chicken

This section presents data on the opinions of chicken farmers surveyed, regarding the level of demand for indigenous chicken.

4.4.5.1 Level of demand for indigenous chicken

This section presents data on the level of demand as indicated by chicken farmers surveyed.

Table 4.23: Level of demand

Demand	Frequency	Percent
Low	4	7.7
High	48	92.3
Total	52	100.0

As shown in Table 4.23, of the 52 chicken farmers surveyed, 48 of them equal to 92.3 % felt that demand for indigenous chicken was high while 4 of them (7.7%) felt it was low.

4.4.5.2 Cost of rearing one chicken

This section presents data on the cost of rearing one chicken till point of sale by chicken farmers surveyed.

Table 4.24: Cost of rearing one chicken

Cost	Frequency	Percent
Kshs. 100- Kshs. 200	2	4.0
Kshs. 201 - Kshs. 300	16	32.0
Kshs. 301 - kshs. 400	24	48.0
Kshs. 401 - kshs. 500	6	12.0
More than 501	2	4.0
Total	50	100.0

As shown in Table 4.24, of the 50 chicken farmers surveyed 24 of them, equal to 48.0% spend between Kshs 301 – Kshs 400 followed by 16 of them (32.0%) who spent between Kshs 201 – Kshs 300. Those that were spending the most (more than Kshs 501) were 2 of them (4.0%) while 2 of them (4.0%) were those that were spending the least (Kshs 100 – Kshs 200). Therefore the average cost of rearing one chicken till point of sell was Kshs 340.

4.4.5.3 Selling price for one chicken

This section presents data on the selling price for one chicken by chicken farmers surveyed.

Table 4.25: Selling price for one chicken

Selling price for one chicken	Frequency	Percent
Kshs. 301 - Kshs. 400	1	2.3
Kshs. 401 - Kshs. 500	12	27.9
Kshs. 501 - Kshs. 600	12	27.9
Kshs. 601 - Kshs. 700	10	23.3
Kshs. 701 - Kshs. 800	8	18.6
Total	43	100.0

As shown in Table 4.25, of the 43 chicken farmers surveyed majority 12 of them equal to 27.9% sold their chicken between Kshs 401 – Kshs 500 and between Kshs 501 – Kshs 700 respectively. This was followed by 10 of them (23.3%) who sold one chicken between Kshs 601 – Kshs 700. Those that sold at the highest price of between Kshs 701 – Kshs 800 were 8 of them (18.6%), while one person equal to 2.3% sold at Kshs 301 – Kshs 400. The study finding show the average selling price was Kshs 740.

4.4.5.4 Ability to sell chicken produced

This section presents data on the extent to which chicken farmers surveyed are able to sell the chicken produced.

Table 4.26: Ability to sell chicken produced

Ability to sell chicken produced	Frequency	Percent
Less than half	16	38.1
More than half	7	16.7
Sell all	19	45.2
Total	42	100.0

As shown in Table 4.26, of the 42chicken farmers surveyed, majority 19 of them equal to 45.2% were able to sell all their chicken, 7 of them (16.7%) sold more than a half while 16 of them (38.1%) sold less than half. The study findings show 61.9% of indigenous poultry farmers are able to sell all or more than half of their chicken produced.

4.4.5.5 Option to continue with indigenous chicken keeping

This section presents data on the willingness of chicken farmers surveyed to continue with indigenous chicken keeping.

Table 4.27: Option to continue with indigenous chicken

Option to continue	Frequency	Percent
Yes	48	94.1
No	3	5.9
Total	51	100.0

As shown in Table 4.27, of the 51 chicken farmers surveyed 48 of them, equal to 94.1% would continue keeping indigenous chicken even if there was another option while only 3 of them (5.9%) would not.

4.4.5.6 Market for indigenous chicken

This section presents data on the market channels for indigenous chicken used by chicken farmers surveyed.

Table 4.28: Market channel

Market channel	Frequency	Percent
Middlemen	8	18.6
Market	4	9.3
Hotel	3	7.0
To indigenous chicken farmers	18	41.9
Locally	10	23.2
Total	43	100.0

As shown in Table 4.28, of the 43 chicken farmers that sell their chicken, 18 of them equal to 41.9%, sold their chicken to fellow indigenous chicken farmers, 10 of them (23.2%), sold them locally in their neighbourhoods, and 8 of them (18.6%) sold to middlemen while 4 of

them (9.3%) sold to the market and only 3 of them (7.0%) sold to hotels.

4.4.5.7 Market share

This section presents data on the number and type of chicken that traders surveyed had at the start of their business, the number and type of chicken they had for sale, number of chicken they sold on a good business day, and how chicken are sold by traders surveyed.

4.4.5.8 Number of chicken that traders had initially

This section presents data on the number of chicken that traders surveyed started with.

Table 4.29: Number of chicken that traders had initially

Number of chicken	Frequency	Percent
1 – 10	32	50.8
11-20	23	36.5
21-30	4	6.3
31-40	3	4.8
More than 41	1	1.6
Total	**63**	**100.0**

As shown in Table 4.29, of the 63 chicken traders surveyed, majority 32 of them equal to 50.8%, started trading in chicken business with a stock of 1 – 10 chicken, followed by 23 of them (36.5%) who started with 11 – 10 chickens. Those that started with 21-30 were 4 of them (6.3%) while 3 of them (4.8%) started with 31-40 chicken. The study findings show therefore that out of 63 chicken traders surveyed, 59 of them (93.6%) started with less than 31 birds while only 4 of them (6.4%) started with more than 31 birds.

4.4.5.9 Number of chicken that traders have for sale

This section presents data on the number of chicken that traders surveyed had in stock for sale on a good business day.

Table 4.30: Number of chicken that traders have for sale

Number of chicken	Frequency	Percent
1 – 30	26	41.3
31-60	28	44.4
61-90	4	6.4
More than 91	5	7.9
Total	63	100.0

As shown in Table 4.30, of the 63 chicken traders surveyed, majority 28 of them equal to 44.4% were able to stock 31 – 60 chicken followed by 26 of them (41.3%) who stocked 1 – 30 chicken. Those that stocked between 61-90 chicken were 4 of them (6.4%) while the ones who had more than 91 were 5 of them (7.9%). The study findings show out of 63 chicken traders surveyed, 26 of them equal to 41.3% had in stock less than 31 chicken, while 37 of them (58.6%) had more than 31 birds.

4.4.5.10 Type of chicken that traders had initially

This section presents data on the type of chicken that chicken traders surveyed, started with.

Table 4.31: Type of chicken at start of business

	Exotic chicken		Indigenous chicken	
Number of chicken	Frequency	Percent	Frequency	Percent
1 – 5	5	7.9	0	0
6-10	5	7.9	35	55.6
11-20	0	0	21	33.3
21-30	0	0	4	6.3
31-40	0	0	2	3.2
More than 41	0	0	1	1.6
Total	10	15	63	100.0

As shown in Table 4.31, of out of the 63 chicken traders surveyed, only 10 chicken traders equal to 15% sold exotic chicken at the start of their business while all them 63 equal to 100% chicken traders, had indigenous chicken.

4.4.5.11 Type of chicken currently being sold

This section presents data on the type of chicken currently sold by chicken traders surveyed.

Table 4.32: Type of chicken currently sold

Type of chicken	Frequency	Percent
Indigenous chicken	34	54.0
Exotic chicken	29	46.0
Total	63	100

As shown in Table 4.32, of the 63 traders surveyed majority 34 of them, equal to 54% were dealing with indigenous chicken at the time of the study while 29 of them (46.0%) were dealing exotic chicken. The study findings show the indigenous chicken have a higher market share than exotic chicken at the traders level in the study area.

4.4.5.12 Number of chicken sold on a good business day

This section presents data on the number of chicken sold on a good business day by chicken traders surveyed.

Table 4.33: Number of chicken sold on a good day

	Exotic chicken		Indigenous chicken	
	Frequency	Percent	Frequency	Percent
1 – 5	9	26.5	0	0
6-10	8	23.5	0	0
11-15	3	8.8	0	0
16-20	10	29.4	0	0
More than 21	4	11.8	0	0
21-30	0	0	34	54.0
31-60	0	0	24	38.0
61-90	0	0	2	3.2
More than 91	0	0	3	4.8
Total	34	100	63	100.0

As shown in Table 4.33, of the 63 chicken traders, majority 34 of them, equal to 54.0% sold between 21-30 indigenous chicken per day followed by 24 of them (38.0%) who sold between 31-60 indigenous chicken per day.

4.4.5.13 How chicken are sold by Traders

This section presents data on the form in which chicken are sold by chicken traders surveyed.

Table 4.34: Branding

How chicken are sold	Frequency	Percent
As live birds	33	52.4
As dressed carcasses whole chicken	60	95.2
In pieces as Half chicken	60	95.2

As shown in Table 4.34, of the 63 chicken traders surveyed 33 of them, equal to 52.4%, sold chicken as live bird, Of the 63 chicken traders surveyed, 60 of them 95.2%, sold chicken as dressed carcasses whole chicken and of the 63 chicken farmers surveyed, 95.2% sold in pieces as half chicken.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, DISCUSSION, CONCLUSIONS AND RECOMMEDATIONS

5.1 Introduction

This chapter presents the summary of the study findings, a discussion of the findings, conclusions and recommendations based on those findings. This is in relation to demographic characteristics of respondents, commercialization, farmer training, appropriate poultry practices, resources, farmer networks and demand for indigenous chicken. Suggestions of other related studies that could be carried out in future are also presented.

5.2 Summary of findings

This section is a presentation of a summary of the major findings of the study

This study showed that most of the indigenous poultry farmers 71.2% were female while 28.8% were male. Majority of chicken farmers 45.1% had secondary education, 29.4% had college education while 17.6% had primary education. It can be noted that even indigenous chicken farming is also being adopted by educated farmers.

5.2.1: Evidence of commercialization of indigenous chicken

The study found that majority of the respondents (67.3%) reared indigenous chicken for commercial purpose while 32.7% for home consumption. The study also found that while most farmers (86.5%) started the business with less than 5 indigenous chicken, commercialization has taken root with 98.1% of the farmers keeping more than 5 indigenous chicken. In fact, 52% of the respondents keep more than 25 indigenous chicken.

5.2.2: Access to farmers training

The study established that majority (82.7%) of the respondents were trained on poultry production while 17.3% were not. The study also found that training strongly influenced commercialisation at p –value at p-value 0.007 (<0.05). Also the mode through which farmers received this training was as important for commercialization as the training itself. Access to training through field days influenced commercialization strongly at p-value 0.04, agricultural shows at p-value 0.02, farmer forums at p-value 0.009 and extension services was at p-value 0.013. Therefore, it seems commercialization has been realized through training. A relationship is statistically significant at p = 0.05 or less than 0.05 (or 95% confidence level).

5.2.3: Adoption of appropriate poultry practices

The study found an overwhelming majority of farmers have adopted appropriate poultry practices with 98.0% providing separate housing,. 98.0% providing feed supplementation while 75% having moved away from scavenging as a method of feeding. The study also found 86.5% of farmers vaccinated their chicken against Newcastle which is a disease that has potential of wiping out entire flocks of chicken. Therefore the study found that commercialization has been embraced by farmers through the adoption of appropriate practices that increase survival rates of chicken.

5.2.4: Access to resources

Resources are an important asset in commercialization. The study found, majority of farmers (96.1%) had sufficient space for expanding their indigenous chicken enterprises. Those that had no space, had constructed 2-3 floor chicken house. Further, the study established that although farmers have little access to credit, majority (82.7%) had access to their own finances as start up capital for indigenous chicken. However 65 % of the farmers experienced challenges in finding money to buy inputs.

5.2.5: Membership to farmer networks

Farmer networks are important for development of a business. The study revealed that 65.4% of indigenous chicken farmers belonged to indigenous chicken farmer groups through which they received benefits that have made them realize commercialization. In fact the study found that majority of farmers (59.6%), benefited from access to training, 57.7% from group encouragement and 51.9% from access to extension workers while 25.0% benefited through access to markets.

5.2.6: Demand for indigenous chicken

The study found there was high demand for indigenous market in the study area with 92.3% farmers indicating they experienced high demand for their chicken. In addition the study found that the average cost of rearing one chicken till point of sale was Kshs 340 while the average selling price was Kshs 740. Consequently the respondents were making a profit of Kshs 400. It is no wonder therefore; that an overwhelming majority, 94.1 % of respondents said they would continue with indigenous chicken rearing even if there was another alternative. In fact commercialization has taken root to such an extent that 41.9% of the farmers sold their chicken to fellow indigenous chicken farmers who after realizing the potential in the market introduced the indigenous chicken enterprise at their own households. The study also found majority of the chicken traders (54%) were dealing with indigenous chicken and not exotic chicken.

5.3: Discussions of the findings

This research established that farmers in the peri-urban areas of Njiru and Kasarani districts are engaged in commercialization of indigenous chicken. In fact Njiru and Kasarani farmers, seem to have taken the business seriously by increasing their share of the market and by increasing the number of chicken because of commercialization. And like Makhura, Goode

and CoetZees (1996), say, those who increase their flock participate more in the market. This is also supported by Mailu and Wachira (2009) who found that a one unit increase in flock size increases the likelihood to participate in the market by 2.5%.

Commercialization of indigenous chicken is being realized through several factors among them training, which was embraced by majority of farmers. Training strongly influences commercialization of indigenous chicken as it enables farmers to interpret information about the market, and appropriate poultry practices that enhance commercialization of indigenous chicken. As Montshwe (2006), says, training increases the participation of small holder farmers in the mainstream markets.

It appears that not only training is important but also the media through which farmers access that training, is equally important for commercialization. In fact access to training through field days, agricultural shows, farmer forums, and extension services influenced commercialization strongly. Commercialization took root because extension contact made farmers aware, of possible market outlets for their products as well as appropriate poultry practices. This is supported by Montshwe (2006) who says, that farmers needed awareness of opportunities to commercialize indigenous poultry.

Appropriate poultry practices were found to be necessary for the process of commercialization. Most farmers provided separate housing for their indigenous chicken, gave feed supplementation and vaccinated their chicken against Newcastle disease. Newcasle disease has the potential to wipe out entire flocks of chicken. Better husbandry improved survival rates of chicken and led to increased numbers for sale. As Dana et al (2006) found, improving survival rates and lowering mortalities through appropriate poultry practices increased productivity.

The study found majority of indigenous chicken farmers have access to their own finances as start up capital for indigenous chicken. However, they have little access to credit and most of them had financial difficulties in purchasing inputs. This is likely to slow down the process of commercialization, if it is not dealt with and as Mathijs and Nivelin (2002) say, lack of resources hinders the capacity to increasing production for sale. This study assumes that access to poultry-based credit has a positive effect on commercialization. In fact, access to credit for poultry production may increase the ability to use better quality inputs and services, and may, therefore, increase efficiency in the commercialization process. As Bravo-Ureta and Pinheiro (1993) say, access to credit tends to increase farmers technical efficiency that enhance production.

Farmer networks through farmer chicken groups were found to influence commercialization. Groups served as channels through which various poultry improvement technologies, such as poultry vaccination, chicken house building, and feeding were disseminated. In addition group synergies, as well as access to markets were important benefits derived by farmers through group networks. Networking therefore enhanced commercialization as increased flock sizes were realized, and, as Francesconi and Ruerd (2007) found, collective action and cooperate members out performed individual producers by increase in herd sizes. Increase in herd size increases participation in the market as also mentioned by Montshwe (2006).

The impact of commercialization of indigenous chicken rearing has been realized in the study area as a source of income due to demand and good prices. In fact the study found demand was high and indigenous chicken production profitable. It is not surprising that majority of

chicken farmers surveyed said they would continue with indigenous chicken keeping even if there was another alternative. As Mailu, et al (2010) established, prices have a positive relationship with the probability of a farmer engaging in a sale. The farmers revealed the reason for high demand was the good taste and the perceived nutritionally superior quality of the indigenous chicken.

5.4: Conclusions of the study

These conclusions are based on the findings and analysis of the study. It was established that there was commercialization of indigenous chicken in the peri urban areas of Njiru and Kasarani. This commercialization is influenced by farmer training and the method of training adopted, namely field days, agricultural shows, farmers forums, and extension services.

Indigenous chicken farmers have adopted appropriate poultry practices, which include preparation of poultry houses, techniques of brooding chicks, vaccination, and feeding. Adoption of most of the practices has influenced commercialization and has helped in raising the standard of living of the farmers.

Resources such as space to expand farmer's chicken enterprise, time to care for indigenous chicken and labour were not a constraint. However the main challenge farmers faced, was lack of credit. Despite the lack of credit majority of farmers financed their venture with their own savings. Non the less they had difficulties in finding money to buy inputs. Exploration into other forms of funding needs to be looked into.

In terms of networking, belonging to a group was found to bring synergy and accrued benefits such as training, extension service access, market information and access to inputs which in turn influenced commercialization.

On demand, clearly there are good local markets for indigenous chicken. The demand for

indigenous chicken was high. Because of the positive dynamics involved in chicken farming majority of indigenous chicken farmers indicated that they would continue with indigenous chicken rearing even if they had other options. However, demand for chicken was subject to the forces of demand and supply where when the supply is high the demand is low and vice versa. Demand for chicken is very high during low production season. The time of study was a low production period as the farmers had sold most of their stock during Easter holidays. This was evident in the fact that some indigenous chicken traders were found to be selling only exotic chicken as the stock for indigenous chicken had run out.

5.5: Recommendations of the study

a) Support to farmers by government is required through facilitation of increased access to resources such as grants to chicken groups, scaling up technical training, providing skills and information on poultry production.

b) Farmers should organize themselves into groups so as to increase networking amongst themselves and other bodies or institutions that are of benefit to them.

c) Training manuals with illustrations that covers all aspect of poultry keeping, basic record and book keeping skills, basic marketing strategies should be developed and widely distributed to farmers.

d) Poultry research institutions and state livestock developing programmes should develop genetically improved breeds of indigenous chicken selected from the country's indigenous genetic pool which efficiently convert feed.

5.6: Suggestions for further research

1 Replications of this investigation will need to be carried out five or six years from now to establish exactly what changes in commercialization will have taken place in indigenous chicken farming.

2 Replications of this study in other rural based towns to see variation in location, town or rural area on commercialization of indigenous chicken.

3 Further research to assess whether demand for indigenous eggs is a factor in commercialization is required

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APPENDICES

Appendix 1: Letter of Introduction

To whom it may concern.

Dear Sir/ Madam,

RE: ACADEMIC RESEARCH

I am a student of University of Nairobi pursuing a Masters Degree in Project Planning and Management. I am conducting an academic research on factors influencing Commercialization of indigenous chicken in peri urban areas of Njiru and Kasarani Districts. Indigenous chicken farmers and traders have been chosen to provide information relating to issues of rearing indigenous chicken for sale and their market. The information that you give as a farmer and as a trader will be treated in uttermost confidence and will not be used for any other purpose except for academic purposes only.

Yours faithfully

Bernadette Ouma

Appendix 11: Questionnaire for Indigenous Chicken Farmers

This questionnaire is intended to collect data on factors influencing commercialisation of indigenous poultry. The information you give will be treated as confidential and will be used for academic purposes only. I therefore request for your assistance. Kindly respond to all the questions in the questionnaire as honestly as possible.

Instructions

Please answer the questions to the best of your knowledge.

Write your responses in the space provided.

Explanations where applicable should be precise and clear and detailed.

Please put a tick [√] where appropriate.

Section A: Background information

1. Gender Male [ ] Female [ ]

2. Please indicate your education level.

a) Primary b) Secondary

c) College d) University

3. How many indigenous chicken do you normally keep?

a) Less than 5 chicken b) 6 - 10 chicken

c) 11-15 chicken d) 16 - 20 chicken

e) 21-25 chicken f) 26-30 chicken

g) 31-35 chicken h) 36- 40 chicken

I) 41- 45 chicken j) 46-50 chicken

k) Above 50 specify number.....

4. What is your main reason for rearing indigenous chicken?

For home consumption	
For commercial purposes	
Other.....	

5. Please indicate the number of indigenous chicken you started with.

Less than 5 chicken	
6 - 10 chicken	
11-15 chicken	
If Other please indicate number	

Section B: Farmer Training

6. Have you ever been trained on poultry production? Yes [ ] No [ ]

7. If yes, tick below to indicate the mode of training you attended.

Field day	
Workshop	
Agricultural shows	
Farmer Demonstrations	
Farmer forums	
Extension worker visits at home	
Other forms of training ------	

8. Do you think the training you received was adequate for your chicken rearing? Please tick as appropriate.

a) Adequate [ ]

b) Fairly adequate [ ] c) Not adequate [ ]

Section C: Appropriate poultry practices

9. Which of the following practices do you carry out in keeping your indigenous chicken? Please indicate by a tick on the practices in the space provided.

1. Provision of separate housing		
2. Provision of feed supplementation		
3. Vaccination against the following:-	a) Newcastle Disease	
	b) Fowl pox	
	c) Fowl typhoid	
	d) Mareks Disease	
	e) Other.....	
4. Hatching chicks by the following methods:-	a) Mother hen	
	b)Surrogate mother hen	
	c) Use of incubator	
5. Purchase of chicks		

10. How do you feed your indigenous chicken? Pease tick in the space provided.

Left to scavenge only	
A mix of scavenging with feed supplementation	
Compound feed only	
Compound feed and grain	
A mix of compound feed, grain, vegetables	
Other	

Section D: Resources

11. Please indicate the source of your finances.

Own funds	
Cooperative	
Bank	
Agricultural Finance Cooperation (AFC)	
Merry go round (Chama)	
Grants from government	

12. Do you have enough space for future expansion of your poultry rearing if you wished to do so?
Yes [ ] No [ ]

13. Is money to buy inputs a challenge to you?

Yes [ ] No [ ]

14. How do you overcome this challenge?

.....

.....

15. Do you have time to take care of your indigenous chicken your self?

Yes [ ] No [ ]

16. If no please indicate why?.....

17. What kind of labour do you use to take care of your chicken?

I use family labour	
I use hired labour	
I do the work myself	

Section E: Farmer Networks

18. Do you belong to a farmer group whose members rear chicken? Yes [ ] No [ ]

19. If yes, what benefits have you received as a member? (You may tick more than once.)

1. Access to extension worker visits	
2. Access to training	
3. Access to input agents	
4. Access to market	
5. Group encouragement (synergy)	
Other-	

Section F: Demand

20. In your opinion what is the level of demand for indigenous chicken by consumers?

Low [ ] High [ ]

21. If high, why do you think the demand is high?

---

22. If low, why do you think the demand is low?

---

23 How much does it cost you to rear one chicken?

Please indicate your answers in the table below

Cost of one chick	
Cost of one hatching egg	
Cost of feed for one chicken	
Cost of drugs and vaccines for one chicken	
Salaries for one chicken	

24. How much do you sell one chicken? Ksh.....

25. To what extent are you able to sell the chicken you produce?

Less than half	
More than half	
Sell all	

26. If you had an option would you still continue with indigenous chicken keeping?

Yes [ ] No [ ]

27. Where do you sell your chicken?

Middlemen	
Market	
Hotel	
To indigenous chicken farmers	
Other---	

THANK YOU

Appendix 111: Questionnaire for indigenous chicken traders

This questionnaire is intended to collect Data on factors influencing commercialisation of indigenous poultry. The information you give will be treated as confidential and will be used for academic purposes only. I therefore request for your assistance. Kindly respond to all the questions in the questionnaire as honestly as possible.

Instructions

Please answer the questions to the best of your knowledge.

Write your responses in the space provided.

Explanations where applicable should be precise and clear and detailed.

Please put a tick [√] where appropriate.

Section A: Background information

1. Name of District.....

Section B: Commercialization

2. How long have you been in this business?

Less than five years	
More than five years	

3. How many chicken did you start with?.....

4. Out off this number you started with, how many were indigenous chicken and how many were exotic chicken? Please indicate your answer in the table below.

Type	Number
Indigenous chicken	
Exotic chicken	

5. What kind of chicken do you sell currently?

Indigenous chicken	
Exotic chicken	

6. On a good business day what is the number of chicken that is in stock for sale?

No.....

7. On such a day, how many are local chicken and how many are exotic chicken? Please give the number in the table below.

Type	Number
Indigenous chicken	
Exotic chicken	

8. In what form do you sell your chicken? You may tick more than once.

As live birds	
As dressed carcase Whole chicken	
In pieces as; Half chicken	
Quarter chicken	

THANK YOU

Appendix IV: Research Authorization Letter

REPUBLIC OF KENYA

NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telegrams: "SCIENCETECH", Nairobi
Telephone: 254-020-241349, 2213102
254-020-310571, 2213123,
Fax: 254-020-2213215, 318245, 318249
When replying please quote

P.O. Box 30623-00100
NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref: **NCST/RRI/12/1/SS-011/804/5**

Date: **21st June, 2011**

Bernadette Hasana Ouma
University of Nairobi
P. O. Box 92
KIKUYU

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on **"Factors influencing commercialisation of indigenous chicken in Peru Urban areas: A case of Njiru and Kasarani Districts in Nairobi County, Kenya"** I am pleased to inform you that you have been authorized to undertake research **Njiru & Kasarani Districts** for a period ending ***31st December, 2011.***

You are advised to report to **the District Commissioners & the District Education Officers of Njiru & Kasarani Districts** before embarking on the research project.

On completion of the research, you are expected to submit **one hard copy and one soft copy** of the research report/thesis to our office.

P. N. NYAKUNDI
FOR: SECRETARY/CEO

Copy to:
The District Commissioners
Njiru & Kasarani Districts

The District Education Officers
Njiru & Kasarani Districts