

**THE CONTRIBUTION OF VILLAGE CHICKEN REARING  
TO INCOMES OF RURAL HOUSEHOLDS: THE CASE OF  
NYIMBA DISTRICT IN EASTERN PROVINCE**

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## DECLARATION

I declare that this thesis is my account of my own research and that the main content, except to the contrary, is not substantially the same as any other thesis that has been submitted for a degree at any tertiary educational institution.

I thereby, also bear full responsibility for any erroneous publications.

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## **DEDICATION**

This thesis is dedicated to my beautiful wife Gladys and my three children; Naimanji, Muweme and Chawanz. I also extend this dedication to my mother Vasit Banda and my late father Enerst Esau Phiri .The presence of these special people to me, urged me to work extremely hard.

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Finally I thank God for his endless mercy and love that allowed me to successfully complete my Masters programme.

## ABSTRACT

The study was conducted to investigate the contribution of village chicken rearing to incomes of rural households in Nyimba district in Eastern province of Zambia. The overall objective of the study was to determine the contribution of village chicken rearing to incomes of rural households. Data was collected from independent samples of 150 respondents in 6 agricultural camps of Nyimba District. Collected data were analyzed using Statistical Package for Social Sciences (SPSS). The model that was used to ascertain the viability of the village chicken enterprise was gross margin. The results show that many rural households use free range system and the major controllers were women with 73%. The study noted that 75.3% of respondents cited income as the major reason for keeping village chickens while food was at 17.3%. The average village chicken flock size per household of the study area was 11 and the average price was K 40. The gross margin estimation shows that a rural household realized a positive margin from the sale of village chicken. This shows that village chicken keeping contribute to income of rural households due to the viability of the enterprise. However, the production of village chicken has constraints. These constraints have contributed to failure to maximize gains from the village chicken. The alternative strategy to combat the challenges that have characterized the village chicken enterprise and production includes vaccinations, proper housing units, organised markets and provision of

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supplementary feed. The study noted that many rural households agreed that income from village chicken have contributed to the improvement of standard of living. However, it was noted that there is lack of transformative approach to maximize the profitability of village chicken. Therefore we conclude that village chicken rearing has a significantly contributions to the income of rural households despite its major constraints. Therefore, the null hypothesis  $H_0=0$  is rejected.

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## LIST OF ABBREVIATIONS

BRAC	Bangladesh Rural Advancement Commission
CEO	Camp Extension Officers
SEA	Each Standard Enumeration Area
FRS	Free Range Systems
GDP	Gross Domestic Product
IS	Intensive Systems
SIS	Semi Intensive Systems
ML	Ministry of Livestock
DMMU	National Disaster Management and Mitigation Unit
SPSS	Statistical Package for Social Sciences
Std Dev	Standard Deviation
Min	Minimum
Max	Maximum

## **CHAPTER 1**

### **1.0 INTRODUCTION**

#### **1.1. Introduction**

Village chicken are considered to have evolved from the jungle in Asia and they were distributed in the course of human migration to all parts of the world (Blench and MacDonald, 2000; Moiseyeva et al., 2003). In Africa village chickens entered through Egypt according to Blench and MacDonald (2000). During this ancient period village chickens were kept for activities such as cockfighting sports, time, cultural and spiritual usage and eventually as the source of food. It was noted that as time progressed village chicken gained some economic importance.

The most prominent subsector of the livestock sector, which provides quick income to a majority of rural households, is village chicken (Sodjinou E, 2011). In Zambia over 95 percent of rural households have been shown to keep flocks of indigenous chicken (Simainga et al., 2011; Haazele et al., 2002). This is in conformity with Masimula (2004) his declarative knowledge that surveys indicated that 91% of families in rural areas keep village chickens. Nyimba district is not exceptional to this preference rearing of village chickens in rural areas. KPIA (2009) argue that rural households who are more likely to have incomes below the poverty line engage in village chicken keeping. Village chicken is viewed as the best alternative option for income generation in rural households.

Village chicken is the greatest prestigious livestock due to its inherent attributes of not requiring large investment to start or maintain. Village chickens can enable the rural households climb the livestock ladder through income generation. This allows a progression

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of increasing income levels for the poorer people to improve their circumstances (Dolberg, 2003). Village chicken can also provide income for family activities such as education, health and clothes. Village chickens have constantly commanded a price premium over broiler chickens and this has increased the wide market demand for village chickens. The demand of these village chickens is also extreme high in restaurants and markets, but there is always low supply which does not meet the demand of the market. Village chickens have the potential to contribute to the income at rural households. Unfortunately the economic value of the village chickens has not being fully exploited by the small scale farmers.

Traditionally village chickens are mainly sold when there is a need for money by a small scale farmer. In some places, the chickens are sold in village markets to middlemen who subsequently assemble and transport them to urban traders. This indicates that the government's micro-economic policies need to incorporate the promotion of village chickens production and marketing. This would trigger village chickens enterprise which would in turn generate reasonable income at rural household. Mack et al. (2005) showed that nearly all families living in rural areas of developing countries, including the poor and landless, are owners of village chicken. Gueye (2005) supports this when stating that more than 90% of rural families in most developing countries keep one or more poultry species.

Following Permin et al. (2004) using a holistic approach, it is possible to improve village chickens development, which may help the rural households in developing their skills and creating a sustainable income with very few inputs. However, there is failure to categorise livestock into its specific components. This has culminated into lack of representation of epistemology of the researchers. One component that needs to be singled out in livestock is village chicken. Undoubtedly village chicken is one category that has not been fully exploited economically. Nexus thinking approach demands that new ways of doing things should be inculcated in the community in order to see the desired transformation. Exploring the monetary potential of village chickens will enable the rural community to earn more income.

Village chickens are kept through subsistence farming practices by almost all the rural households, with a minimum of at least five birds per family (Thwala, 2012). The valuable

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traits of village chicken such as disease resistance, adaptation to harsh environments, tastier meat and eggs, easy to manage using limited resources and ability to utilize poor quality feed have a high contribution in achieving sustainability in low-input production systems and enhance income generation in rural households.

Though village chickens are not seen as a primary occupation by the rural households in Zambia, it is a source of small but significant income to rural families. A major comparative advantage of rearing village chickens is the conversion into cash in a shorter time. Village chickens do not require huge capital as is the case with other livestock species.

Village chickens are considered as gold of Africa, this was attested in Ethiopia when commercial farms were set up in order to meet the increased demand for village chickens from an emerging middle class urban sector. Most Ethiopians still exhibit a strong preference for village chickens. (Dana et al., 2010). This indicates that village chickens sector fulfils a viable role for contributing to rural households' income.

In Nyimba district nearly all the rural households are more likely to keep village chickens. The important position of village chicken is the income contributions that village chicken would contribute to rural households. Surprising many small scale farmers has negatively viewed village chickens as the provision of supplementary income rather than being the primary income source. Following Aklilu et al (2007) village chickens play a significant role of acting as the first and last resource a poor household owns. This was attested by the small scale farmers' themselves who agreed that village chickens keeping is the first step on the ladder for poor households to climb out of poverty. For instance it is the provision of first capital and at the time of draught acts as the initial capital for recovery. These arguments shows that village chickens are the seeds you sow to get the fruits, vegetables, goats, pigs and cattle for the rural household.

Based on the developmental position of the village chickens some scholars have argued that if, the poor can acquire village chickens; this can help them to realize income and move out of the poverty (Dolberg, 2001). This indicates that village chickens play a significant role of acting as the first and last resource a poor household owns.

In Zambia, evidence from vulnerability assessments by the National Disaster Management and Mitigation Unit (DMMU) show that households with village chickens are better able to survive droughts and recover the following year than households without village chickens (DMMU, 2008). This is because households with village chickens are able to sell and generate quick income compared to those that don't have. In Benin, village poultry enables farmers to achieve the annual cycle of family economy by selling village chickens during periods of slender means, when the granaries are empty, in order to afford cereal for family consumption.

It is also argued that village chickens production plays a significant role in income generation in a condition where many people are landless or have no formal skills to participate in income earning activities (Fattah, 1999; Aklilu et al., 2008). According to Alders and Pym (2009), impact studies have demonstrated that income from the sale of poultry eggs in South Asia is used to educate children and begin the process of asset accumulation. In Jos South Local Government in Nigeria, Fasina et al. (2007) show that village chickens alone contributes over 83% of the cash income of sampled families, proving that village chickens is a major economic activity for these families.

## 1.2 Problem statement

Undoubtedly different researches have been carried out on production and productivity of village chickens, diseases and adaptability of village chickens in the environment. Despite the widespread rearing of village chickens, there is no documented evidence on the specific contribution of village chicken rearing to incomes of rural households. The scanty information of income from village chickens that is available is not tailored to rural household situation and may not yield concrete facts to depend on rural scenario. The work presented in this thesis aims to fill this gap.

## 1.3 General objective

The overall objective of the study is to determine the contribution of village chicken rearing to incomes of rural households.

### 1.3.1. Specific objectives



The specific underlying objectives inherent to this general objective are:

To determine the income that can be generated from village chickens in Nyimba district.

To determine factors responsible for village chickens market performance in Nyimba district.

To investigate the production constraints of village chickens in Nyimba district.

## **1.4 Rationale of Study**

Understanding constraints will assist in devising solutions and means of enhancing the income that could be generated from village chickens at rural household.

## **1.5 Area of study**

The study area was Nyimba district, situated in Eastern Province. The three agricultural blocks were Hofmyre, Central and Vizimumba. The estimated small scale farmers were 20,153.

## **1.6 Scope of study**

The study was conducted from December 2015- July 2016.

The rest of this paper is organized as follows. Chapter 2 literature review, Chapter 3 describes methodology, Chapter 4 data analyzes results, Chapter 5 discussion and Chapter 6 gives the conclusion, implication and draws policy recommendations.

## CHAPTER 2

### 2.0 LITERATURE REVIEW

#### 2.1 Overview

Village chicken is one of the subject areas that have been researched globally. Different researchers have expressed their epistemology on divergent views on the focus of study. However, it has been noted that information regarding the role of village chicken particularly on income generation in the livelihoods of small scale poultry producing households is in piece meal and not reliable (Biorl, etal 2010). The literature will touch on the concepts, models, and general overview of village chicken with bias to income as viewed by researchers and writers. It will also review studies of marketing perception and challenges of village chickens.

The following sub-headings will be discussed under the literature review:

- Income of village chicken
- Marketing of village chicken
- Price variation of village chicken
- Profitability of village chicken
- Management of village chicken
- Village chicken production constraints

#### 2.1.2 Income of village chicken

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Village poultry production plays a significant role in income generation and poverty alleviation in a condition where many people are landless or have no formal skills to participate in income earning activities (Fattah, 1999; Aklilu et al., 2008). According to Alders and Pym (2009), impact studies have demonstrated that income from the sale of poultry eggs in South Asia is used to educate children and begin the process of asset accumulation. In Jos South Local Government in Nigeria, Fasina et al. (2007) show that poultry alone contributes over 83% of the cash income of sampled families, proving that poultry is a major economic activity for these families. The sale of poultry products also allows for investment in other livestock such as goats and cattle production, and in other business enterprises (Clarke, 2004).

Kryger et al. (2010), in their extensive review of village poultry farming in developing countries, note that most studies on poultry based interventions struggle with the methodological problems posed by confounding factors associated with the various support activities that are included in many development projects. Moreover, following Dolberg (2003), despite the fact that microcredit has been an important component in various poultry-based interventions undertaken in various developing countries, impact studies have not clearly distinguished between the benefits of micro credit (financial part) and the benefits of poultry production (technical part of the projects). Islam and Jabbar (2005) claim that more objective impact studies are required to understand the effect of poultry based interventions on recipient households. Such knowledge is essential to guide the intended adaptation or replication underway in several countries or to guide further efforts in using poultry as a tool for poverty alleviation. The work presented in this thesis aims to fill this gap by relying on a nonparametric method.

According to Alders and Pym (2009), impact studies have demonstrated that income from the sale of poultry eggs in South Asia is used to educate children and begin the process of asset accumulation. In Jos South Local Government in Nigeria, Fasina et al. (2007) show that poultry alone contributes over 83% of the cash income of sampled families, proving that poultry is a major economic activity for these families. The sale of poultry products also

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allows for investment in other livestock such as goats and cattle production, and in other business enterprises (Clarke, 2004).

Village chickens are a useful tool to help poor rural households to recover from disasters, and it provides a practical and effective first step to provide income to the household. Indeed, several studies (Dossa et al., 2003; Aklilu et al., 2008) claim that if the poor can acquire poultry it can help them to move out of poverty. A study in the Southern province of Zambia hit by drought and cattle disease, found that households with chickens were able to survive drought and recover the following year better than households without chickens (Clarke, 2004).

Some studies such as Perry et al.,( 2002); Moreki et al.,(2010) ,Upton, (2000); MOLD, (2008) have attempted to highlights the monetary value of village chickens .They recognized that village chickens has the potential to increase the income per rural household. This was supported by Thornton et al., (2002) and Moreki et al., (2010) arguments that indigenous chickens are widely distributed in rural areas where they play the important role of income generation. Although these arguments were stressed out there is no clear indication on the income that can be generated.

Cumming, (1992); Ojok, (1993) and Saleque, (2000) cemented the argument above by indicating that in qualitative terms the value of village chicken is well known, but few have attempted to derive monetary values for village chickens although a few researchers have approached the subject. This shows that although other researchers have tried to carry out a study on village chicken income the information is either not documented or the researchers did not complete the study. Hence there is need for the involvement of a researcher to carry out calculations and determine the monetary value of smallholder village chickens.

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It can be ascertained from the researchers' findings that many rural households just keep village chickens without realizing the income that can be generated from them. This is showed by the findings and arguments put across by Maphosa et al., (2005) that in Zimbabwe, almost every household in the communal areas owns local chickens (*Gallus gallus domesticus*). It can be deduced from this arguments that it is not just enough to keep village chickens without critically know the exactly income that can be generated from them. Although Kitanyi, 1998, Muchadeyi et al., (2005) observed that village chickens are used to meet the multiple household objectives that include income generation. It sends a signal of doubts again because the researchers did not explore further to ascertain the exactly income that can be generated from village chickens.

Gueye (1998); Sonaiya et al (1999) and Whyte (2002) observed that village chicken represent a significant component of rural household livelihood as a source of income. This could be attributed to the arguments by Kyarisiima et al (2004) that indigenous chickens have invaluable characteristics that are not found in the exotic strains. These characteristics are appropriate to the traditional low input/low output farming systems.

Various studies (e.g. Nielsen et al., 2003a; Clarke, 2004) have shown that village chickens interventions could contribute to income generation in rural areas. For example, smallholder poultry projects implemented in Bangladesh since 1993 have improved beneficiaries' household conditions in many ways (Clarke, 2004). About 28% of the households moved above the poverty line within 18 months, there was an 86% to 99% increase in school enrolment because people were able to use the income obtained from selling the village chickens to implement the activities. However, the amount obtained from village chickens per household could not be ascertained by the researcher.

Copland and Alders, (2005) noted that under circumstances of extreme poverty people keep village chickens. The sell of live birds and eggs also generate some income which is used for purchase of essential commodities such as soap, salt, kerosene, sugar: and sometimes children's school requirements like uniform, exercise books and school fees. Again the

degree to which income can be generated from village chicken is not coming out clearly. This shows that there is a lacuna in these arguments.

Rosenzweig and Wolpin 1993 noted that in rural areas where credit markets are missing, village chicken functions as 'insurance' to hedge against shocks and stresses. Again its argued that village chicken functions as a savings account, which can be tapped into fairly quickly to meet household needs such as school fees, costs of weddings and funerals (Obi et al., 2008). Following these arguments it can be deduced that village chicken represents a store of value which appreciates very quickly with time, as demonstrated by the high productivity parameters estimated for village/backyard extensive poultry across developing countries.

The observations put across by LID,( 1999); FAO, (2002), Sonaiya et al., (1999); Epprecht et al., (2007) that seventy percent (70%) of the world's rural poor depend on village chickens need to be critically analyzed in order to ascertain the validate of the claim. This is so because the word depend means you can't do without it. The study would endeavour to unlock this argument by dissecting dependence on village chickens. The study takes new dimension of considering income to be the cornerstone of village chicken in the rural households. This will ascertain the income generated by village chickens. In fact among the rural poor, village chicken is found to be a crucial livelihoods asset for the poorest segments, such as those households that are in the first income quintile (Maltsoglou and Rapsomanikis, 2005; Roland-Holst et al., 2007).

### **2.1.3 Marketing of village chicken**

Different village markets can be divided into two categories; rural or primary markets and boma markets. In this context rural markets are those situated in or near the production sites and they constitute the main selling place for farmers. However, access to these markets is difficult for traders from boma areas, notably due to the bad quality of the roads especially during the rainy season. The main buyers at this type of market are people from the surrounding villages and from the boma. Village chickens transactions take place in the sun, under trees or under shelters made of wood with roofs of straw.

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Boma markets are situated in the district and these represent a meeting place where village chickens are sold. The main sellers at this market are the assemblers and producers. Buyers constitute people within the boma and some restaurant owners and a few consumers mainly from other district areas. Mainly these are passersby.

Indigenous chickens are ready for marketing at six to eight months and they do not require high financial and technical inputs. There is no formal or organized market for indigenous chickens and as a result, farmers of indigenous chickens compete unfairly with broiler chicken farmers, thus forcing indigenous chicken farmers to lower their prices. However, the demand for indigenous chickens is still high. Many restaurants and food outlets now serve indigenous chicken meat though, only in limited amounts (MOA, 2012).

Some scholars have argued that village chickens provide enriched white meat with high quality for sale (Dolberg and Petersen, 2000; Mapiye and Sibanda, 2005; Miao, 2005). If researchers claim that village chicken can be sold, then this argument provides the necessary platform to assess the market of village chicken. Further Julian, (1992) and Muchadeyi et al., (2004) arguments shows that village chickens are used as banks in cases where they are sold. However, these arguments need to be substantiated in order to ascertain the reliability and validate of the information on village chicken market.

In marketing production is normally associated with income generation. This is in agreement with the observations by Chitukuro and Foster, (1997); Kushi et al., (1998); Sonaiya et. al., (1999); Guèye, (2000); Alabi et al., (2006); Smucker and Wisner, (2008), who noted that village chicken production contributes to the income of rural poor households. Furthermore village chickens production constitutes a quick and high return investment opportunity (Epprecht et al., 2007; Sonaiya, 2007) for improving any one or all of these livelihoods indicators. Moreover, village chickens is often recognised as an entry

point into livestock production (Alabi et al., 2006; Guèye, 2007a), which is associated with breaking out of poverty traps due to the ability to generate income.

## 2.1.4 Price variation of village chicken

Kumar et al (2012) argued that market prices of the indigenous chickens and their monthly fluctuations revealed that the selling prices were not same in different markets throughout the year. The present findings are very much similar to an earlier study where intermediaries and retailers were found to make higher profits compared to the farmers. Following Kumar arguments this indicates that, sustainable growth of poultry industry demands formulation and implementation of a national poultry development policy with poultry production and its marketing system. The farmers urged that for the development of indigenous chicken farming, low cost feed, proper breeding facilities and improvement of indigenous breeds by crossing with exotic breeds would be worth considering.

The variation in the buying price occurred all year round. The price fluctuated more during festive occasions, such as end of year and Chinese New Year celebrations, when the selling price was highest. The price was mutually determined by both buyer and seller, but was usually by the merchant.

In this study it is assumed that the village chickens are homogeneous, which is one of the criteria for perfect competition. However, a good can vary according to certain specific characteristics on which the consumer often bases his/her decision. For example, village chicken can vary according to size, feathers, sex, taste, etc. Thus, a village chicken is not the same as broiler chicken. In the same way, a village chicken with a white color is not the same as one with a black or red color. In short, each commodity is a bundle of characteristics. In other words, consumer theories, consumers have preferences for the characteristics of commodities. Provision of information on consumer preferences can allow producers and traders to improve their earnings from livestock sales (Williams et al., 2006).

The statistical method available for the analysis of price variation over characteristics is the price elasticity of demand. What we want to compare is the size of the change in quantity



demanded with the size of the change in price. Its subjacent assumption postulates that each good is characterized by a set of characteristics. In this study, the price elasticity of demand is based on the hypothesis that goods are valued for their utility bearing attributes. There is no a priori rule about the inclusion of quality characteristics in the model, but the characteristics included should be observable and economically relevant to the buyers (Orden et al., 2005).

The formula shows that a rise in price (a positive figure) will cause a fall in the quantity demanded (a negative figure). Similarly a fall in price will cause a rise in the quantity demanded. Thus when working out price elasticity of demand, we either divide a negative figure by a positive figure, or a positive figure by a negative. Either way, we end up with a negative figure. In this study it was noticed that price of village chicken was elastic ( $< 1$ ) because the upward slight change in price caused low returns of village chickens. This is in conformity with J.Sloman (2006) his argument on elastic. He contended that a change in price causes a proportionately larger change in the quantity demanded. Rural household will decide how big a change in price or quantity is. In this case the value of elasticity will be greater than 1, since we are dividing a larger figure by a smaller figure.

Estimation of the economic value of a particular characteristic can have several uses in the market sector. It can help the researcher or producer to better orient his/her work in order to develop and produce products (for example improved breeds, etc.) in order to fulfill the requirements of the market and those of the consumer. Producers may be able to alter their production practices, use of inputs, or varieties to influence attributes that increase product prices (Carman, 1997). The rural household and traders will also be adopt strategies for transport, handling, storage and transformation in order to improve village chickens price through an emphasis on attributes important to end users.

## **2.1.5 Profitability of village chicken**

The Agricultural Marketing Resource Centre (AMRC) (2013), on its analysis of agriculture and rural development defined profit as the excess of income over costs. Profitability was

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described as the measure of the returns a business creates after deducting operating costs and other expenses from income divided by inputs.

Natukunda, Kugonza and Kyarisiima (2011) in their study to determine factors affecting marketing and profitability of indigenous chickens in Uganda used a two stage sampling involving purposive random sampling technique to select 100 chicken farmer households. In the study, they found that indigenous chickens were profitable and profit was found to be 5000 Ugandan shillings (UShs) per bird sold. The factors that affected profitability were: total average costs; distance to the nearest market; access to extension services; education level and experience of the farmer (Natakunda et al., 2011).

Hossen (2010) conducted a study on the effect of management interventions on the productivity and profitability of indigenous chickens in Bangladesh. It was found that households earn a minimum profit of US\$ 47.3 per annum. It was also noted that with the management interventions such as chick separation and creep feeding of chicks, egg production was increased and mortality of local chickens was reduced. This resulted in the increase of the family or household income from US\$ 47.3 to US\$ 342 per annum. Hossen (2010) further concluded that weaning of chicks, feed supplementation of broody hens during incubation and the creep feeding system of management may have formed a basis of the increasing egg production and survival of the indigenous chickens, which eventually leads to enhanced productivity and profitability of family poultry in Bangladesh.

Dutta, Islam and Kabir (2013) investigated the production performance of indigenous chickens in selected areas of Rajshali, in Bangladesh, using a stratified random sampling technique from six districts. In their study, profitability was calculated using a cost-benefit ratio and it was estimated at US\$ 0.24 and US\$ 0.19 per family and per bird respectively (Dutta et al., 2013). It was concluded that raising indigenous chickens was a feasible and efficient enterprise, which required better understanding of the socio-economic aspects of the small scale poultry farmers in urban, semi-urban and rural areas of Bangladesh.

Debbie Cutting, Technoserve Director (Swazi Observer, 31 July 2012) in a study of the key market dynamics and profit drivers of the indigenous chickens industry in Swaziland, noted that profitability was affected by four key drivers, namely: vaccination costs, transportation costs, costs of supplementary feed and the selling price per unit of an indigenous chicken. She also pointed out that these key drivers vary from one farmer to the other. She emphasised that overspending on supplementary feed eroded more than 50% of the revenue generated by the producers and more than 25% of the revenue were spent on transport costs (Swazi Observer, 31 July 2012).

Jugessur et al. (2004) reported that the profit obtained from the sale of village chickens and eggs represents 9% and 18% of the total income of the family, respectively. While these findings are appreciated, there is need to argue that the researcher did not hold other things constant (*ceteris paribus*) by generalizing the findings without specifying the target group. The researcher would have taken into consideration that mostly its rural areas that keep village chickens in order to avoid obfuscation of the findings.

## **2.1.6 Management of village chicken**

Free range system (FRS); in this system, chickens are reared extensively for various reasons including provision of eggs and meat for household consumption, occasional source of income and various socio-cultural obligations (Njenga, 2005). This system is more common in low human population density rural areas and is based entirely on low input-low output management. Small flocks of less than 30 adult birds per household are kept with minimal care and no supplementation (Ndegwa et al., 1998; Nzioka, 2000). The birds leave their night shelters in the morning and are left to source any available feed resources around the homestead and take care of themselves. Free-range feed resources usually include grass, insects, earthworms and various seeds (Mwamachi et al., 2000; Birech, 2002). During cropping seasons, birds are sometimes confined and supplemented with maize, kitchen leftovers and any other available feed resource. Night shelters include rudimentary coops, kitchens, stores and human habitats. Due to low inputs, production is also low but the cost per unit of egg or meat is nearly negligible (Okitoi et al., 2000a).

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Semi-intensive system ;( SIS) in this system, chickens are kept in small flocks of between five and 50 birds mainly for consumption and sale. Levels of inputs range from low to medium depending on the commercial value attached to the flock. The birds are left to free range around the homestead or in fenced runs feeding on grass, insects, kitchen wastes, and any other available feed resource (Mwamachi et al., 2000; King'ori et al., 2007). They are provided with some form of housing ranging from simple shelters to proper chicken houses. Health care depends on the commercial value attached to the enterprise. However, water and supplementary feeds are provided. Because input levels are low, production is lower than in intensive system (IS). The system is common in high human population density rural and peri-urban areas.

Intensive system; (IS) in this system, flocks ranging between five and 500 adult birds, depending on the objectives, are fully confined in constructed shelters or runs and provided with commercial or home-made feed rations and health care. The enclosed system protects the birds from thieves and predators. Deep litter and slatted floors are the most common housing systems used. Usually the birds are reared for household consumption, but are mostly for sale. Production of eggs and growth rates are higher while mortalities are low (Okitoi et al., 2000a). However, due to high costs of inputs and high levels of management required, this system is rare in rural areas and common in urban and peri-urban areas where households own very limited or no land but are able to provide the required inputs (Menge et al., 2005). This was consistent with the findings that in this study no single rural household practiced this system.

Tadelle and Ogle ( 2001) argued that the number of village chickens per household in most rural communities is small; constituting an average of 7–10 mature chicken, 2–4 adult hens, a male bird (cock) and a number of growers of various ages. This finding suggests that the researchers doubted that small number of village chickens kept by the household cannot generate any income. Its cardinal to note that even with one village chicken a household can generate some income. It's also imperative to state that Tadelle and Ogle findings were not cast in concrete because the house holds that uses semi intensive and intensive system coupled with good management could have more village chickens and generate adequate income.

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Village chicken keeping is manageable especially in the case where the target group is the rural household. In recent years rural smallholder poultry has been identified as an important tool in rural households. In Bangladesh a model poultry programme was developed to provide micro-credits to village chickens keepers (Saleque, 2000). This programme supports credits as a way of encouraging rural households to keep village chickens. This approach of providing credits has been heavily critiqued by Dambisa (2009). She argued that donor support which she describes as dead aid has brought more harm than good particularly in Africa. Hence, Dambisa arguments hold because village chicken can effectively generate income to rural households without depending on micro credits. The best alternative option of encouraging village chickens keeping is to educate small scale farmers to use better management that could maximize profitability of village chickens. This is so because knowledge, experience and enthusiasm are of equal importance in village chicken keeping.

Mack et al. (2005) noted that the productivity of village chickens is low in addition to poor breeding levels. This could be the reason which leads to low income that is generated by the rural households. Hence increasing production and the productivity of village chickens would enable the rural households to increase the sales and generate more income.

Statistics as presented by different researchers indicates that on average 80% of rural households keep village chickens. This is in agreement with Kryger et al. (2010), Alabi et al., (2006) and Banerjee (2004) who noted also that around 80 percent of rural households in developing countries engage in smallholder village chicken production for income purpose. Todd (1998) reported that many countries point to a number of reasons why village chicken would make an excellent tool for income generation. Others observed that village chicken do not require large investment to start and maintain and hence generate better income (Alders and Spradbrow 2001; Alders et al 2009; Copland and Alders, 2005; Kryger et al., 2010). According to Sonaiya and Swan (2004), in sub-Saharan Africa, 85% of poultry sector consists of village chickens that are managed in village production systems. This suggests that there is a high possibility that village chicken is kept mainly for income generation in order to earn a living.

The Bangladesh Rural Advancement Commission (BRAC), shows in its' annual report that more than 70% of rural households are involved in chicken keeping. Moreover, around 97.82% of village chicken production in Ethiopia is traditionally managed (FAO, 2008). Mack et al. (2005) showed that nearly all families living in rural areas of developing countries, including the poor, are owners of village chickens. Gueye (2005) supports this when stating that more than 90% of rural families in most developing countries keep one or more village chickens. In Benin, village poultry is owned by 84% of farm households (Kherallah et al., 2001). The statistics shows that village chicken is valued in many communities although the only challenge is inadequate information on the income that can be generated by village chicken.

In a study carried out in the Niger Delta (Nigeria), Alabi et al. (2006) showed that village chicken husbandry (35%) contributes more to the household income of women than business activities (30%) and paid employment. This clearly shows that rural households depend on village chickens for income generation when all other factors are held constant (*ceteris paribus*).

## **2.1.7 Village chicken production constraints**

It has been noted that diseases of smallholder poultry have been identified as a major cause of mortality. Mortality in smallholder poultry has been identified as the most important constraint to increased productivity. This is particularly true for young chicks and growers of whom 60% have been reported to die during the first 3 months after hatching and a consequent loss of production, although deaths due to predators, mismanagement, and nutritional deficiencies probably play important roles. Many diseases have been documented in smallholder poultry (Ahlers, 1999; Aini, 1999; Christensen, 2000; Kelly et al., 1994; Permin and Bisgaard, 2000) as diseases are easily contracted under free-range conditions due to poultry scavenging habits. Infectious diseases remain a great threat to the sustainability and survival of smallholder poultry. Furthermore, disease control is very difficult to carry out under unconfined management and is therefore rarely practised by the owners.

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Despite the potential inherent to this traditional system, many constraints hinder its involvement namely neglect by proprietors and policy makers, unimproved genetic materials, poor housing design, prevalence of Newcastle and Gumboro diseases and poor feeding ( Ekue et al., 1999, Awan et al., 1994). Pandey, 1992; Bagust, 1994. These leads to village chicken production to have low input system and there is little investment on disease control and prevention, supplemental feed or housing and results in low output from high losses and low production. Poor husbandry practices such as lack of proper housing, resulting in high incidence of predation, and insufficient supplementary feeding are other factors that have further limited the production potential of the rural chicken.

It is noted that the major challenge for improving village chicken production at village level lies in the organizational aspects, not in the technical. Solutions for technical problems relating to disease, nutrition and management have long been known and applied in large-scale farming, but how to organize the production at village level for the benefit of small scale farmers with 5–50 chickens remains a major task. The vast experience from Bangladesh (Askov-Jensen, 1996; Saleque, 1996; Alam, 1996 ; Fattah, 1999 and Ahamed, 2000) has shown that it is possible to “atomize” an industrial system into small enterprises, whereby poor, often illiterate, women producers may earn a living from having only 5–10 egg-laying hens.

Although the approach used in Bangladesh was viewed as the best strategy to deal with village chicken production constrains. It is important to know that the approach in Bangladesh is not directly applicable in an African context particularly in Zambia. This is in agreement with Daura (1980) who categorically argued during his literature review that the inconsistency of results obtained from feeding trials shows that grain contents alone is not a good indicator of forage quality as measured by animal performance.

## **CHAPTER 3**

### **3.0 METHODS, MATERIAL AND TOOLS**

#### **3.1 Description of study area**

Nyimba district is located in the southern part of Eastern province and lies between longitude 30 degrees east and latitude 15 degrees south. It is the gateway to the Eastern Province about 340 Km from Lusaka along the Great East Road.

The district falls within the tropical continental climate commonly known as savannah with an annual average rainfall of 600mm. During the drought years an average of 490mm has been recorded (NDSA 2013). Temperatures vary from high to medium. During the hot and dry season, the temperatures rise up to a minimum of 32 degrees Celsius and drop to a minimum of 15 degrees Celsius in the cold season on the plateau.

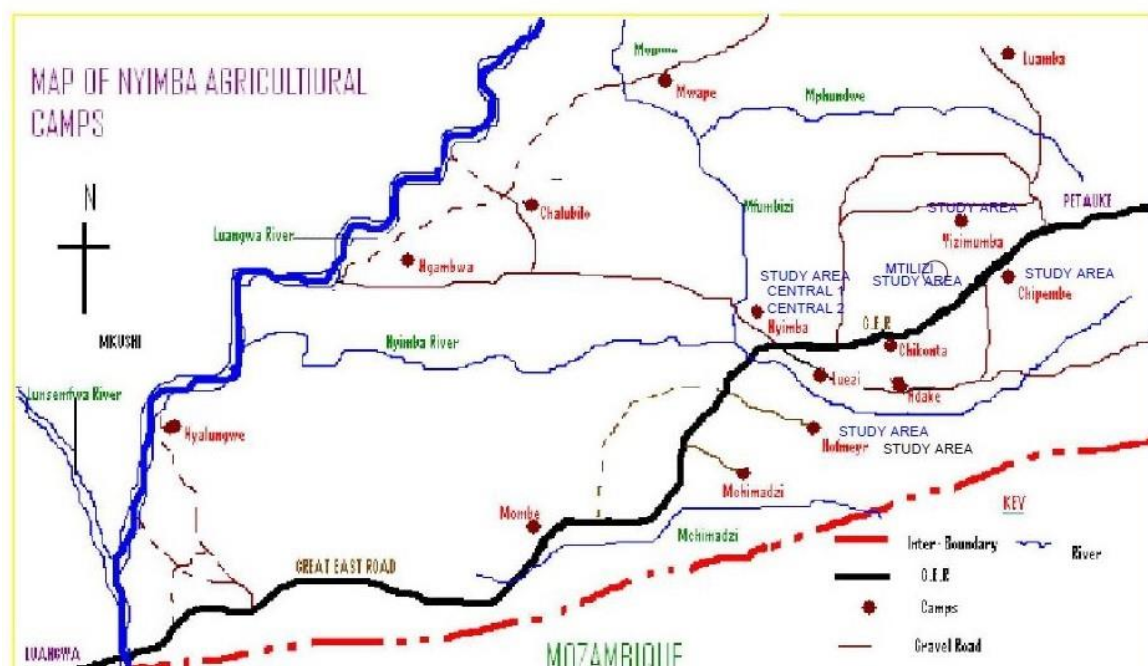
The district is divided into four (4) chiefdoms and most local people are small scale farmers. Generally the indigenous people speak Nsenga though certain distinctions are made such as, the Ambo nsenga in the chiefdom of Luembe and Mwape, while the Tandes are found in Nyalugwe chiefdom. As of the 2010 Zambian Census, the district had a population of



85,025 people out this 43,033 were females and 41,992 were males (CSO,2010).This represents 5.3% of the total population in eastern province. The statistics indicates that the district had more females then males.

The district is prominent in village chicken production. Village chicken is one of the key sources of food and income for rural households. Below is the geographical location of the surveyed camps in the district:

**Figure 1 Map of Agricultural Camps**



Source: MA (2016)

## 3.2 Study design

The study involves a descriptive research using quantitative approaches. The target population was smallholder farmers in the area who keep village chickens.

### 3.3 Sampling and data collection

The sample for this study was collected using the sampling frame from the District Agricultural Coordinator's office in the Ministry of Agriculture. The district has three agricultural blocks and in each block there are five agricultural camps. In each block two camps were selected using randomized sampling (lottery); and from each camp one village was selected using simple random sampling.

Participants were provided with verbal information to inform them of the purpose of the study, that participation was entirely voluntary, they were free to leave the study at any time and that all data obtained from them was treated secret. The verbal informed consent was obtained from the village headmen prior to collection of data. The verbal information was deemed appropriate due to the expectation of relatively low literacy levels among participants. The response was documented for each participant by a tick box on the questionnaire that was administered to each potential participant and the response was ticked in the presence of the participant.

To collect the data, in this study, the local enumerators were employed and each enumerator worked in his locality. This was done by way of personal interviews using a structured questionnaire. The structured questionnaires, interviews and observations were designed to collect data on the various aspects of the living conditions of the households. The enumerators were trained on interviews, administration of a questionnaires and data collection.

Secondary data was collected and utilized for the study. The secondary data was gathered through desk research. The secondary data was collected through review of published journals, relevant websites, documents, reports and academic papers.

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The primary data was collected from the small scale farmers in three agricultural camps. Each Standard Enumeration Area (SEA) had its own random start selected depending on the total number of households (N). The systematic sampling method was used to select households. The following equation was used for sampling.

Let  $N = nk$

Where: N = total number of households in a Standard Enumeration Area (SEA).

n = total desired sample size to be drawn from a stratum in a Standard Enumeration Area (SEA).

k = the sampling interval in a given Standard Enumeration Area (SEA) calculated as  $k=N/n$ .

In this study the targeted total number of respondents was 150 and the data collection was augmented by observations to validate the farmer's responses during the visits.

### 3.4 Assurance of data quality

To ensure data quality, various strategies were used from the preparatory phase until the data analysis. First, during the preparatory phase, draft questionnaire was sent to the supervisors. The aim was not only to obtain their opinions on the guides and questionnaires (length, content, aspects that can be added or deleted), but also to obtain their perception on the concordance between the questions and field realities. This allowed the researcher to make improved versions of the questionnaires which was finally administered in the field.

The researcher organized a one day training session for the enumerators that were engaged to collect data in the field. The aim of the training was to introduce the enumerators to the purpose of the study and its scope. The administration of the questionnaires was made possible with the help of six enumerators who were the Camp Extension Officers (CEO) in charge of the respective camps. Each question was explained and clarification made. The training also enabled the translation of some key questions into the local language (Nsenga). The questionnaires were administered in Nsenga the local language, which was predominantly.

All probing techniques and questionnaires were pre-tested before being used. This pre-test took place in one experimental village, which was not among the research villages, just after the training of the enumerators. During this pre-test, each enumerator was asked to interview one household and record all problems encountered and the time spent. These enabled improvements were necessary.

During the quantitative data collection phase, about 10% of 150 household were validated. The validation consisted of going into the sampled households and asking the household's head some questions from the questionnaire. The objective was to ensure that the enumerators had actually conducted the survey with the household and to verify the consistency of the responses with those obtained by the enumerator. The validation was performed by the researcher.

### **3.5 Data Analysis**

After the fieldwork, the questionnaires were checked and codified. Data recording was conducted using Microsoft Office Excel. Collected data were analyzed using Statistical Package for Social Sciences (SPSS). Descriptive statistics such as mean, standard deviation, variance, frequency and percentage were used to summarize and present the results. Statistical Package for Social Sciences (SPSS) was used to generate correlation analysis of some variables which could help in the generalization of the findings and explanation of the existing phenomena. Calculator was used to calculate gross margin.

### **3.6 Ethical considerations**

The researcher put in place a number of safeguards to make sure that the views and freedom of the individual participants were respected and held in confidence. The question on the names of the respondents was deliberately not included in the questionnaire so as to give freedom to the respondent to answer freely. The respondents were informed that information would be treated with confidentiality and purely for academic purpose. The language that was used was appropriate for local community.

### **3.7 Limitation of Study**

The study was for Nyimba District and it was confined to six agriculture camps. This was so, because the researcher could not have all the members of the population to be investigated due to lack of financial and time resources.

## CHAPTER 4

### 4.0 DATA ANALYSIS RESULTS

#### 4.1 Contribution of village chicken rearing to income of rural household- Descriptive analysis results

Table 1 shows the frequency and percentage of age of respondents

Variables	Frequency	Percent
10-20	1	.7
21-31	29	19.3
32-42	52	34.7
43-above	67	44.7
Total	149	99.3

Source: Field survey (2016)

Table 1 shows that 44.7% of the respondents were small scale farmers who were 43 years and above. 34.7% of the of the respondents were 32 to 42 years old , while 19.3% had a range of 21 to 31 years old. 0.7 % percent of respondents were 10 to 20 years old. In this study, the relationship between age and village chicken income was expected to be positive

for elderly small scale farmers and negative for young small scale farmers. In other words it was assumed that small scale farmers develop more interest to keep village chickens as they reach old age. This shows that the age that maximizes the production and income from village chickens falls within the range of age of 43 and above.

**Table 2 shows the frequency and percentage of marital status of respondents**

Variable	Frequency	Percent
Single	21	14.0
Married	111	74.0
Divorced	9	6.0
Widow	9	6.0
Total	150	100.0

Source: Field survey (2016)

Table 2 shows marital status of respondents 74% of the respondents were married, 14 % were single, 6% were divorced and 6% were widows. All marriage respondents kept the village chickens and the single respondents others did not. This indicates that married families show the significance of the enterprise in meeting family needs and welfare.

**Table 3 shows the frequency and percentage of family size of respondents**

Variable	Frequency	Percent
0-5	72	48.0
6-11	73	48.7
12-17	5	3.3
Total	150	100.0

Source: Field survey (2016)

Table 3 indicates that 48% of respondents had family size which range from 0 to 5 people per household, while 48.7% of respondents the family was 6 to 11 people and 3.3% of respondents the family size ranged from 12 to 17 people per housed. In this study it was noted that rural households with big families keep a good number of village chickens.

We assume that this factor will have a positive effect on the contribution of village chicken rearing to incomes of rural households.

**Table 4 shows the frequency and percentage of education achieved by respondents**

Variable	Frequency	Percent
Primary	110	73.3
Secondary	29	19.3
Tertiary	1	.7
None	10	6.7
Total	150	100.0

Source: Field survey (2016)

Table 4 shows the highest education achieved by the respondents. Many of the respondents achieved primary education and this was followed by the secondary education and least was tertiary education. The results show that only 6.7% of the respondents did not have formal education, while 73.3% of them attended up to primary level of formal education and 19.3% reached secondary level. 0.7 % of the respondents had tertiary education.

**Table 5 shows the frequency and percentage of reasons for keeping village chickens**

Variable	Frequency	Percent
Source of income	113	75.3
Own consumption	26	17.3
Culture	11	7.3
Total	150	100.0

Source: Field survey (2016)

### 5.1.5 Factors that make rural households to keep village chicken analysis

The results in table 5 shows that 75.3% of the respondents keep village chickens for income; while 17.3 % keep village chickens for consumption and 7.3 % keep village chickens for culture believe. This shows that source of income was the more reason for keeping village

chickens. This shows that due to high demand there was positive correlation between frequency of selling village chickens and contribution to household income. This result suggests that there is high demand of village chickens in the community. This also indicates that village chickens producers have comparative advantage of broiler chickens hence high sales are recorded.

**Table 6 shows the frequency and percentage of controllers of village chickens**

Variable	Frequency	Percent
Women	63	42.0
Men	24	16.0
Both	63	42.0
Total	150	100.0

Source: Field survey (2016)

Table 6 shows that 42 % of women kept village chickens while 16% of men were involved in keeping village chickens and both sex had 42% who kept village chickens. The results show that women had much interest to keep village chickens.

**Table 7 shows the frequency and percentage of number of village chickens**

Variable	Frequency	Percent
1-5	28	18.7
6-11	53	35.3
11 and above	69	46.0
Total	150	100.0

Source: Field survey (2016)

Table 7 shows that 18.7% of respondents had village chickens in the range of 1-5, while 35.3% had 6-11 village chickens and only 46% had 11 and above. This implies that on average more rural households keep 11 and above village chickens.

**Table 8 shows the cross tabulation of gender of respondents and reasons for keeping village chicken**



### Gender of respondent \* Reasons for keeping village chickens Cross tabulation

		Reasons for keeping village chickens			
		Source of income	Own consumption	Culture	Total
Gender of respondent	Male	63	19	5	87
	Female	49	7	6	62
<b>Total</b>		<b>112</b>	<b>26</b>	<b>11</b>	<b>149</b>

Source: Field survey (2016)

Table 8 shows that 37% of male indicated that the reasons for keeping village chickens was the source of income. 13% of male indicated consumption as the reason, while only 3% of male believed that culture was the major reason for keeping village chickens. The tables also shows that 34% of female indicated source of income to be the major reason, while 5% of female considered consumption as the reason and only 7% of female felt that culture was the major reason.

### Table 9 shows the cross tabulation of gender of respondents and mortality rate of village chicken

#### Gender of respondent \* Mortality rate of village chickens Cross tabulation

		Mortality rate of village chickens				
		High	Very high	Fair	Low	Total
Gender of respondent	Male	17	25	33	12	87
	Female	15	12	27	8	62
<b>Total</b>		<b>32</b>	<b>37</b>	<b>60</b>	<b>20</b>	<b>149</b>

Source: Field survey (2016)

The results in table 9 shows 11% of male considered mortality rate to be high, 17% of male indicated very high, 20 % of male felt that mortality rate was fair and 8% of male indicated that it was low. 10% of female considered mortality rate that it was high, 8% of female indicated very high while 18% of female mentioned that it was fair and only 8 female felt it was low.

**Table 10 shows cross tabulation of gender of respondents and number of village chicken**

<b>Gender of respondent * Number of village chickens Cross tabulation</b>					
		Number of village chickens			
		1-5	6-11	11 and above	Total
Gender of respondent	Male	12	28	47	87
	Female	15	25	22	62
<b>Total</b>		<b>27</b>	<b>53</b>	<b>69</b>	<b>149</b>

Source: Field survey (2016)

Table 10 shows that 8% of male headed households kept 1-5 village chicken, 19% of male headed households kept 6-11, while 32% of male headed households kept 11 and above village chickens. The table also indicates that 11% of female headed households kept 1-5 village chickens while 16% of female headed households kept 6-11 and 14% of female headed households kept 11 and above village chickens.

**Table 11 shows cross tabulation of education achieved and number of village chickens**

<b>Education achieved * Number of village chickens Cross tabulation</b>					
		Number of village chickens			
		1-5	6-11	11 and above	Total
Education achieved	Primary	23	42	45	110
	Secondary	1	8	20	29
	Tertiary	0	0	1	1
	None	4	3	3	10
<b>Total</b>		<b>28</b>	<b>53</b>	<b>69</b>	<b>150</b>

Source: Field survey (2016)

Table 11 shows the cross tabulation of education achieved and number of village chicken kept. Primary education had 73% of respondents; secondary had 19% of respondents and tertiary had 0.6% of respondent while none of the above had 6.7% of respondents.

**Table 12 shows cross tabulation of education achieved and reasons for keeping village chicken**

**Education achieved \* Reasons for keeping village chickens Cross tabulation**

		Reasons for keeping village chickens			Total
		Source of income	Own consumption	Culture	
Education achieved	Primary	88	17	5	110
	Secondary	23	6	0	29
	Tertiary	0	1	0	1
	None	2	2	6	10
Total		113	26	11	150

Source: Field survey (2016)

Table 12 explains that 58% of respondents with primary education kept village chickens because it was a source of income, while 11% of respondents with primary education felt it was due to consumption and only 3% of respondents indicated that it was due to culture. The table also shows that 15% of respondents with secondary education kept village chicken due to source of income and 4% of respondents were due to consumption and 0.7 % of respondent with tertiary education kept village chickens due to consumption.6.7% of respondents had none of the above.

**Table 13 shows cross tabulation of education achieved and methods of keeping village chickens**

**Education achieved \* Methods of keeping village chickens Cross tabulation**

		Methods of keeping village chickens		Total
		Free range	Semi intensive	
Education achieved	Primary	87	23	110
	Secondary	23	6	29
	Tertiary	0	1	1
	None	9	1	10
Total		119	31	150

Source: Field survey (2016)

The results in table 13 shows that 58% of respondents with primary education used free range system of management while 15% of respondents with primary education used semi intensive system. The table also shows that 15% of respondents with secondary education used free range and only 4% of respondents with same education used semi intensive while 6.7% of respondents had none of the above. This is graphically illustrated in the graph below.

**Figure 2 shows bar chart of education achieved and methods of keeping village chickens**

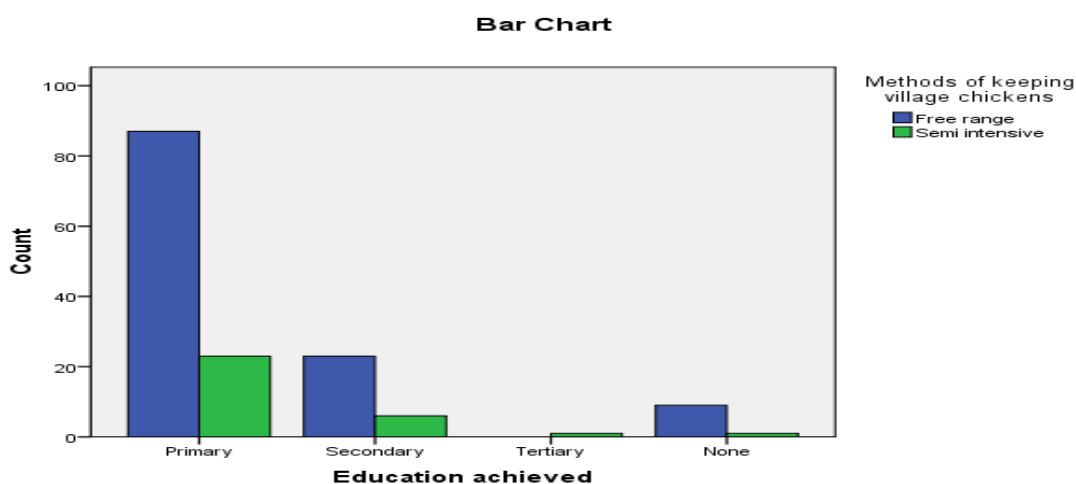


Table 14 shows cross tabulation of education achieved and production and productivity of village chickens

**Education achieved \* Production and productivity of village chickens Cross tabulation**

		Production and productivity of village chickens				
		Very good	Good	Fair	Poor	Total
Education achieved	Primary	23	37	44	6	110
	Secondary	8	8	11	2	29
	Tertiary	0	1	0	0	1
	None	1	3	4	2	10
<b>Total</b>		<b>32</b>	<b>49</b>	<b>59</b>	<b>10</b>	<b>150</b>

Source: Field survey (2016)

Table 14 shows the results of respondents' production of village chickens based on education. The respondents with primary education were 73%, while for secondary were 19%, tertiary was 0.7% and those that indicated none of the above were 6.7%. The results was also represented graphically below.

**Figure 3 shows education achieved and production and productivity of village chickens.**

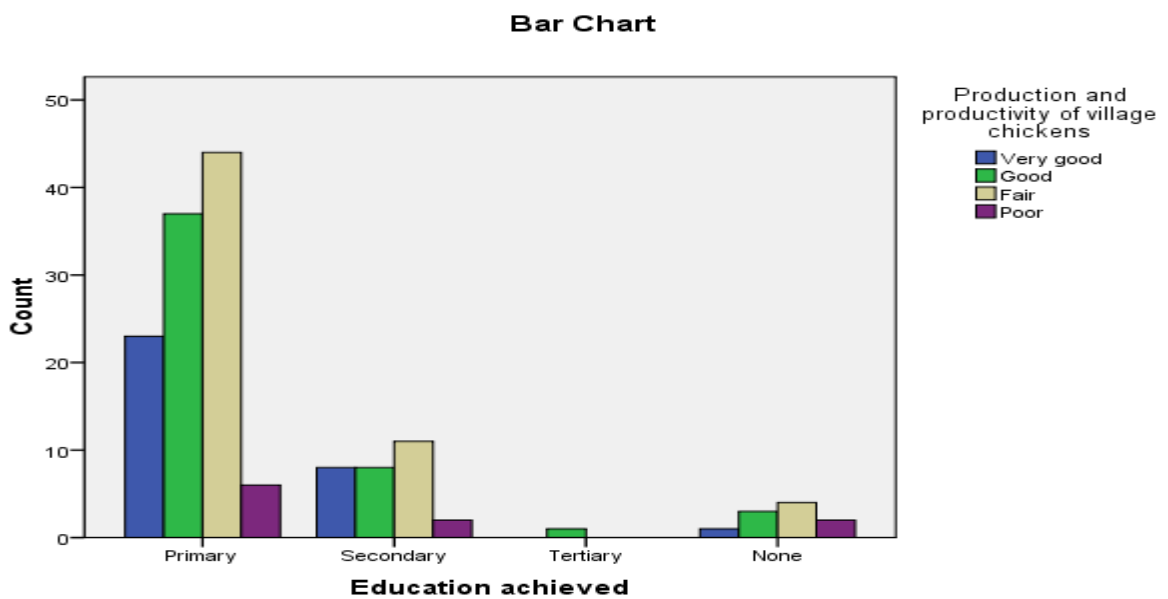


Table 15 shows cross tabulation of education achieved and mortality rate of village chickens

**Education achieved \* Mortality rate of village chickens Cross tabulation**

	Mortality rate of village chickens				Total
	High	Very high	Fair	Low	
Education achieved Primary	29	27	41	13	110
Secondary	3	9	11	6	29
Tertiary	0	0	1	0	1
None	1	1	7	1	10
<b>Total</b>	<b>33</b>	<b>37</b>	<b>60</b>	<b>20</b>	<b>150</b>

Source: Field survey (2016)

Table 15 shows the category of the respondents on education and mortality rate. Respondents with primary education were 73%, while for secondary were 19%, tertiary was 0.7% and those that indicated none of the above were 6.7%. The results were also represented graphically below.

**Figure 4 Shows education achieved and mortality rate of village chickens**

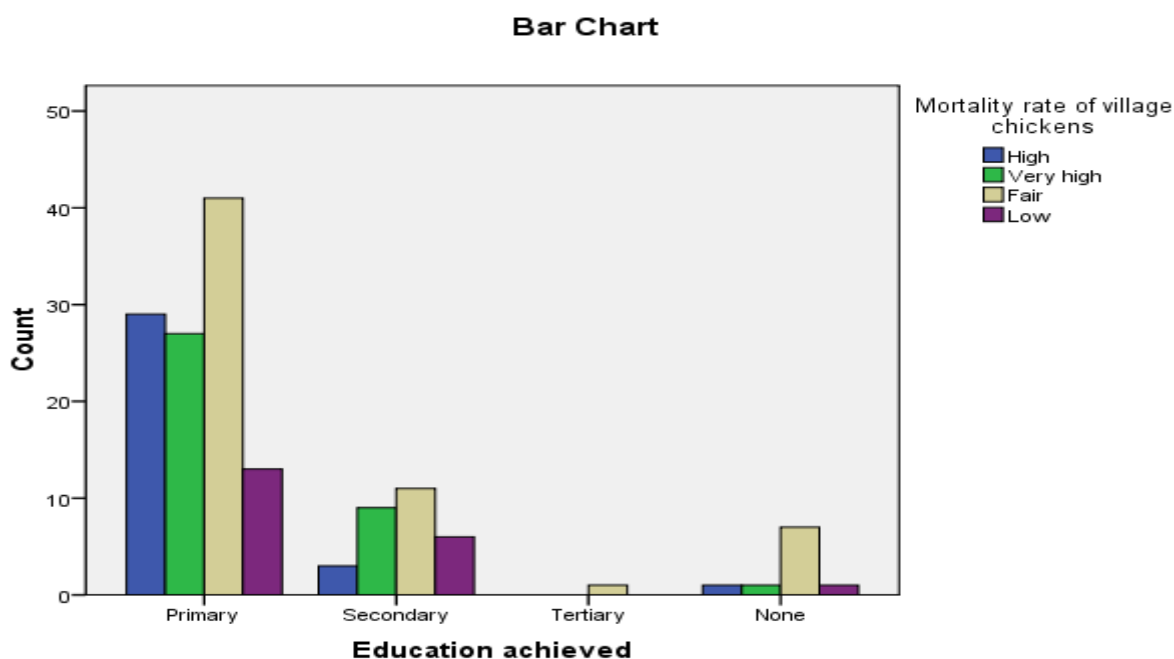


Table 16 shows cross tabulation of education achieved and average egg production per hen

## Education achieved \* Average egg production per hen Cross tabulation

	Average egg production per hen			Total
	1-10	11-20	21-above	
Education achieved Primary	56	53	1	110
Secondary	12	17	0	29
Tertiary	0	1	0	1
None	3	7	0	10
<b>Total</b>	<b>71</b>	<b>78</b>	<b>1</b>	<b>150</b>

Source: Field survey (2016)

Table 16 shows the category of education for respondents and the average egg production per hen. The respondents with primary education were 73%, while for secondary were 19%, tertiary was 0.7% and those that indicated none of the above were 6.7%. The results were also represented graphically below.

**Figure 5 Shows bar chart of education achieved and average egg production per hen**

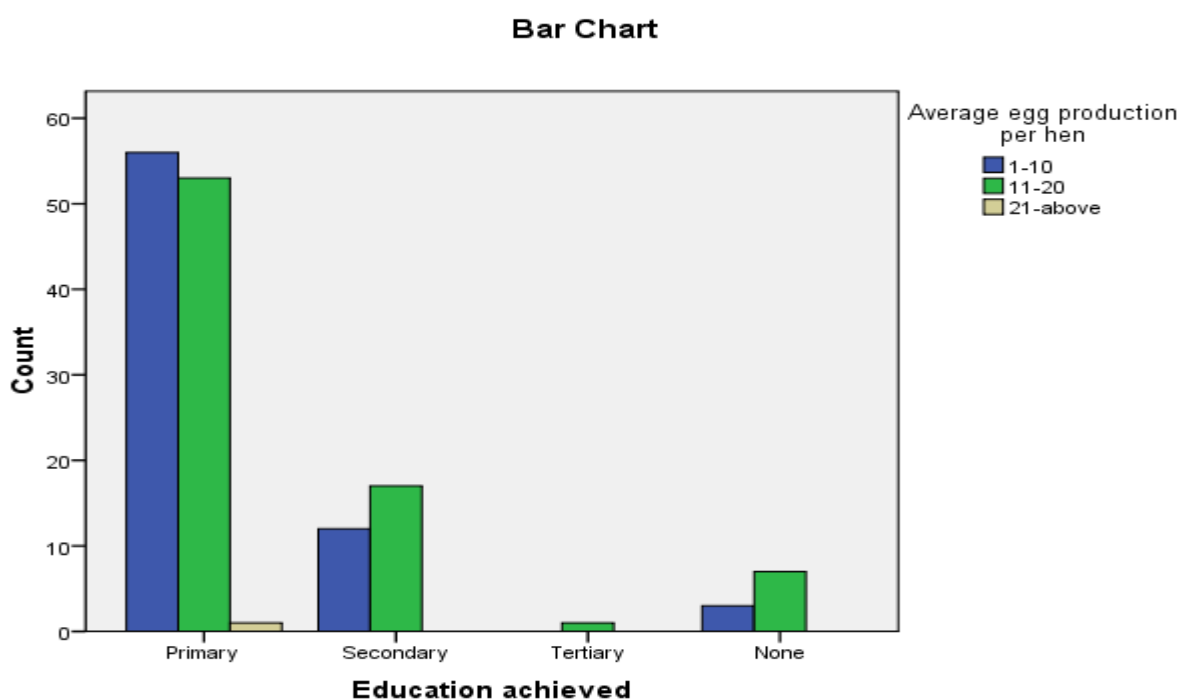


Table 17 shows cross tabulation of education achieved and production cost of village chicken per year

**Education achieved \* Production cost of village chickens per year Cross tabulation**

		Production cost of village chickens per year					Total
		10-100	110-210	220-320	330-above	Nil	
Education achieved	Primary	31	12	4	3	60	110
	Secondary	5	4	0	3	17	29
	Tertiary	0	0	0	0	1	1
	None	3	1	0	0	6	10
Total		39	17	4	6	84	150

Source: Field survey (2016)

Table 17 explains that 28% of respondents with primary education had the production cost of K 10-100 ,while 11% of respondents with the same education had K110-210,It also indicated that 4%of respondents with similar education had K220-320 and only 3% of respondents had K 330 and above. The table also shows that 17% of respondents with secondary education had K10-100 as production cost, while only 14% of respondents had K110-210 and 10% of respondents had K330-above.The graph below also illustrates the results. This indicates that education is important in business because it enhances people's knowledge which would assist them to reduce the cost of production.



**Figure 6 shows bar chart of education achieved and production cost of village chickens per year**

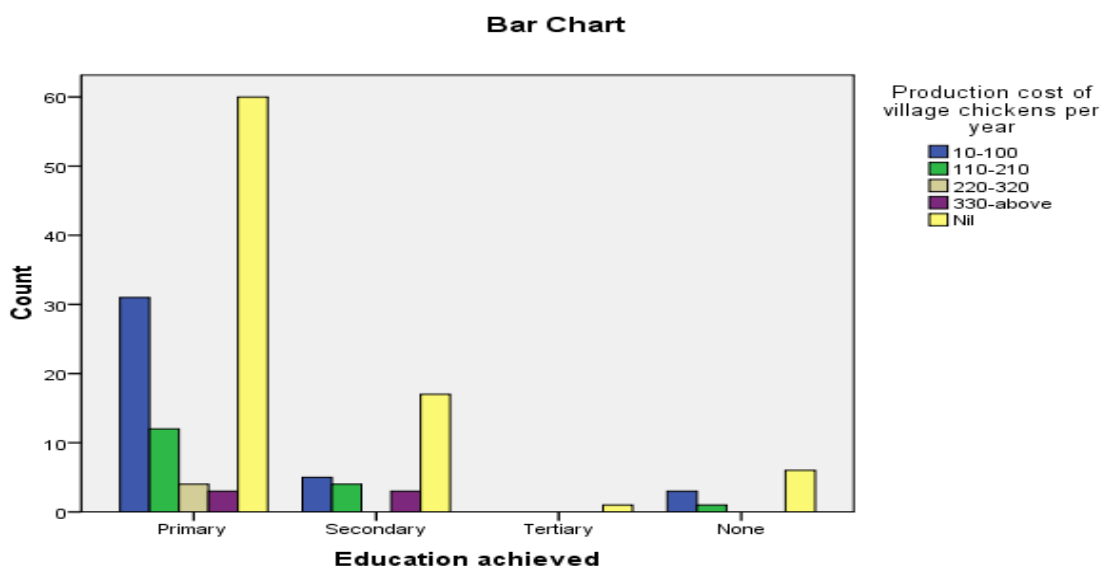


Table 18 shows cross tabulation of education achieved and number of village chicken kept last two years

**Education achieved \* Number of village chickens kept last two years Cross tabulation**

		Number of village chickens kept last two years			Total
		1-50	51-100	101-above	
Education achieved	Primary	82	14	14	110
	Secondary	20	6	3	29
	Tertiary	1	0	0	1
	None	9	1	0	10
<b>Total</b>		<b>112</b>	<b>21</b>	<b>17</b>	<b>150</b>

Source: Field survey (2016)

Table 18 shows the category of the respondents on education and number of village chickens kept last two years. Respondents with primary education were 73%, while for secondary were 19%, tertiary was 0.7% and those that indicated none of the above were 6.6%. The results were also represented graphically below.

**Figure 7 shows bar chart of education achieved and number of village chicken kept last two years**

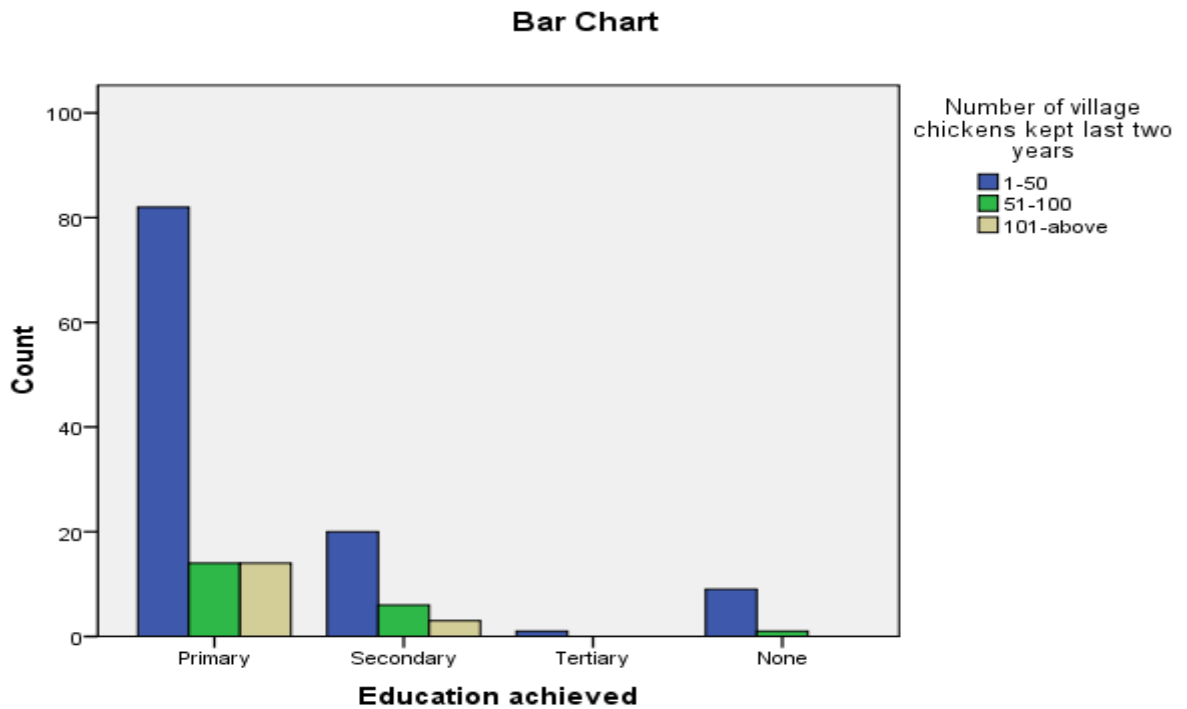


Table 19 shows the frequency and percentage of village chicken sales

Variable	Frequency	Percent
Yes	138	92.0
No	12	8.0
Total	150	100.0

Source: Field survey (2016)

Table 19 shows that 92% of the respondents sell village chickens and 8% of the respondents interviewed did not sell village chickens. This implies that many rural households keep village chickens for business.

Table 20 shows the frequency and percentage of selling village chickens

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Variable	Frequency	Percent
Weekly	33	22.0
Monthly	54	36.0
Yearly	63	42.0
Total	150	100.0

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Source: Field survey (2016)

Table 20 shows that 22% of the respondents had weekly selling of the village chickens; while 36% had monthly selling and 42% had yearly selling of village chickens.

Table 21 shows the frequency and percentage of market of village chickens

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Variable	Frequency	Percent
Within the village	133	88.7
District main market	17	11.3
Total	150	100.0

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Source: Field survey (2016)

Table 21 shows that 88.7% of the respondents interviewed had established market for village chickens within the village; while 11.3% of the respondents sold the village chickens at the district main market.

Table 22 shows the frequency and percentage of usage of money raised from village chickens sales

---

Variable	Frequency	Percent
Grocery	73	48.7
Food	48	32.0
Education	20	13.3
Farming inputs	9	6.0
Total	150	100.0

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Source: Field survey (2016)

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The results in table 22 indicates that 48.7% of the respondents sell the village chickens in order to purchase household groceries ; while 32% of the respondents sell in order buy food,13.3 % of respondents pay school fees, buy school books and uniforms for the children. It also shows that 6% of the respondents sell village chickens in order to purchase farming inputs and drugs for livestock.

Table 23 shows the frequency and percentage of challenges faced in village chicken enterprise

Variable	Frequency	Percent
Lack of business knowledge	11	7.3
Inadequate market	17	11.3
High mortality rate	108	72.0
Theft	13	8.7
Expensive feed	1	.7
Total	150	100.0

Source: Field survey (2016)

Table 23 shows that 7.3 % of the respondents cited that lack of the business knowledge on village chickens enterprise was one of the major constraints; while 11.3% of the respondents pointed out that inadequate market were the major constraint. The table also indicates that 72% of the respondents perceived high mortality rate as the biggest challenge. It was again noted that 8.7% of the respondents ranked theft as one of the major challenges and only 0.7% cited expensive feed as the challenge.

Table 24 shows the frequency and percentage of challenges preventing growth of village chicken production

Variable	Frequency	Percent
Diseases	115	76.7
No Supplementary feed	9	6.0
Predators	17	11.3
Others	9	6.0
Total	150	100.0

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Source: Field survey (2016)

Table 24 also shows that 72.6 % of the respondents believed that diseases is one of the biggest threats to production of the village chickens; while 6% of the respondents indicated that supplementary feed was the major threat to production of the village chickens. It was also noted that 11.3% of the respondents perceived predators as the major threat to production of the village chickens. Only 6% of the respondents pointed out that other factors were the threats to the productions of village chickens.

Table 25 shows the frequency and percentage of ways of reducing challenges

Variable	Frequency	Percent
Support from donors	9	6.0
Housing	22	14.7
Availability of drugs	79	52.7
Training	34	22.7
Improve the marketing system	3	2.0
No idea	3	2.0
Total	150	100.0

Source: Field survey (2016)

The results in table 25 shows that 6% of the respondents observed that support from donors was the best alternative strategy to combat the challenges that have characterized the village chickens enterprise and production. The table also indicates that 14.7% of the respondents perceived that improved housing was the alternative option for the challenges faced in this industry; while 52.7% of the respondents cited that the availability of the drugs was the best option to combat the challenges. The table shows that 22.7% of the respondents pointed out that training in good management of village chickens were the other best alternative strategy to eradicate the challenges. Only 2% of the respondents believed that improving market system for village chickens was the best strategy to fight the challenges while 2% had no idea.

Table 26 shows the frequency and percentage of other livestock animals reared

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Variable	Frequency	Percent
Cattle and goats	35	23.3
Cattle and pigs	35	23.3
Cattle and ducks	10	6.7
Cattle ,guinea fowl and dove	4	2.7
Pigs and goats	46	30.7
None	20	13.3
Total	150	100.0

---

Source: Field survey (2016)

Table 26 shows that 23.3% of the respondents kept both cattle and goats; while 23.3 % of the respondents kept cattle and goats. It was also noted that 6.7% of the respondents kept cattle and ducks, while 2.7 % of respondents kept cattle guinea fowls and dove, 30.7% of respondents kept pigs and goats. The table also shows that 6.7 % of respondents kept none of the above.

Table 27 shows the frequency and percentage of changes observed in livelihood from inception of keeping village chickens

---

Variable	Frequency	Percent
Improvement of food	69	46.0
Improvement of income levels	56	37.3
Education levels	4	2.7
Good health	5	3.3
No change	16	10.7
Total	150	100.0

---

Source: Field survey (2016)

Table 27 shows that 46% of the respondents noticed some drastic improvements in food security for the household; while 37.3% of the respondents observed improvement in income levels. The table also indicates that 2.7% of the respondents noticed improvement in education due to the fact that some incomes from village chickens are used towards

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education for the children. It was also noted that 3.3 % of the respondents observed improvement in health because rural house hold were able to meet some cost towards health. Only 10.7 % of the respondents observed no any change in the standard of living.

Table 28 shows the frequency and percentage of market performance of village chickens

Variable	Frequency	Percent
Good	84	56.0
Very good	15	10.0
Fair	28	18.7
Poor	23	15.3
Total	150	100.0

Source: Field survey (2016)

The results in table 28 shows that 56% of the respondents perceived market performance of the village chickens as good and only 10% of the respondents consider it very good. The table also indicates 18.7% of the respondents perceived the market performance as fair and 15.3% of the respondents consider it poor.

Table 29 shows the frequency and percentage of price of village chickens

Variable	Frequency	Percent
20-25	66	44.0
25-30	41	27.3
30-35	29	19.3
35-65	14	9.3
Total	150	100.0

Source: Field survey (2016)

Table 29 shows that 44 % of the respondents had sold village chickens at the price of K20 to K25; it also indicates that 27.3 % of the respondents pegged the price at K25 to K30. The table shows that 19.3% of the respondents had K30 to 35 as the price of the village chickens; while 9.3% had K35 to K65 price of village chickens.

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Table 30 shows the frequency and percentage of reasons for selling village chickens

Variable	Frequency	Percent
Buy Food	70	46.7
For education	14	9.3
Buy farming inputs and drugs	7	4.7
Due to diseases	1	.7
Income	36	24.0
No reason	22	14.7
Total	150	100.0

Source: Field survey (2016)

Table 30 shows that 46.7 % of respondents felt food was the major factor, while 9.3 % of respondents cited education, 4.7 % of respondents indicated farming inputs and drugs for livestock and 0.7 % mentioned diseases as one of the factors that prompted them to sell village chickens.

Table 31 shows the frequency and percentage of estimate of income from other sources

Variable	Frequency	Percent
10-250	55	36.7
260-500	22	14.7
510-750	7	4.7
760-above	66	44.0
Total	150	100.0

Source: Field survey (2016)

Table 31 shows that 36.7 % of the respondents generate K10 to K250 from non village chickens per year ; while 14.7% of the respondents realised K260 to K500 and only 4.7% realise K510 to K750 .It was also noted that 44% of respondents had K760 and above as income from non village chickens per year.

Table 32 shows the frequency and percentage of income from village chickens



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Variable	Frequency	Percent
30-50	136	90.7
60-100	11	7.3
110-above	3	2.0
<b>Total</b>	<b>150</b>	<b>100.0</b>

Source: Field survey (2016)

Table 32 shows that 90.7 % of respondents generate K30 to K50 from the sales of village chickens per day while 7.3% of respondents generate K60 to K100 and only 3% of respondents generate K110 and above per day.

Table 33 shows correlation of two variables

### Correlations

		Gender of respondent	Village chickens keepers
Gender of respondent	Pearson Correlation	1	-.098
	Sig. (2-tailed)		.232
	N	149	149
Village chickens keepers	Pearson Correlation	-.098	1
	Sig. (2-tailed)	.232	
	N	149	150

Source: Field survey (2016)

Table 33 shows that there is a negative (-.098) correlation relationship between gender of respondent and village chicken keepers. The level of significance for this is .232(P- Value >  $\alpha$ ).

Table 34 Annual production cost of the rural household keeping village chicken

### Annual production cost of village chickens

Variable	K
Veterinary	330
Labour	100
Feed	210
Housing	320
Total	960

Source: Field survey (2016)

Table 34 presents a summary of costs incurred during production of village chicken. Based on the data the total production cost for 42 village chickens was K960 per year and the average for a village chicken was K5.71. The study shows that those households with higher education had low production cost. This indicates that education is important in business because it enhances people's knowledge which would assist them to reduce the cost of doing business.

Table 35 shows constraints faced in production of village chicken

	Frequency	Percentage
Diseases	108	72
Supplementary feed	9	6
Predators	17	11.3
Others	9	6

Source: Field survey (2016)

Table 35 shows disease was the highest at 72%, followed by predators at 11% and supplementary feed 6%.

Table 36 shows the expected signs of different variables

Table 36 variables and expected signs

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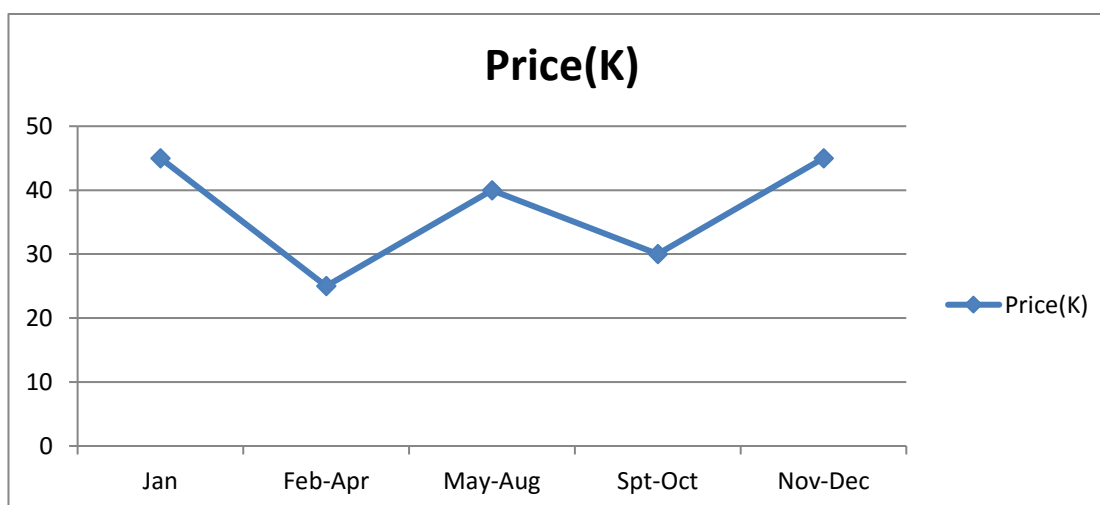
Variables	Expected sign
Diseases	-
Supplementary feed	+
Predators	-
Hatchability	+
Incubation period	+
Brooding period	-
Mortality rate	-
Feed cost	-
Market price per chicken	+
Total number of chickens sold	+
Total number of chickens consumed	-
Vaccination costs	-
Stock size	-
Housing	+

---

Source: Field survey (2016)

The figure 7 shows signs of different variables. Eight variables had 8 negative signs and 6 variables had positive.

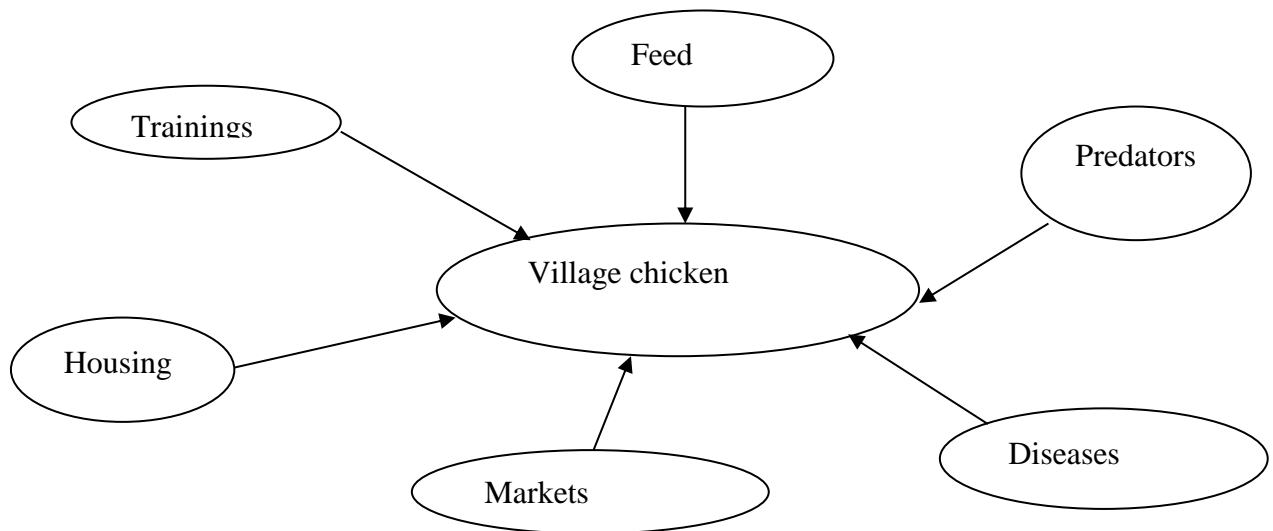
**Figure 8 village chicken price variations: January -December**



Source: Field survey (2016)

Figure 8 shows price variation from January up to December. The price trends fluctuated depending on demand and supply.

**Figure 9: Showing village production constraints**



Source: Field survey (2016)

Figure 9 shows the constraints that affect village chickens. The most prominent one is diseases.

## **CHAPTER 5**

### **5.0 DISCUSSION OF THE RESULTS**

#### **5.1 Discussion of the results**

The salient findings of this study are argued by different approaches as presented below. This is in conformity with the argument put across by Daura (1980) that the relative economic feasibility of the tested treatments is dependent on the costs of the several ration ingredients. This indicates that the findings can be argued depending on the researcher's epistemology. In this study it's noted that lack of perspective on village chicken has been the Achilles' heel of heterodox of transformative approach to the rural community in Nyimba district.

##### **5.1.1 Hypothesized factors contributing to village chicken incomes of rural households**

The study noted that the majority of the respondents (45%) were 45 and above years. This shows that they had enough experience in the village chicken enterprise. This also means that age of the respondents had both positive and negative effects on village chicken income. This is in line with Sall et al. (2000) argument that age, a proxy for rural household experience, implies that knowledge gained over time from working in an uncertain production environment may help in evaluating information, thereby influencing the incomes of rural households. In this study, the relationship between age and income is expected to be positive for young small scale farmers and negative for old small scale farmers. In other words, we assume that producers are opened to new innovations until a certain age after which they become less open until they reach old age.

The results show that women had much interest to keep village chickens. This is in conformity with Muchadeyi et al., (2004) argument that the women look after the village chickens and earnings from the sales of eggs and chickens are often their main source of income. The results also shows that men have the specific roles in the managing of the

village chickens .The findings by Muchadeyi et al., (2004) also indicates that in addition to shelter construction, men are also dominant in the treatment and slaughtering of chickens (Muchadeyi et al., 2004). Women, even in those households headed by men, are responsible for most of the decision-making on chicken production (Kusina et al., 2001).It can be deduced from this that gender as a factor plays a role in the income generation of village chickens in rural household.

## **5.1.2 Cross tabulation of education achieved and number of village chicken**

Distribution of respondents with respect to educational status reveals that they attended different levels of formal education.The results in table 11 shows that 73% of respondents who had primary education kept more village chickens than those who had secondary and tertiary education; This implies that many rural households with low education consider village chicken rearing as the major source of income because it's easy to convert it into cash. This also entails that as one acquires more education the chances of being a small scale farmer reduce because they tender to seek for employment in urban areas. For example, people that have acquired advanced education consider village chicken as an insignificant secondary occupation when compared with other activities. This is in line with Mandal (2006) argument that education is an accelerator for growth and development. Education changes overall behaviour, since, it is the process of imparting or acquiring knowledge and habit through instruction or study. Therefore, an improvement in the education level makes people to look for other opportunities.

Education has a positive and significant effect in life. This means that small scale farmers who have received a formal education are more likely to leave the village in search of greener pasture. This indicates that only people that have not advanced in education are left in the village (*ceteris paribus*). This could be attributed to the reason that explains that the majority of village chicken keepers in Nyimba district have only acquired primary education as the highest level.

## 5.1.3 Cross tabulation of gender of respondents and reasons for keeping village chicken

Analysis revealed that in this study both sex consider income as the main reason for keeping village chicken (table 8). Though village chicken is not seen as a primary occupation by many people, it is a source of small but significant income to rural families. This is in conformity with Sonaiya et al. (1992) observation that in Nigeria, none of the women surveyed in south western Nigeria viewed village chicken as a main occupation; but they recognized it as a source of significant income. The study noted that a major comparative advantage of village chicken for rural households is the conversion of village chicken into cash in a shorter time, with less capital requirement and with less risk than is the case with other livestock species or other uses of labour. This could be the reason why rural households attribute village chicken in this study as a major source of income. In this study it was also observed that 56% of male respondents believed that village chicken is the major source of income. This implies that due to the responsibilities that men have in the households' village chicken enterprise realizes fast income that meets family needs and welfare.

The study also noted that 44% of female respondents cited income as the major reason for keeping village chicken. Hence village chickens act as the fast way of realizing income in rural household. Guèye (2003) in Botswana also found out that 74% of the women had their main occupation in trading of live chickens and their eggs. Related studies by Alabi et al (2006) indicated that village chicken trade is the third most important income generating opportunity in influencing women's incomes in the Niger delta.

Cross tabulation of education achieved and reasons for keeping village chickens also shows that 77% of both male and female respondents that had acquired primary education cited village chickens as a source of income (table 12). This entails that village chicken is recognized as the tool to end problems in rural households. This is in line with observation that if the poor people can acquire village chicken, this can help them to move out of poverty (Dolber, 2001; Dossal 2003). Gue'ye, (2000) also gave his declarative knowledge that village chicken act as a starter that enables people to raise themselves and their families

from degrading poverty to a better livelihood. Despite the small flocks of village chicken reared by rural families, the contribution of this village chicken to most rural households is substantial.

#### **5.1.4 Cross tabulation of gender of respondents and mortality rate of village chickens**

Generally both male and female respondents noted that mortality rate of village chicken was very high (Table 9). The majority of the respondents put diseases (72%) and predation (11%) as major causes of mortality in village chicken. In addition, supplementary feed (6%) and others (6%) was also mentioned by some people as causes of village chicken mortality (Table 35). Most common predators are dogs, cats, snakes, eagles and thieves.

Around 72 % of the respondents suggested that the highest mortality of village chicken was caused by diseases. This mortality rate may not only due to diseases but also other factors like predators, lack of supplementary feed and harsh production environment where they scavenge on. Similarly, mortality during brooding stage (up to 8 week of age) was high for village chickens (Kitalyi 1998, Tadelle and Ogle 2001). These authors further explained that this (mortality) represents the major loss in the scavenging system of production.

Many researchers have argued that Newcastle Disease is the most devastating disease for scavenging chicken of the study area. This is in line with the report of Sonaiya and Swan (2004) who disclosed that Newcastle Disease was the most severe disease in village chicken production with devastation up to 100% particularly in young chicks.

Mortality was observed to be the major limitation to village chicken production in Zimbabwe (Kusina et al., 2001; Pedersen, 2002; Maphosa et al., 2004). Mortality claim more exits than other exits such as sales, consumption, gifts, exchanges or entrusted chickens (Muchadeyi et al., 2005). Village chicken mortality often exceeds 50% (Kusina et al., 2001; Pedersen, 2002) in communal areas and less than 20% on-station in Zimbabwe (Pedersen, 2002). Predation and diseases were recorded as the major causes of mortality in many communal areas (Kusina et al., 2001; Pedersen, 2002). However, despite these



challenges (Table 33) shows that there is a strong positive correlation relationship between the gender of respondents and village chicken keepers.

## **5.1.5 Cross tabulation of education achieved and methods of keeping village chickens**

The results in table 13 explain that only very few respondents with tertiary education used semi intensive. The study noted that about 80% of respondents who have acquired primary education use free range system in rural areas. This system is more common in low human population density rural areas and is based entirely on low input-low output management. Small village chicken of less than 30 adult birds per household are kept with minimal care and no supplementation (Ndegwa et al., 1998; Nzioka, 2000). Village chicken leave their night shelters in the morning and are left to source any available feed resources around the homestead and take care of themselves. Free-range feed resources usually include grass, insects, earthworms and various seeds (Mwamachi et al., 2000; Birech, 2002).

The findings show that 20 % of respondents who have acquired secondary education keep village chickens using semi-intensive system (SIS). It was ascertained that in this system farmers keep the range of 11 and above village chickens. This is in line with Mwamachi et al (2000) arguments that in this system, chickens are kept in small flocks of between five and 50 village chickens mainly for consumption and sale. Levels of inputs range from low to medium depending on the commercial value attached to the flock. The flocks are left to free range around the homestead or in fenced runs feeding on grass, insects, kitchen wastes, and any other available feed resource (Mwamachi et al., 2000; King'ori et al., 2007). They are provided with some form of housing ranging from simple shelters to proper chicken houses. Health care depends on the commercial value attached to the enterprise. However, water and supplementary feeds are provided. Because input levels are low, production is lower than in intensive system (IS).

On average the majority of the respondents had primary education and uses free range system. In this study it was noted that the rural households do not practice intensive system. This could be attributed to the low production and poor management of village chickens in the study area. This is in conformity with the argument put across by Menge et al , (2005) that due to high costs of inputs and high levels of management required, this system is rare

in rural areas and common in urban and peri-urban areas where households own very limited or no land but are able to provide the required inputs. This was consistent with the findings that in this study no single rural household practiced this system.

## **5.1.6 Cross tabulation of education achieved and production and productivity of village chickens**

The study noted that 73% of the respondents with primary education had high production compared to those with secondary and tertiary education. The study also noted that respondents with tertiary education were the least in terms of production. This is in conformity with the empirical evidence that in all of the countries households with less educated heads and are significantly more likely to keep poultry. The former result can be explained by the fact that in the study countries household-level poultry production is a low-input, low output activity, which does not require high levels of skill and education (Alemu et al., 2008). Education may enhance the rural household's ability to efficiently allocate inputs across competing uses, and to select the best alternative option (Polson and Spencer, 1991).

## **5.1.7 Correlation**

The results of correlation (Table 33) shows that there is a negative (-.098) correlation relationship between gender of respondent and village chicken keepers. This entails that keeping village chicken does not require a specific sex; hence village chicken keeping belong to any one and not a single sex. This also implies that for every one unit increase in gender of respondent does not increase village chicken keepers. Since the p-value is greater than the threshold  $\alpha$  then it means that coefficient is statistically insignificant.

## **5.1.8 Gross margin analysis of village chicken**

In this study the model that was used to ascertain the viability and profitability of village chicken was gross margin. This is in line with the observations noted that there is need to shift the focus of village chicken production from simply increasing the number of chickens

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in the flock to profit maximization (Sonaiya, 1996). This means that rural households should calculate the gross margin as a way of transformative approach.

For this study gross margin is the difference between revenue and production costs per unit of village chicken.

$$GM = (\text{Total sales} - \text{Cost})$$

Annual average number of village chicken per rural household was 42 (Refer table 18).

Annual production cost of village chicken per rural household was K 240 (Refer table 34).

Production cost per village chicken is  $240/42 = \mathbf{K\ 5.71}$

Average price per village chicken was K40

$$\text{Gross Margin} = \mathbf{K\ 40 - K\ 5.71 = K\ 34.29}$$

The gross margin estimation shows that a rural household realized a positive margin from the sale. This shows that village chicken enterprise in rural household is viable. This is in consistency with the findings by Natukunda, Kugonza and Kyarisiima (2011) in their study to determine factors affecting marketing and profitability of indigenous chickens in Uganda. They used a two stage sampling involving purposive random sampling technique to select 100 chicken farmer households. In the study, they found that indigenous chickens were profitable and profit was found to be 5000 Ugandan shillings (UShs) per bird sold.

The findings of this study on profitability of village chickens also agrees with Hossen (2010) conducted a study on the effect of management interventions on the productivity and profitability of indigenous chickens in Bangladesh. It was found that households earn a minimum profit of US\$ 47.3 per annum.

Dutta, Islam and Kabir (2013) also investigated the production performance of indigenous chickens in selected areas of Rajshali, in Bangladesh, using a stratified random sampling technique from six districts. In their study, profitability was calculated using a cost-benefit ratio and it was estimated at US\$ 0.24 and US\$ 0.19 per family and per bird respectively (Dutta et al., 2013). It was concluded that raising indigenous chickens was a feasible and

efficient enterprise. This again shows that the findings of this study on profitability are in agreeable. All the observations in the data are taken into account see appendix 1.

## 5.1.9 Markets of village chicken

Table 21 shows that 88.7% of the respondents interviewed had established market for village chickens within the village; while 11.3% of the respondents sold the village chickens at the district main market. This shows that many rural households prefer selling village chicken at the door step than transporting to the district market.

This study noted that village chicken markets can be divided into two categories; rural or primary markets (direct channel) and district or boma markets (indirect channel). In this context rural markets are those situated in or near the production sites and they constitute the main selling place for farmers. This entails that village chicken producers follow production orientation system. According to Cole (2004) production orientation implies that the organization concentrates its attention on production efficiency in order to attract customers to its products. He further argued that this works well when demand is well ahead of supply. The thinking behind this orientation is that customers follow the product and this was in conformity with the findings.

However, access to these markets is difficult for many traders, notably due to poor feeder roads especially during the rainy season and long distances. The main buyers at this type of market are people from the surrounding villages and few from the boma. The transactions take place at any convenient place. The study ascertained the characteristics of rural marketing and classified them according to Sodjinou (2011) arguments and these include; located in production/rural area ,main sellers are farmers, more accessible to producers ,less used by boma consumers ,main buyers are assemblers and less equipped.

District or Boma markets are situated in the district and these represent a meeting place where village chickens are sold. The main sellers at this market are the traders and producers. Buyers constitute people within the boma which include restaurant owners and a few consumers which come from other districts. This means that these producers follow

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market orientation system. A market orientated system focuses on the needs of its customers. Its primary concern is to find out what its customers 'needs and wants are so as to meet them with highest level of customer satisfaction. In this system production responds to the demands of marketing rather than the other way round (Cole, 2004). The findings shows that very few village chicken producers do market research to identify the customers' needs. Satisfaction of customer needs entails that producers follow the customers in order to study and woo them. Sodjinou (2011) noted the characteristics of district market which includes: situated at the main market of the district, highly used by people within the boma, main sellers are retailers; few or no producer takes his products to this type of market and better equipped.

Village chicken market is under perfect competition. Sloman (2006) describe perfect competition as a market structure where there are many firms; where there is freedom of entry into the industry; where all firms produce an identical product; and where all firms are price takers. Village chickens producers are price takers. This is so because there are many village chicken producers in Nyimba district. Hence the price is determined by the interaction of demand and supply. This is in conformity with Sloman (2006) arguments that under perfect competition there are so many firms in the industry that each one produces an insignificantly small portion of total industry supply, and therefore has no power whatsoever to affect the price of the product.

The study also noted that there is complete freedom of entry into village chicken market for new producers. Existing producers are unable to stop new producers in the market. The study shows that all village chicken producers produce an identical product. (The product is 'homogeneous'.) This implies the producers do not advertise because producers and consumers have perfect knowledge of the market. The finding also shows that producers are fully aware of the prevailing prices of village chickens, costs and market opportunities. The study also noted that consumers are fully aware of the price, quality and availability of the village chickens in the market.

## 5.1.10 Market performance of village chickens

The study indicates that market performance has significance contribution to income of rural household. Following Fu (2003), the term performance 'as used by Industrial Organization (IO) economists generally refers to the degree to which the operation of a market can achieve economic efficiency. Sloman (2006) define economic efficiency as a situation where each good is produced at the minimum cost and where individual people and firms get the maximum benefit from their resources. For this study a market is more efficiently operated when the goods transacted are used by transforming resources more prudent. Performance refers to a market 'as a whole, which comprises all the interacting buyers and sellers, instead of individual economic agents such as firms (Fu, 2003).

In this study it is assumed that the village chickens are homogeneous, which is one of the criteria for perfect competition. The findings indicate that village chicken can vary according to certain consumer preference on which the consumer often bases his/her decision. In this study it was ascertained that the price for village chicken can vary according to size, place, sex, productivity, breed, ownerships and weight. The findings show that consumer preference plays a very important role in marketing. This is in conformity with the argument suggested in other writings that provision of information on consumer preferences can allow producers and traders to improve their earnings from livestock sales (Williams et al., 2006).

The statistical method used for the analysis of price variation over consumer preference in this study is the price elasticity of demand. What we want to compare is the size of the change in quantity demanded with the size of the change in price. Its subjacent assumption postulates that each good is characterized by a set of characteristics. In this study, the price elasticity of demand is based on the hypothesis that goods are valued for their utility bearing attributes. There is no a priori rule about the inclusion of quality characteristics in the model, but the characteristics included should be observable and economically relevant to the buyers (Orden et al., 2005).

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The price elasticity of demand shows that a rise in price (a positive figure) will cause a fall in the quantity demanded (a negative figure). Similarly a fall in price will cause a rise in the quantity demanded. Thus when working out price elasticity of demand, we either divide a negative figure by a positive figure, or a positive figure by a negative. Either way, we end up with a negative figure. In this study it was noticed that price of village chicken was elastic ( $< 1$ ) because the upward slight change in price caused low returns of village chickens. This is in conformity with Sloman (2006) his argument on elastic. He contended that a change in price causes a proportionately larger change in the quantity demanded. Rural household will decide how big a change in price or quantity is. In this case the value of elasticity will be greater than 1, since we are dividing a larger figure by a smaller figure.

Estimation of the economic value of a particular preference can have several uses in the market sector. It can help the producer to produce better products (for example improved breeds, etc.) in order to fulfill the requirements of the market and those of the consumer. Carman (1997) noted that producers may be able to alter their production practices, use of inputs, or varieties to influence attributes that increase product prices.

Figure 8 shows that the selling price is low in February-April. This can be explained by the fact that February-April is a period of hardship, when the food stores are empty. The majority of rural household take the majority of their village chickens to market during this period, which results in a decrease in the price of village chicken due to an increase in supply. This is in conformity with Sloman (2006) his argument that a rise in supply is signaled by a fall in price. This then acts as an incentive for demand to rise. A fall in supply is signaled by a rise in price. This then acts as an incentive for demand to fall. Sodjinou and Koudande (2008) also found the same results in the Central and the Southern part of Benin where they showed that in this period, the producer takes chicken to the market in order to be able to buy cereal for the family. It is mainly during this period that producers ask for credit from traders.

During the harvesting period from May-August when the food stores are filled of cereals, producers reduce their supply causing an increase in the village chicken price. During

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September- October, the village chicken price decreases again. In fact, this period is characterized by the emergence of various diseases, especially Newcastle disease. To avoid losing the entire chicken flock, producers, in particular those who do not vaccinate their poultry and do not provide shelter, take their products to market. September-October is also the time when children return to school. According to Sodjinou and Koudandé (2008), during this period, the breeders need money to purchase school supplies for children and to pay school fees and various subscriptions. Many village chickens keepers thus take their products to the market, which causes a slight decrease in the price of chicken. In other words, the supply is relatively abundant in this period, but the demand is low. Producers also usually ask for a credit from traders during September to October to finance children's schooling.

During November-December, the price of chicken increases again. These months are when the main festivals are held, in particular Christmas, New Year and other religious holidays. The demand for poultry products in general is thus high, with a relatively weak supply. This price level for poultry is maintained until January. In February, the chicken price often decreases. In fact, during this period, farmers usually take their village chicken to market in order to avoid losing all their chickens to disease.

The highest demand for village chickens coincided with the major social and religious festivals of the year. These are the Christmas and New Year season (December- January). This was consistent with the findings of Aklilu (2007) who reported high sales of local chickens in periods like Easter and Christmas in Ethiopia. Similarly in Thailand, the large numbers of village chickens were consumed corresponded to annual and occasional ceremonies in which all villagers participated (Masuno 2008). The differences in the demand of village chickens in times of the year can be attributed to the levels of income for the consumers. Religious festival days are associated with increased poultry consumption and sales. These patterns cause strong fluctuations in prices of village chickens and are reflected as one of the problems faced by small scale farmers.



## 5.1.11 In-depth analysis of production constraints of village chicken

In this study it was discovered that village chickens production often encounters problems. As a consequence village chickens production remains low in most places and this affects the income of village chicken. Table 35 presents the a priori expectations of the independent variables which determine the income of village chicken.

Natakunda et al., (2011) argued that the factors that affected profitability of village chicken were: total average costs; distance to the nearest market; access to extension services; education level and experience of the farmer.

In this study some of the noted constraints of village chicken include:

Stock size (X<sub>1</sub>): Total number of chicken units produced in a year. It is expected to have a significant and positive effect on income because the higher the stock size, the higher the probability to sell.

Total number of chickens sold (X<sub>2</sub>): A positive and significant relationship is expected between income and number of chickens sold.

Total number of chickens consumed (X<sub>3</sub>): A negative but significant effect is expected between consumption and income.

Market price per bird (X<sub>4</sub>): This is the average market price of indigenous chicken. Demand for food commodities is inelastic, so a positive relationship between price and income is expected.

Vaccination costs (X<sub>5</sub>): These are costs incurred due to diseases or parasites. They increase total costs and reduce income. A negative relationship between vaccination costs and income is expected.

Feed costs (X<sub>6</sub>): This refers to total feed costs of producing village chickens and major costs of production. A significantly negative relationship between feed costs and income is expected.

Diseases(X<sub>7</sub>): A negative but significant effect is expected between diseases and income.

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Supplementary feed (X<sub>8</sub>): A significantly positive relationship between supplementary feed and income is expected.

Predators(X<sub>9</sub>): A significantly negative relationship between predators and income is expected.

Hatchability(X<sub>10</sub>): A significantly negative relationship between hatchability and income is expected.

Incubation period(X<sub>11</sub>): A significantly positive relationship between incubation period and income is expected.

Brooding period (X<sub>12</sub>): A significantly positive relationship between brooding and income is expected.

Mortality rate(X<sub>13</sub>): A significantly negative relationship between mortality rate and income is expected.

Housing (X<sub>14</sub>): A significantly positive relationship between housing and income is expected.

Other factors that may affect income of village chicken education, experience or knowledge of buyer during buying, the offer of village chicken in markets compared with the demand and geographic location (e.g. prices tend to be higher in urban areas, compared with rural areas).

Village chicken production has over the years attracted some attention due to the enormous potential for increasing the output vis-à-vis the relatively low output at present. However, the view has been that village chicken production could only be improved by preventing few diseases in the flocks and/or supplementing with feed. This point of view has, however, not lead to an increased production. The reasons for this lack of success may be quite obvious if Figure 9 is analysed. Disease prevention and supplementing feeding only constitutes a part of the overall number of problems related to village chicken production.

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In agreement with these results, Mapiye and Sibanda (2005) in Zimbabwe reported that 40.5% of deaths in family chickens were due to predation, disease (30.3%), accidents (8.8%), parasites (8.6%) and unknown causes (12.9%). NCD was the major cause of mortality (75%) in the present study followed by chronic respiratory disease (CRD) (4%) and eye infections (2.4%). Parasites were another major cause of losses. The result on NCD is consistent with Sonaiya (2009) and Moreki (2010).

The study noted (Table 25) that other ways of overcoming production constraints includes; support from stakeholders, proper housing unit, supplementary feed, availability of drugs and trainings. Reducing production constraints would lead to increase in village chicken income.

The low emphasis that small livestock has received from policy makers and other agencies supporting agriculture is manifest through low levels of trainings received by the households on techniques of village chicken production. The study shows that 23% of the households suggested that they need training on village chicken poultry production.

Natakunda et al., (2011) noted that with the management interventions in village chicken production; egg production was increased and mortality of local chickens was reduced. This resulted in the increase of the family or household income from US\$ 47.3 to US\$ 342 per annum. Hossen (2010) further concluded that weaning of chicks, feed supplementation of broody hens during incubation and the creep feeding system of management may have formed a basis of the increasing egg production and survival of the indigenous chickens, which eventually leads to enhanced productivity and profitability of family poultry in Bangladesh.

The research established that despite production constraints; village chicken enterprise is viable and that it contributes significant to the income of rural household. Hence the null hypothesis  $H_0=0$  is rejected.

## 5.2 Conclusion

The study was conducted to analyze the contribution of village chicken rearing to incomes of rural households in Nyimba district in Eastern province of Zambia. The overall objective of the study was to determine the contribution of village chicken rearing to incomes of rural households. The specific underlying objectives inherent to this general objective were to determine the income that can be generated from village chickens, to analyse village chickens market performance and to investigate the production constraints of village chickens.

It was also noted that many rural households keep village chickens using free range system. However, due to this type of management the income of village chicken was affected by diseases, supplementary feed, predators and high mortality rate. The study noted that every one unit effort to reduce production constraints would generate more village chicken income.

The study ascertained that village chicken enterprise in rural areas is viable. The study ascertained that market performance for village chickens was generally good. The gross margin estimation shows that a rural household realized a positive margin from the sale. This shows that the profitability of village chickens was also good. Further studies should be conducted to determine the urban areas demand for village chicken.

## 5.3 Recommendation

The following recommendations are suggested based on the result of the current study:

In order to increase the income generated from village chicken. The village chicken keepers should organise bulking centres. This will encourage buyers and increase the negotiating power of the price.

The extension staff should train village chicken keepers on marketing and management of village chicken.

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The government and other stakeholders should consider provision of adult education in rural areas. Education will enable small-scale farmers to adopt innovation and use improved husbandry practices, such as improved feeds and veterinary services.

The Ministry of Livestock (ML) through the extension services should scale up the reduction of village chicken mortality rate through carrying out vaccination programs all the time and not only in time of disease outbreak.

The problem of predators could be reduced by sensitizing the village chicken keepers to construct better housing unit for village chickens. This will protect village chickens from predators especially during the night.

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## Appendix Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Gender of respondent	149	1.00	2.00	1.4161	.49457
Age	149	1.00	4.00	3.2416	.78543
Education achieved	150	1.00	4.00	1.4067	.81180
Marital status	150	1.00	4.00	2.0400	.66434
Family size	150	1.00	3.00	1.5533	.56208
Occupation	149	1.00	3.00	1.0201	.18269
Village chickens keepers	150	1.00	2.00	1.0133	.11508
Reasons for keeping village chickens	150	1.00	3.00	1.3200	.60557
Number of years for keeping village chickens	150	1.00	3.00	2.3467	.70460
Methods of keeping village chickens	150	1.00	2.00	1.2067	.40627
Responsible for keeping village chickens	150	1.00	3.00	2.0000	.91959
Number of village chickens	150	2.00	4.00	3.2733	.75881
Production and productivity of village chickens	150	1.00	4.00	2.3133	.88338
Mortality rate of village chickens	150	1.00	4.00	2.4467	.97991
Average egg production per hen	150	1.0	3.0	1.533	.5138
Village chickens raised after hatching	150	1.00	2.00	1.0867	.28229
Production cost of village chickens per year	150	1.00	5.00	3.5267	1.78245
Number of village chickens kept last two years	150	1.00	3.00	1.3667	.67968

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Sell some of your village chickens	150	1.00	2.00	1.0800	.27220
Why prompted to sell	150	1.00	6.00	2.9000	2.06521
Price of village chickens	150	1.00	4.00	1.9400	1.00489
Frequency of selling village chickens	150	2.00	4.00	3.2000	.77719
Number of village chickens sold last two years	150	1.00	4.00	1.3400	.78433
Market of village chickens	150	1.00	2.00	1.1133	.31806
Market performance of village chickens	150	1.00	4.00	1.9333	1.16818
Usage of money raised from selling village chickens	150	1.00	4.00	1.7667	.90053
Challenges faced in village chickens enterprise	150	1.00	5.00	2.8400	.70549
Challenges preventing growth of village chicken production	150	1.00	4.00	1.4667	.91715
Ways of overcoming challenges	150	1.00	6.00	3.0600	.93572
Other livestock kept	150	1.00	6.00	3.3400	1.87828
Estimate of income from other sources	150	1.00	4.00	2.5600	1.36829
Income from village chickens	150	1.00	3.00	1.1133	.37607
Changes observed in livelihood from inception of keeping village chickens	150	1.00	5.00	1.9533	1.26032