

# **VALUE CHAIN ANALYSIS OF INDIGENOUS POULTRY SUB-SECTOR IN LUSAKA AND SURROUNDING DISTRICTS - ZAMBIA**

**By**

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## EXECUTIVE SUMMARY

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The indigenous poultry subsector plays an important role in the livelihood of Zambian smallholder farmer households. Most households keep flocks of indigenous chicken with little inputs, but serve as the main source of protein in rural human diets; supplemental income through sales of eggs and birds; and essential goods and services through barter. Indigenous chickens fetch a premium price, as the meat is highly preferred to that of broiler chickens, especially among the affluent due to its low fat content. Unlike cattle which are predominantly in the hands of men, poultry production has a gender aspect as women and children prefer poultry production as it easily fits in with their other duties around the homestead.

Regardless of the enormous potential that the livestock subsector (poultry inclusive) has for contributing to national development, it has been mostly neglected as most policies on agriculture have been biased towards crop production. Furthermore, the little effort given to livestock is mostly directed at cattle while poultry and other small livestock get very little attention. Consequently, the rural poultry subsector is still highly underdeveloped with poor linkages between producers and consumers. Information on market players, market size and market constraints are often lacking as the few studies that have been done on the subsector are focused on the production side while the marketing aspect has been ignored. Consequently, growth is constrained by poor marketing system orchestrated by lack of information.

This study complements other available studies by providing information on the subsector that stretches beyond the bounds of production. It provides information on linkages between the rural poultry industry and the mainstream market to enable the players harness and maximize the benefits from the value chain. The goal is to contribute to poverty reduction among rural households through improved access to profitable markets for indigenous poultry as well as improved access among urban households for cheap indigenous poultry products. The general objective is to examine and map the value chains from production through distribution and final consumption whilst highlighting the major constraints faced by the players.

The study relies on primary data collected using field surveys from farmers/producers (in Chongwe and Mumbwa districts), assemblers/wholesalers, retailers, processors as well as final consumers in Lusaka district. Secondary data on value chain analysis provided inputs for understanding the context and rationality behind the status of the subsector. The key findings and recommendations are outlined below:

1. Although over 95 percent of smallholder households keep indigenous poultry, these are kept as part-time activity and there are few, if any, that are keeping indigenous poultry on commercial basis. Furthermore, productivity and production is very low leading to low and unplanned sale at the farmgate level. However, looking at the differences between the mean production (10 hens) and the maximum (50 hens), and considering that it is a low input activity, potential for growth exists.

2. The indigenous poultry value chain consists of producers, assemblers/wholesalers and retailers. The absence of processors along the chain means that chickens are sold live (in open markets) and consequently cannot be retailed through formal channels like supermarkets leading to exclusion of potential customers in the middle and high income categories who normally shop from supermarkets. The majority of the household that did not consume village chicken cited non-availability as the main reason.
3. With increases in the population as well as growing incomes due to the growing economy, demand for indigenous chicken has been growing especially among the high income groups who not only prefer it for its taste, but also for health reasons (due to its low fat content) hence indicating the need for investment in the subsector.
4. Although the value chain for indigenous chicken shows positive margins for all the players along the chain, there are various constraints which if addressed would improve the operation of the chain leading to increased incomes for the value chain members and at the same time ensuring cheap delivery of indigenous chicken in a more convenient form and in formal outlets to consumers. The key challenges faced by farmers include lack of knowledge leading to low productivity and production. The wholesalers face the challenge of low supply of indigenous chicken which is compounded by poor rural road networks making the cost of assembling very high. Retailers face the challenge of high prices and seasonality of supply for indigenous chicken.

Based on these findings, the following is recommended:

1. Capacity Development on Improved Production Process: farmers need to be trained on improved poultry production methods such as proper housing, provision of medications and supplementary feeding. They also need to be sensitized on the commercial aspect of indigenous poultry so that they can look at it as an income generating activity.
2. Value Addition in the marketing process: unlike its closest competitor, village chicken marketing is still at rudimentary level. Because they are sold live, they are never stocked in supermarkets and mostly found in isolated markets making them highly inaccessible. Value addition along the marketing chain can be done through addition of another link in the chain in the form of processing. This could involve slaughtering, dressing and packaging the chickens in such a way that they can be sold in formal retail outlets such as supermarkets. This is not only going to bring the product closer to consumers but also provide it in a more convenient form for those busy urban households hence increasing demand. Furthermore, this is likely to reduce the cost of storage, as currently the chickens are stored live and have to be fed leading to losses. This will also ensure a more steady supply as dressed processed chickens can be kept in cold storage hence avoiding seasonality of supply.
3. Group marketing: survey findings show that at the farm level, the best prices were obtained when farmers marketed their chickens through cooperatives (bulking centers). Group marketing not only gives the farmers bargaining power but also reduces the

search costs for the assemblers. These groups can also serve as avenues for sharing information on improved production methods. These producer groups can also play an active role in sharing and exchanging critical backward and forward linkage information in collaboration with the various value chain actors. Producer/marketing groups also provide an opportunity for gender mainstreaming in the value chain as women and youth groups could be targeted. Some of the key activities could be:

- a. Incorporate indigenous poultry enterprises in women farmers' groups activities
  - b. Actively link women's groups with knowledge service providers (NGOs, universities, extension department, embedded services of large private sector enterprises such as supermarkets)
  - c. Link them with micro credit institutions
4. Access to finances: although indigenous poultry is low cost enterprise, productivity in the sector can be highly improved through modernizing the production system (i.e. provision of modern veterinary drugs, proper housing and supplementary feeding. One way in which this can be addressed is to increase access to finance both at the production level (leading to increased production) and the marketing level (leading to improved services). Microcredit institutions could boost some of the traders who could then be able to procure larger quantities and process (i.e. slaughter, dress and package) the chickens into a form that can be supplied through modern supermarkets
5. Infrastructure development: this involves development of feeder roads for linking the farm with main access road to market or growth centers. Lack of these roads increases cost for head load carrying and at the same time increases losses in transit. Most markets do not have specialized places for keeping live chickens until they are sold. They are normally kept in crowded cages under the sun with little food leading to stress, weight loss and consequently deaths. Provision of a live poultry sections within market structures where chickens could be received, tagged treated for disease while awaiting purchase would reduce losses due to deaths in storage.
6. Policy issues: over the years, agricultural policies in Zambia have been biased towards crops production (particularly maize) and large livestock such as cattle leading to a total neglect of small livestock like chickens. Consequently, extension and resource allocation has also been biased towards maize and large livestock. We would recommend inclusion of small livestock like poultry on the agenda. Activities such as allocation of resources towards research in indigenous poultry breeds development, improved production systems as well as marketing systems. This will not only benefit over 96 percent of the rural households, but also the majority of urban consumers who are currently unable to access the indigenous poultry products.
7. Creating linkages among value chain players: one way in which search costs for assemblers could be reduced is through producers having market days on which they bring chickens in one place where assemblers could purchase them. This would not only benefit assemblers through reduced search costs but also producers who are likely to get better prices as they would have more choice of whom to sale to.

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## ACRONYMS

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AFDB:	African Development Bank
CSO:	Central Statistical Office
COMESA:	Common Market for Eastern and Southern Africa
DMMU:	Disaster Management and Mitigation Unit
FISP:	Farmer Input Support Programme
FNDP:	Fifth National Development Plan
SNDP:	Sixth National Development Plan
VCA:	Value Chain Analysis

## 1.0 INTRODUCTION

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The livestock sector is important to Zambia as it contributes about 35 percent of the national agricultural output. The sector has potential for growth especially among Smallholders who produce 83 percent of the 2.8 million cattle, 97 percent of the 1 million goats, 64 percent of the 80 000 sheep, and 90 percent of the 480 000 pigs. Poultry production is estimated at around 12 million broiler birds, 3 million commercial layers and 11 million free range chickens (Songolo, 2001). Most households keep flocks of free- range local chicken with little inputs, but serve as the main source of protein in rural diets (Haazele et al., 2002); income through sales of eggs and birds; and essential goods and services through barter. For instance, the requirement for schoolbooks or fees at the beginning of the school year triggers such sales. Although indigenous chickens tend to have lower feed efficiency (King'ori *et al.*, 2003; Tadella et al., 2003), their economic strength lies in the low cost of production when compared to the value of the outputs.

Whereas cattle are rarely slaughtered for home consumption (implying that an increase in cattle numbers translates only minimally into an increase in the availability of proteins or cash), chickens are readily slaughtered on many occasions depending on availability. Evidence from vulnerability assessments (DMMU, 2008), show that households with chickens are better able to survive droughts and recover the following year than households without chickens. Furthermore, unlike cattle which are predominantly in the hands of men, poultry production has a gender aspect as women and children prefer poultry production as it easily fits in with their other duties around the homestead. Unlike the relatively stagnant cattle numbers, estimates show that there has been an increase in the production of sheep, goats and poultry. Production of commercial poultry increased almost three-fold while that of traditional poultry had increased by 50 percent between 1995 and 2000 (Hantuba, 2002). Free range chickens fetch a premium price in Zambia. The meat is highly preferred to that of broiler chickens, especially among the affluent due to its low fat content.

Regardless of the enormous potential that the livestock subsector (poultry inclusive) has for contributing to national development, in the recent past, the sector has been mostly neglected as most policies on agriculture have been biased towards crop production (Yambayamba and Musukwa, 2007). Furthermore, the little effort given to livestock is mostly directed at cattle while poultry and other small livestock get very little attention. Consequently, the rural poultry subsector is still highly underdeveloped with poor linkages between producers and consumers. For instance, information on the market players, the market size and market constraints are often lacking. Furthermore, the few studies done on the subsector (Yambayamba and Musukwa, 2007; Haantuba, 2002) are focused on the production side while the marketing aspect has been neglected (Haazele et al., 2002). Consequently, growth of the subsector is constrained by poor marketing system orchestrated by lack of information. Therefore, this study will complement the available studies by providing information on the subsector that stretches beyond the bounds of production. It shall provide information on linkages between the rural

poultry industry and the mainstream market to enable the players harness and maximize the benefits from the value chain. This fits in with national priorities as highlighted in the current National Agricultural Policy which has increased market access, as one of the sector strategies. The remainder of this report is organized as follows: the remainder of section provides the study objectives, brief framework on value chain analysis as well as the data sources and study areas. Section two, which provides the findings is divided into the product flow and process flow subsections, which are followed by the value chain, information flow and environment analysis. Finally conclusions are drawn based on the findings followed by recommendations.

### **1.1 Objectives of the Study**

This sub-section provides the study objectives as well as framework and methodology. The methodology provides details of the study areas as well as sample selection. The framework provides the key points of intervention along the chain while the methodology provides the study areas as well as sampling methodology.

Designing and implementation of effective livestock sector policies and strategies has repeatedly proven to be a daunting task, both because of limited information and also capacity and resources for livestock policy makers (Pica-Ciamarra, 2008). For instance, in the Zambian traditional livestock system lack of knowledge about production and marketing behaviors of smallholder animal producers; functioning of traditional markets and the role of traditional livestock markets in meeting urban consumer demand has often led to misguided policies and developmental interventions with little potential to effectively serve the needs of smallholder producers (FSRP, 2011). Therefore, the goal of this study is to contribute to poverty reduction among rural households through improved access to profitable markets for local poultry as well as improved access among urban households for cheap indigenous poultry products. The general objective is to examine and map the local poultry value chains from production through distribution and final consumption. Specifically, the study aimed at:

1. Develop a subsector value chain map
2. Identify the major players in the value chain.
3. Identify the key constraints and opportunities faced by the value chain members
4. To describe and analyze the values added by various stakeholders
5. Understand and quantify the associated costs
6. Carry out an assessment of current and future markets

### **1.2 Framework and Methodology**

The study borrows from methodologies used by the Asian Partnership for the Development of Human Resources in Rural Asia (AsiaDHRRA) in 2008 under the Linking Small Farmers to Markets Program. Under this program, Value Chain Analysis (VCA) in the free range chicken clusters in selected areas of Cambodia were conducted with the aim of contributing to the process of linking rural industries and enterprises into the mainstream markets to harness and

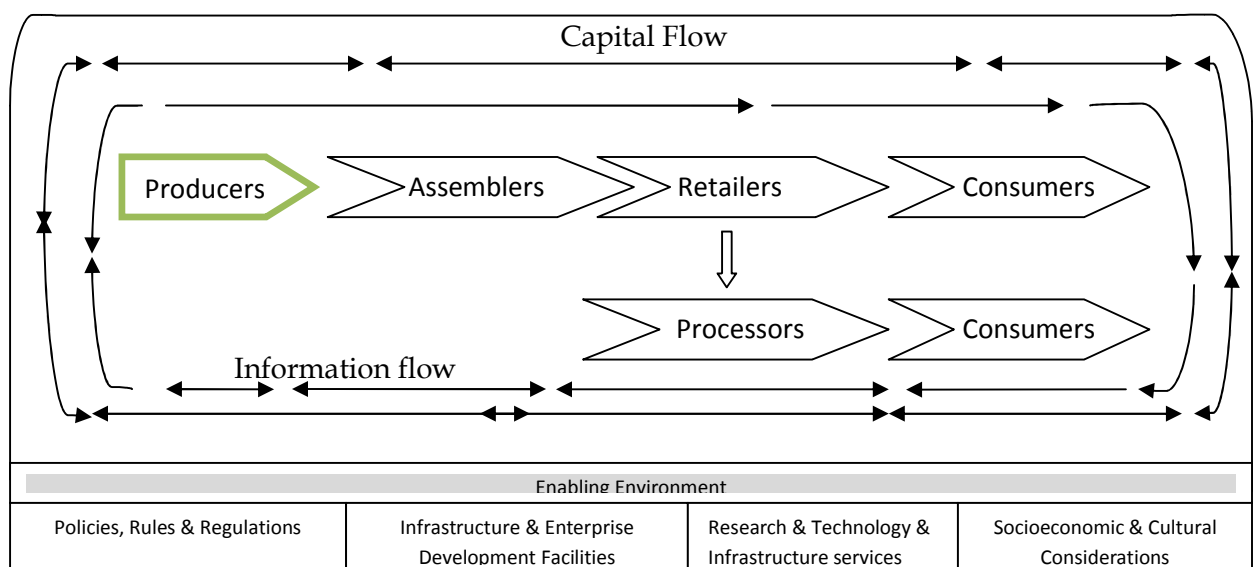
maximize the benefits of the value chain as well as aid in developing strategic linkages between chicken producers, market players and consumers.

As defined by Kaplinsky (2000), the value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production (i.e. involving combinations of physical transformation and the input of several producer services), delivery to final consumers and final disposal after use. The essence of VCA is to improve strategic learning in enterprise development. VCA treats the enterprise not as a singular (autonomous) entity, but as part of an integrated chain of economic functions and linkages across geographical boundaries. The value chain analysis seeks to understand the various factors that drive the incentives, growth, and competitiveness within a particular industry and identify opportunities and constraints to increasing benefits for stakeholders operating throughout the industry. This feature of VCA lends to its completeness as a strategic tool in exploring different alternative strategies for poverty reduction (AsiaDHRRA, 2008).

### 1.2.1 Description of VCA model components

The purpose of analyzing the value chains of indigenous chicken is to identify key points of intervention along the chain and to recommend specific policy directions to enhance the competitiveness of the indigenous chicken subsector. The analysis is premised on the assumption that different agents across the value chain behave based on key market signals and moderating variables provided by the enabling policy, economic and technical environment. Producers, wholesalers, processors and consumers interact based on specific capital requirements and information they obtain from various market sources. Furthermore, dynamics of market interactions are balanced by the conditions set forth by different market policies, technological advancements, and socioeconomic, cultural and environmental concerns (AsiaDHRRA, 2008). The VCA models developed under these assumptions is shown in figure1.

Figure 1: Typical indigenous poultry value chain for Lusaka and surrounding districts



The above VCA model integrates analysis of the commodity supply chain as well as the associated enabling environment. To achieve this, the model comprises of the following analytical entry points: (a) product and process flow, (b) information and money flow, and (c) the enabling environment. These are further classified as primary and support activities.

**Primary activities:** These are functions which are directly involved in the production, processing and distribution of the product. In this case these include production, processing and distribution up to the final consumption. Market information and finance are also important function within the value chain as they play a pivotal role in the production and movement of indigenous chicken from producers to consumers as they send signals of when, where, how, and how much to produce. The seamless flow of market information and efficient financial delivery are important elements in enhancing the efficiency of supply chain activities.

**Support activities:** While these are not directly involved in manufacture and movement of the product, these have critical impact on the efficiency of production and distribution (AsiaDHRRA, 2008). These support activities serve as the value chain's enabling environment and include: (1) Policies, Rules and Regulations, (2) Infrastructure and Enterprise Development Facilities, (3) Research and Technology and (4) Socioeconomic and Cultural Considerations.

*a. Policies, Rules and Regulations*

Of late, there has been renewed commitment towards promotion of agricultural diversification. Other than concentrating on maize production, livestock has been receiving more attention as can be seen in the Fifth and Sixth National Development Plans which allocates resources towards livestock sector development. However, these are still very much biased towards cattle. Furthermore, the government reiterates its commitment towards promotion of value addition for agricultural products. However, this requires creation of enabling laws and regulations that tends to create a business environment conducive for growth in value chains.

*b. Infrastructure and Enterprise Development Facilities*

Transportation infrastructure plays an important role in facilitating timely delivery of goods and services which is important for preserving product quality and value. An efficient transport system translates to savings in delivery costs and reduces losses through quality deterioration and wastage. For instance, for the indigenous chicken value chain, production is done by individual farmers scattered all-over the country side while a good proportion of consumption occurs in towns. Consequently a good linkage between the production centers and consumption centers in form of improved infrastructure is not only likely to reduce losses in transit and costs of assembling but also lead into reduction of prices paid by consumers.

*c. Research and Technology, and other Institutional Services*

Research and Development institutions and other institutions play an indirect but important role in the performance of the value chains. Research is important in that it creates innovative methods of production thus enabling producers produce sufficient quantities at low costs. Particularly, for indigenous poultry, productivity is still very low compared to broiler chicken

leading to insufficient supply. Other services such as finances enable investments in the sector, as well as entry of more players which increases competition as well as raises efficiency of operation within the subsector.

*d. Socioeconomic and Cultural Considerations*

Of importance under this are the changes in the consumption patterns being observed in the country. Within increases in income, there is an increase in the preference for natural/organic foods especially among the medium and high income groups. As the country grows economically, the increase in the proportion of individuals in the medium to high income categories provides an increase in the potential market for indigenous chicken. Furthermore, for these types of consumers (lifestyle consumers), demand for indigenous chicken is relatively income inelastic as they tend not to easily substitute it with broiler chicken.

### **1.3 Data and Study Areas**

Due to limitations on current studies on marketing of indigenous poultry in Zambia, the study mainly relied on primary data collected using field surveys from farmers/producers, assemblers/wholesalers, retailers, processors as well as final consumers. Secondary data on value chain analysis provided inputs for understanding the context and rationality behind the status of the subsector. The study focused on Lusaka district (as the major consuming district) and Mumbwa and Chongwe (as the some of the major sources of indigenous poultry consumed in Lusaka district).

#### **1.3.1 Sample Selection**

Considering the many categories of study participants to be included in the analysis, multi-stage sampling was used to select the different sub-samples. In selecting the producers (farmers), multi-stage sampling techniques were used. The first stage involved selecting the districts within Lusaka province to include in the study. Chongwe and Mumbwa districts were purposively selected from a list of districts surrounding Lusaka district that include Chibombo, Kafue, Mumbwa and Chongwe. The main reason for their inclusion is that they represent the largest proportion of rural households producing local poultry that is consumed in Lusaka among the surrounding districts.

The second stage involved selecting the villages within these districts and finally the final units (the farm households). Using area maps, 10 villages were randomly selected from each district. Selecting the individual households involved starting from a central place such as a market place. Then each *n*th household was interviewed in each direction until the quota for each village was reached (15 farm households). In total, the sample comprised of 315 households of which 161 were drawn Chongwe and 154 from Mumbwa.

For the consumer households (Lusaka district), the aim was to analyze the data in clusters based on income. For this purpose, the district was divided into low income, middle income and high

income residential areas so as to be able to assess the effects of income on consumption of indigenous poultry. A list of suburbs in each cluster was used as a sampling frame from which a list of suburbs was selected. Starting from a central starting point, every nth household was interviewed (depending on size of the suburb) until the quota was reached. The total consumer sample size was 297 households (i.e. 97 households from high income households; 74 households from middle income households and 126 households from low income households).

For each suburb selected, the closest market was selected and a minimum of three indigenous poultry traders (retailers) interviewed. This gave a total sample of 30 indigenous poultry retailers. For the processors, the restaurants were classified into two categories; those around the town center (central business district) and those in the periphery markets. A total sample of 30 restaurants was included in the sample. The wholesalers/assemblers were drawn from Soweto and Chibolya markets (these are the largest wholesale markets for indigenous poultry).

## 2.0 FINDINGS

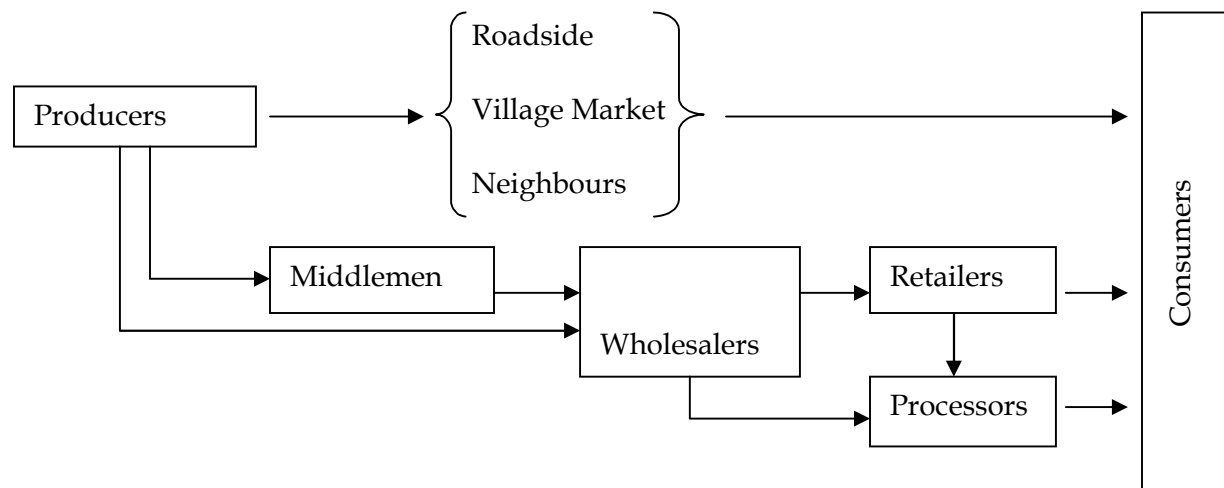
This section provides the findings of the study which are outlined as follows: the first part describes the product flow (the way indigenous chicken flows from the producers to the final consumers). The second part describes the process flow which is essentially the different kinds of activities that the different value chain players undertake along the chain. This is followed by the value chain analysis which provides the margins accruing to different players along the value chain. Finally an analysis of information flow which looks at knowledge levels, pricing and marketing information as well as an analysis of money and capital flow is done which ends with an analysis of the environment, i.e. rules, regulations, policies and technologies.

Based on the study findings as well as literature reviews on previous studies on indigenous poultry marketing, the following subsector map was developed illustrating new findings of flows through different channels from production to the markets. The map is divided between the different functions that are carried out (production, assembling and retailing) in getting indigenous poultry from production end to the end-markets. The participants are divided into channels based on their forward and backward linkages and their use of technologies that differentiate them. This is done by analyzing the product/process flows, information flows and money flows with the aim of suggesting interventions based on the identified supply chain bottlenecks. Furthermore, the enabling environment and end market preferences are analyzed with the aim of suggesting interventions based on the identified constraints.

### 2.1 Product Flow

Indigenous chicken is the predominant poultry species kept among smallholder farmers. Almost all the households (99.0 percent) interviewed in both districts owned chickens. Depending on where the consumption is being done, indigenous chicken can get to the final consumers through various channels as shown in figure 2. This subsection describes the different channels through which indigenous chicken moves from producers to consumers.

Figure 2: Indigenous chicken supply chain





*Producers selling to consumer directly:* in this channel, the farmer/producer sales directly to the consumer who in most cases happened to be a neighbor within the same village or nearby village. This was usually done for cash or barter where they exchange with other items such as maize or clothes. For this sample, this constituted about 13.3 percent of the sales.

*Middlemen:* according to Haazele et al., 2002, these were mostly locally based and took up indigenous chicken trading during the slack time of the agricultural season. These reportedly bought chickens from neighboring farmers for sale at nearby markets within the districts or sold to assemblers for a markup. This channel accounted for 32.3 percent of sales in this sample. After assembling sufficient chickens, the assemblers/wholesalers transported the chickens to Lusaka and sale to retailers or processors. It is through these two channels that the chicken gets to the consumers either as live chickens or processed chickens respectively.

*Local markets, schools or hospitals:* other households reported selling at the nearby markets or other centers with high populations of higher income households such as clinics and schools where consumers are found. This channel accounted for 20.1 percent of the reported sales

*Roadside:* the other important channel was the road side. This was mostly used by those households that are located near the main highways. Whenever there is need, a chicken could be displayed by the roadside and the targeted buyers are the motorists. This constituted 30.3 percent of the sales in the sample.

## **2.2 Process Flow**

The process flow subsection describes the different rows played by the different players along the value chain together with the associated costs whilst highlighting both the challenges faced and suggested solutions. This starts with the production process followed by the wholesaling/assembling, retailing, processing and consumption.

### **2.2.1 Production**

#### *Poultry Types and Breeding practices*

The most common breeds of chicken in Zambia include short-legged chicken, guinea fowl spotted chicken, naked-neck chicken, feathered shanks chicken, frizzled chicken and dwarf chicken. Depending on the breed, indigenous poultry vary in traits such as good laying ability and incubating efficiency in short-legged and naked-neck chicken types, and better disease resistance in naked-neck chickens, or the small body size of dwarf chicken and the unsightly appearance of the naked-neck chicken to consumers, respectively (Haazele et al., 2002). Among the interviewed farmers, 43.9 percent reported making attempts at improving their flock type through deliberate breeding programmes. Chongwe had more farmers (49.3 percent) that reported making deliberate attempts at improving their flock type compared to Mumbwa (38.2 percent). This was mainly through the practice of borrowing a better looking cock or culling bad looking cocks to restrict breeding to the best cocks. The data also shows that ownership of chicken cuts across all gender; women, men and children owned chicken. However, women headed households had fewer chickens on average (24) compared to male counterparts (30).

As opposed to broiler chicken which reaches slaughter weight in only six weeks under intensive management, indigenous chickens take between 18 to 28 weeks to mature depending on type and food availability, which in turn depends on season. Chicks hatched during the harvest period when there is plenty of food grow quicker and have higher survival rates than those hatched during lean times. Similarly, egg laying and hatchability also depends on feed availability. When adequate feed is available, egg production ranges between 8 to 25 eggs per clutch (Haazele et al., 2002). Individual hens only produce one or two clutches per year, with dwarf chickens being the most prolific (laying 15 to 25 eggs per clutch) and achieving up to 100 percent hatchability. In lean times, egg production and hatchability are reduced. Flock size (cocks, hens and chicks combined) averaged 29.5 birds per household with the maximum being 185 birds for the entire sample. Table 1 shows ownership of cocks, hens and chicks by district.

Table 1: Chicken ownership by district

Chicken type	Statistic	District	
		Chongwe	Mumbwa
Cocks	Mean	2.8	2.4
	Maximum	17	10
	Minimum	0	0
Hens	Mean	10.9	9.7
	Maximum	50	40
	Minimum	0	0
Chicks	Mean	17.5	15
	Maximum	150	62
	Minimum	0	0

Mortality was also reportedly high especially in chicks (an average of 9 chicks per month) and lowest in cocks (an average of 1 cock per month). Disaggregated by district, Mumbwa had higher mortality rates (table 2) for cocks, hens and chicks.

Table 2: How many chickens died in the last month by district and chicken type

District	Statistic	Chicken type		
		Cocks	Hens	Chicks
Mumbwa	Mean	1.04	2.52	10.16
	Maximum	6	21	50
	Minimum	0	0	0
Chongwe	Mean	0.44	0.94	7.93
	Maximum	8	7	39
	Minimum	0	0	0
All Districts	Mean	0.68	1.6	9.0
	Maximum	8	21	50
	Minimum	0	0	0

Among the major causes of mortality reported include disease (reported by 79.7 percent), predation (48.9 percent) and cold (12.4 percent). To combat disease, 81.3 percent of the farmers (of whom 83.3 percent where from Chongwe and 79.2 percent from Mumbwa) reported using

medication to protect their chickens. Among the common medication used include traditional herbs (60.6 percent) and human medicines such as chloroquine (10.8 percent). Only 33.3 percent used modern veterinary medicines designed for treating chicken diseases. Although most households provided overnight shelter (75.6 percent), this was mostly in form of small cribs in which the chickens were overcrowded leading to rapid spread of disease. Furthermore, the majority (80.6 percent) provided the chickens with drinking water and 67.6 percent reported providing chickens with supplementary feeding in terms of leftover meals. Although feed purchases constitute over 65 percent of the cost of production for broiler chicken (Zambia Poultry Association, 2020), only 10.2 percent of the households keeping indigenous poultry reported providing the chickens with processed purchased feed. Of those that provided feed, the majority (94.6 percent) provided grain and kitchen waste (38.1 percent).

The above information shows that other than unpaid family labor, the production process does not include marketed inputs hence difficulties in computing costs of production. However, in terms of labor requirement, the data showed that the responsibility of looking after the chickens was shared almost equally among all household members (table 3).

Table 3: Persons responsible for taking care of chickens in the households

Person Responsible	Frequency	Percent
Husband	202	64.1
Wife	209	66.3
Children	164	52.1

Almost all (96.2 percent) of the households interviewed reported having sold a chicken. From the data (table 4), the main reasons for keeping chickens by most households included selling (14.6 percent); home consumption (12.7 percent); selling and home consumption (70.1percent). For those that reported selling chickens the main reasons for selling included the need to pay for children's school fees (62.0percent) and the need to pay medical bills (13.9 percent). However, only 23.6 percent reported keeping and selling chickens solely as a business.

Table 4: Main reason for keeping chickens

Reason	N	Percent
Selling	45	14.6
Home consumption	39	12.7
Selling and consumption	216	70.1

Table 5 shows chicken sales per household. Although most of the households reported selling chickens, sales were quite low. Using recall, the respondents were asked to provide information on chicken sales. Only 17 households reported selling chickens on a weekly basis. Of these 15 (88.2 percent) sold less than 5 chickens per week. A bigger proportion of the respondents reported selling chickens monthly. Of these 149 (84.2 percent) reported selling less than 5 chickens in a month. The remainder reported selling chickens yearly. However, even among these, the majority (40.7 percent) sold less than 5 chickens per year. Similarly, consumption of

chickens was quite low among these households. Only 17.1 percent reported consuming a chicken once a week, whereas the majority (86.0 percent) consumed a chicken monthly.

Table 5: Frequency of selling chickens (weekly, monthly and yearly)

Time frame	No of chickens sold	Frequency	Percentage
Weekly	0 to 10	15	88.2
	11 to 15	-	-
	More than 16	2	11.8
Monthly	0 to 10	149	84.2
	11 to 15	23	13.0
	More than 16	5	1.7
Yearly	0 to 10	61	40.7
	11 to 15	55	36.7
	More than 16	34	22.7

The market channel for indigenous poultry is a complex one, involving a number of market intermediaries who take possession of poultry before passing on to the retailers or consumers. In this study, there were four kinds of pathways through which indigenous poultry was traded at the farm gate level. The prices obtained for the chickens by the farm household were also dependent on the channel used. Table 6 (see annexes) shows the average price for cocks, hens and chicks categorized according to marketing channels. Those that sold through producer groups received the highest prices for both cocks and hens (K32,273 and K24,091 respectively) while those that sold to neighbors got the lowest prices (K28,816 and K20,615 respectively).

Table 6: Marketing channel used by price received

Outlet/Channel	On average, how much sale per chicken (kwacha)			
	Cocks	Hens	Chicks	Average (hens & cocks)
Middlemen/ Assemblers	30,705	23,105	9,349	27,226
Neighboring markets	30,729	22,847	8,897	26,788
Neighbors	28,816	20,615	8,000	24,750
Producer groups	32,273	24,091	11,000	28,181
Roadside	30,618	23,191	10,138	26,904

#### *Constraints and Suggested Solutions*

Overall, the main constraints to increased indigenous poultry production included disease (79.0 percent); high mortality rate (45.7 percent); high predation rate (45.4 percent) and lack of supplementary feeding (12.7 percent) among others (table 7). According to Haazele et al. (2002), Newcastle disease is the common disease that sometimes wipes all the flocks of chickens.

Table 7: Major constraints to indigenous poultry production

Constraint	Frequency	Percent
Diseases	249	79.0
High mortality rate	144	45.7
High predation rate	143	45.4
Lack of supplementary feeding	40	12.7
Poor breeding stock	8	2.5

## 2.2.2 Wholesaling/Assembling

Wholesalers are a very important link between producers and retailers in the indigenous poultry value chain. Over 90 percent of the indigenous poultry retailed among the interviewed retailers gets to Lusaka through wholesalers. For this study, a total of 30 wholesalers/assemblers were interviewed from Soweto (16) and Chibolya (14) markets. Disaggregated by gender, 16 (53.3 percent) were male and 14 (46.7 percent) female. In terms of age, the majority (73 percent) fall into the 25 to 40 years age group. In terms of education, the majority (63.3 percent) had attained secondary education followed by those who had only attained primary school. Only 3.3 percent had attained tertiary education.

The wholesaling/assembling function is fulfilled by either village-based wholesalers or Lusaka based wholesalers. For this study, the majority (63.0 percent) of the wholesalers reported purchasing their chickens directly from farmers while 34.8 percent purchased from village based middlemen. During the assembly process, the main tools of trade are a bicycle, a crib and a housing pen. The activities include moving from one household to the other in search of those willing to sell their chicken. Price determination in the poultry business is subjective; no weighing scales are used. Once they have assembled enough chickens, they put them in cribs and transport them to the roadside in wait for trucks going to major towns such as Lusaka. Table 8 is a summary of various costs incurred by assemblers during for a given trip.

Table 8: Summary of costs incurred by assemblers

Activity	Costs/days/Numbers		
	Mean	Maximum	Minimum
Transporting chickens per cage of 20 (kwacha)	26,433	65,000	10,000
Transportation to Lusaka per chicken (kwacha)	1,322	3,250	500
Council levy per chicken (kwacha)	1,566	3,000	1,000
Amount spent on accommodation/food per day	34,200	120,000	0
Number of days required to assemble per trip	6.14	20	2
Number of chickens assembled per trip	79.33	200	30
Losses incurred through deaths per trip/marketing	3.96	10	0
Market fees per day (kwacha)	1,586	3,000	1,000
Wholesale price per chicken (kwacha)	33,133	38,000	27,000
Retail price per chicken (kwacha)	39,633	45,000	30,000
Number of chickens sold per day	18.8	40	5
Number of chickens sold per week	76.33	180	30
Number of days taken to sale all the chickens	5.03	9	1
Amount of capital required to start the business	511,379	1,200,000	70,000

Within the sample, the assemblers sourced chickens from various places. However, the majority (23.3 percent) sourced their chickens from Chongwe, followed by Mumbwa (16.3 percent) and Choma (16.3 percent). The average cost of a chicken at the farm level was K22,933 while those that bought from local assemblers reported paying as much as K27,226 on average. For the sampled wholesalers, the average number of chickens assembled per trip was 79 chickens. For those who did their own assembling from producers, it took an average of 6 days to assemble

sufficient chickens before transporting to the wholesale markets. During this period, the assembler incurs accommodation and feeding costs. The average spent within the sample was K34,200 per day. This implies that the average cost for accommodation and food per chicken was (6days by K34,200 divided by 79 chickens) K2,579 for the sampled wholesalers.

Depending on the location where they are camping, they sometimes incurred local transportation costs to the road side, where they have to load the chickens into trucks. This cost an average of K6,120 per trip. For a load of 79 chickens, this translates to (K77) per chicken which is almost negligible. Based on the above calculations, the cost of assembling and transporting the chickens to the road side (for those who bought from farmers K22,933+K2,579+K77) was K25,589 per chicken. Those that bought from local assemblers only paid transportation costs to the road side in addition to the K27,226 for a chicken on average.

The other major cost is transportation cost incurred in moving the chickens from the districts (Mumbwa and Chongwe) to Lusaka. The majority (34.6 percent) of these wholesalers reported using public buses as means of transporting the chickens to Lusaka. The chickens are either loaded on the carrier together with other luggage or on a trailer. Others used light trucks (34.6 percent) and big trucks (19.2 percent). The common element with all these modes of transportation was that they were not specialized for transporting live chickens and could be contributing to the large number of losses in transit. The average transportation cost was K1,322 per chicken to Lusaka. During the transportation process, the assemblers also have to pay local council levies (these are levied on all agricultural produce coming out of the districts). The average levy paid per chicken was K1,566. When they get to the Lusaka markets, these traders are required to pay market fees for using the market space. These are either paid to the council or the market management and average about K300. Furthermore, these assemblers incurred losses in transit as well as during marketing until the whole lot is sold. For the sample (table 9) the average number of chickens lost per trip was 3.96 chickens, which translates to K1,661 per chicken per trip (i.e. 3.96 chickens by K33,133 per chicken divided by 79 chickens per trip).

Table 9: Marketing costs from farm gate to the Wholesale markets

Activity	Purchasing from farmers		Purchasing from local assemblers	
	Average cost (K)	Share (total cost)	Average cost (K)	Share (total cost)
Chicken cost	22,933	75.3%	27,226	84.68%
Assembly costs	2,579	8.47%	0	0%
Local transport	77	0.25%	77	0.24%
Counsel levies	1,566	5.14%	1,566	4.87%
Transport to Lusaka	1,322	4.34%	1,322	4.11%
Market fees	300	0.99%	300	0.93%
Loss in transit/storage	1,661	5.45	1,661	5.17%
Total Cost	30,448		32,152	
Wholesale price	33,133		33,133	
Selling price (retail)	39,633		39,633	

As regards sales volumes, it was reported that wholesalers are able to sale an average of 19 chickens per day. The maximum was 40 and the minimum was 5 chickens. It took an average of five days to sale of the whole consignment while the minimum was a day and the maximum was 9 days. This has implications as the markets do not have specialized storage places. Other than losing weight, the mixing chickens from different places without veterinary attention results into spread of diseases and deaths. The mean number of chickens sold within a week was 76 while the maximum was 180 and the minimum was 30.

There are no formal channels of communicating market information to the assemblers. The majority (66.7 percent) reported accessing information on stocking and pricing through fellow traders, while another 20.0 percent relied on personal judgment. Similarly, although the average capital requirement for business start-up was relatively low (the mean was K511,379, the maximum was K1,200,000 and the minimum K70,000), only few (11.9 percent) assemblers reported having access to external capital for business start-up or expansion. The majority (61.9 percent) had used own resources or remittances from relatives (26.2 percent).

#### *Constraints and Suggested Solutions*

Among the constraints faced by assemblers was low supply of chickens by farmers (25.4 percent) and poor road infrastructure (which is exacerbated by the long distances between individual farmers) in the rural areas. This makes the whole process of assembling very costly as they have to spend more time to assemble sufficient quantities as well as travel long distances. High mortality was also a major challenge. The low supply is directly linked to low production as few farmers produce chickens for commercial purposes. Productivity is also low leading to low consumption locally, while sales are rarely planned for but always a response to pressing needs. For potential solutions the majority (30.4 percent) suggested that farmers should increase on the quantities produced. This was followed by those who felt that improvement of rural road networks would make it easy for them to conduct business (19.6 percent) and finally those who wanted access to finances (10.9 percent).

### **2.2.3 Retailers**

Retailers are another important section of the indigenous chicken value chain. It is through them that the majority of the chickens get to the final consumers, the households. These are usually found in the markets which are scattered around the suburbs. It is important to note that retailing also occurs at the wholesale markets (i.e. Soweto and Chibolya)<sup>4</sup>. For this study, a total of 41 retailers were interviewed from the following markets Matero, Chelston, Garden, Chilulu, Chilenge, Chainda and Olympia among others. Disaggregated by gender, there were 21 (51.2 percent) males and 20 (48.8 percent) females emphasizing the gender aspect within the retail segment of the indigenous chicken value chain. In terms of age, the majority (46.3 percent) fall into the 26 to 35 years age group; followed by those in the 36 to 45 years age category (26.8 percent) and the those below 25 years of age (19.5 percent). In terms of education, the majority (43.9 percent) had attained senior secondary school (between 10 and 12 years of schooling)

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<sup>4</sup> When one buys one chicken, they buy at retail price which is higher than the wholesale price

followed by those who had attained junior secondary school (between 8 to 9 years of schooling) 24.4 percent and upper primary (between 5 and 7 years) 17.1 percent.

On average, these retailers reported having been in the chicken business for about 6.27 years; the minimum being 1 year and the maximum being 50 years. Among the reasons advanced for engaging in this business include having friends/relatives/connections within the business (36.6 percent); profitability and lack of better alternatives (22.5 percent each); and low capital requirement (12.25 percent). Only 24.4 percent of these retailers had any other source of livelihood other than the chicken trade. Furthermore, the majority (47.4 percent) reported that more than half of their total monthly income came from the poultry business; 31.6 percent said about half of monthly income is derived from the poultry business and only 18.4 percent said less than half of their monthly income was derived from the poultry trade.

Table 10 shows the major source of chickens for the interviewed retailers. The majority (28.0 percent) sourced their chickens from Chibolya market followed by Soweto market (28.0 percent) and traders that brought the chickens to local markets (12.9 percent). Of the chickens retailed, only 8.6 percent (5.4 percent from Chongwe and 3.2 percent from Mumbwa) were procured directly from farmers (producers). However, the majority (68.9 percent) were procured from assemblers in Soweto and Chibolya.

Table 10: Sources of chickens traded

Source	Frequency	Percent
Soweto	26	28.0
Chibolya	38	40.9
Chongwe	5	5.4
Mumbwa	3	3.2
Traders bring to this market	12	12.9
Others	9	8.5

Only few of the retailers (12.5 percent) had established relationships with the wholesalers from whom they consistently sourced their chickens. The majority (87.5 percent) bought from any wholesaler who had chickens at any given time. Furthermore, the majority (53.7 percent) of the retailers reported that the price at which the chickens are bought is determined by the sellers (assemblers) while the remaining (46.3 percent) said they negotiated the prices. As regards sales, the majority (90.0 percent) said they sell their chickens to households; followed by those running restaurants (10.0 percent). A snapshot check showed that on average, the retailers had 11.3 chickens in stock. The average sold by survey time was 4.86 while it was reported that average daily sales are 7.43 and ranges between 2 and 27 per day. Weekly sales average 35 and ranged between 5 and 135 birds for a given retailer (see table 22 in appendix 1).

The costs involved in procuring chickens from the wholesalers to the retail markets include the cost of purchasing the chickens, transportation, market fees, council levy, storage costs as well as losses in transit and during storage. Table 11 shows the average, minimum and maximum prices of chickens (cocks and hens aggregated) as well as disaggregated by cocks and hens.



Depending on the source, the average cost (aggregated) was K29,414 while the maximum was K37,000 and the minimum was K17,500.

Table 11: Wholesale prices of chicken as reported by retailers

Type of chicken	Average (kwacha)	Minimum (kwacha)	Maximum kwacha)
Average price (cocks & hens)	29,414	17,500	37,500
Cocks	31,756	20,000	40,000
Hens	27,073	15,000	40,000

Depending on the source of the chickens, the retailers faced different costs of transportation. In the case where they sourced the chickens from the farmers themselves, the costs were similar to those faced by the assemblers/wholesalers. In the case where they sourced the chicken from the major wholesale points in Lusaka, the majority (43.6 percent) reported transporting the chickens using minibuses followed by pickup trucks (23.1 percent) and hired taxi as well as wheelbarrows (10.3 percent) as shown in table 12. Those that use minibuses carry the chickens within the buses loaded together with people (especially early in the morning).

Table 12: Types of transportation used in transporting chickens

Type of transport used	Frequency	Percent
Minibus	17	43.6
Pickup truck	9	23.1
Hired taxi	4	10.3
Wheelbarrow	4	10.3
Other (specify)	4	10.3
Bicycle	1	2.6

On average, the retailers bought 39 chickens at a given time. The average amount paid to transport the chickens from the source (wholesaler) was K14,602 while the minimum was K2,000 and the maximum was K70,000 per batch (table 13). This implies that it cost K374 ( $K14,602/39.3$ ) to transport a chicken from the wholesale to the retail market. Most of these retailers (65.8 percent) also reported paying market fees for using the market space. These are either paid to the council or the market management. The average was K1,000 per day while the minimum was K500 and the maximum was K1,500 per day.

Table 13: Summary of costs incurred at retail level

Activity	Mean	Maximum	Minimum
Number of chickens bought per trip	39.3	100	10
Number of chickens sold per day (hens & cocks)	7.43	27.5	2.0
Days taken to sale all the chickens	4.12	14	1.0
Cost of transportation per batch	K14,602	K70,000	K2,000
Deaths in storage	1.41	4	0

Considering that it takes a retailer 4 days to sale a batch of chickens (averaging 39), and for each day the retailer pays K1,000 this implies that the levy paid per chicken is K104 per chicken. Furthermore, these retailers incur losses through deaths or thefts of chickens. The average loss

was 1.41 chickens per batch which translates into K41,179 per batch (K29,414 average per chicken by 1.4 chickens lost per batch). Per chicken, this implies that K1,047 per live chicken delivered and marketed. Aggregating the above costs gives the total costs of retaining which comes to about K32,023 on average per chicken (table 14). Of these, the cost of the chicken gets the biggest share of total costs at 91.85 percent followed by transportation (4.56 percent).

Table 14: Marketing costs from wholesale to retail markets

Marketing Activity	Average cost (Kwacha)	Share to total cost
Chicken cost	29,414	91.85%
Transportation	1,460	4.56%
Market fees	102	0.32%
Losses in transit/storage	1,047	3.27%
Total costs	32,023	
Selling price	38,979	

Retailers indicate that the main reason why indigenous chicken is expensive is low production and consequently supply leading to high prices. Indigenous chicken production also has a seasonality aspect (low productivity in rainy season) with the majority (58.5 percent) of the retailers reporting that they do not have sufficient supply throughout the year. This complaint is related to that of the wholesalers who reported having difficulties assembling chickens due to impassability of some rural roads. The majority (42.5 percent) reported selling most of the indigenous chickens to high and medium income families, 51.2 percent reported selling to both high and low income households while only 5 percent reported selling to low income households only. The majority (85 percent) of the households reported that they are the ones that determine the price at which the chicken is sold while the remainder reported negotiating.

The above analysis shows that there is significant competition in poultry meat supply, consumption and preference between indigenous and broiler chicken (table 23 in appendix 1). Consumption of broiler is twice that of indigenous chicken. The trend is mainly observable among low income households. However, this is reversed among high income households where indigenous poultry is preferred over broiler because of its taste and for health reasons.

Retailers perceptions of demand for indigenous poultry ranged from high (36.6 percent) to very high (17.1 percent) and average (24.4 percent). Only 22 percent of the retailers said that there is low demand. However, despite the reported high demand, about 70 percent of the retailers said they were able to meet this demand, mostly through raising prices. For those that were not able to meet the demand, they suggested that increasing supply at the farm level (32.0 percent) and reducing wholesale prices (28.0 percent) among others would enable them meet demand (table 24 in appendix 1). Majority (61 percent) of the retailers reported that they have a designated place for selling live indigenous chickens within the market places. These were open places where all the indigenous chicken traders display their chickens in cages. Furthermore, 73.2 percent said they have enough knowledge on taking care of the chickens while in storage.

### *Constraints and suggested solutions*

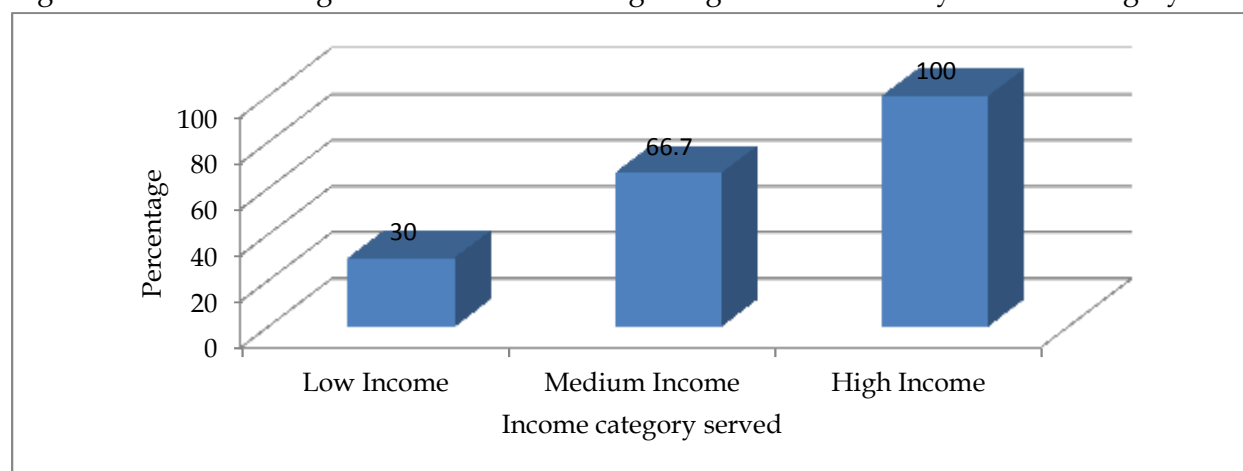
As regards access to credit facilities, only 36.6 percent reported having access to credit facilities for expanding their business. Other than credit, 61 percent also reported facing challenges sourcing chickens. Of those that faced challenges, high buying prices was the most prominent (91 percent) problem.

## **2.2.4 Processing**

### ***Restaurant***

Restaurants are another segment in the indigenous poultry value chain. Although it comprises of only a very small proportion of village chickens marketed, there is value addition in terms of processing. For this study, 30 restaurants were included in the sample drawn from low income areas (33.3 percent); medium income (50.0 percent) and high income (16.7 percent)<sup>5</sup>. Of the sampled restaurants, 60 percent served village chicken. Furthermore, the data showed that the income category served had a bearing on whether a restaurant served indigenous chicken. There was a tendency for those restaurants catering for the medium and high income categories to serve village chicken compared to those catering for the low income category (figure 3). One reason for this is that broiler chicken is more affordable compared to indigenous chicken.

Figure 3: Percentage of Restaurants serving Indigenous Chicken by Income Category



Restaurants add value by processing the chicken (cooking) and then serving it mainly with nshima.<sup>6</sup> These chickens are cut and sold in pieces with one chicken serving approximately between 4 to 10 people. It is for this reason that the quantities handled by restaurants are small. The average price at which the sampled restaurants bought indigenous chicken was K40,529. Figure 4 shows the numbers of indigenous chicken bought and sold per day in comparison to broiler for the sample and disaggregated by income group served by the restaurants.

<sup>5</sup> The low income areas included Garden, Chaisa and Chilulu compounds; the medium income areas included Kabwata, COMESA and Town Center markets while the high income area was Thornpark.

<sup>6</sup> This is a thick porridge made of maize meal. It's the major food for most Zambians

Figure 4: Numbers of chickens bought and sold by chicken type and income group

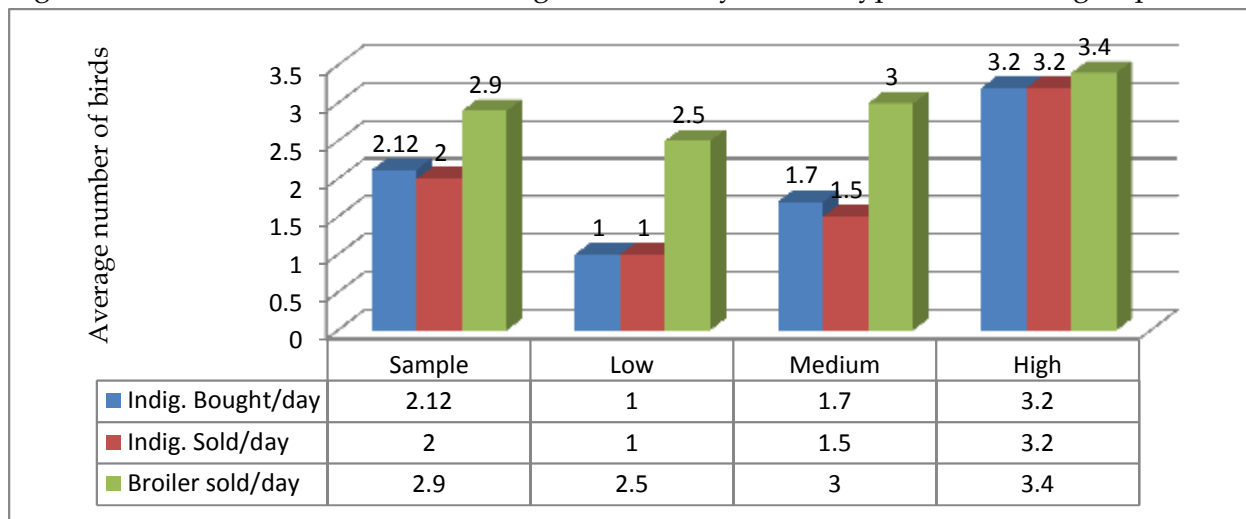


Figure 5 shows that on average, more broilers (average of three per day) are sold in the restaurants compared to indigenous (average of two per day) chickens. The figure also shows that the ratio of indigenous to broiler chickens sold is dependent on the clientele catered for by the restaurant. For instance, those restaurants catering to the high income groups sold more indigenous chickens compared to those catering to low income groups. Furthermore, the differences in the proportions between the two chicken types is smaller for the restaurants catering to the high income groups compared to those catering to the low income groups.

Table 15 compares the price of nshima served with broiler to that served with broiler chicken by clientele served and restaurant. It is worth noting that the differences in prices also reflect the number of people served per chicken, (i.e. for high income groups chicken is sold per quarter while for the low income groups, they cut the chicken into many pieces). Across all the restaurant categories, nshima with indigenous chicken fetches higher prices compared to nshima served with broiler chicken. However, the difference is more remarkable among those restaurants catering to the high income groups compared to the low income groups.

Table 15: Costs of nshima by type of chicken and restaurant

Chicken type		Sample	Income category served		
			Low (K)	Medium (K)	High (K)
Village	Mean	13,916	7,500	13,000	19,600
	Maximum	20,000	8,000	15,000	20,000
	Minimum	6,500	6,500	10,000	18,000
Broiler	Mean	9,596	5,833	10,333	14,600
	Maximum	15,000	7,000	12,000	15,000
	Minimum	4,000	4,000	7,000	14,000

Figure 4 shows the percentage preferences by type of chicken and restaurant type. Overall, it was reported that indigenous chicken is much preferred (53.3 percent) compared to broiler chicken (46.7 percent). However, the overall picture masks the income-related differences. When disaggregated, the data showed that among the restaurants catering to the low income

groups, broiler is more preferred (80 percent) compared to indigenous chicken (20 percent). However, the trend is reversed as the income catered for increases. This implies that preference for indigenous chicken is related to income, which is not surprising considering that indigenous chicken is more expensive compared to broiler chicken.

Figure 5: Chicken preference by income category catered for by restaurant

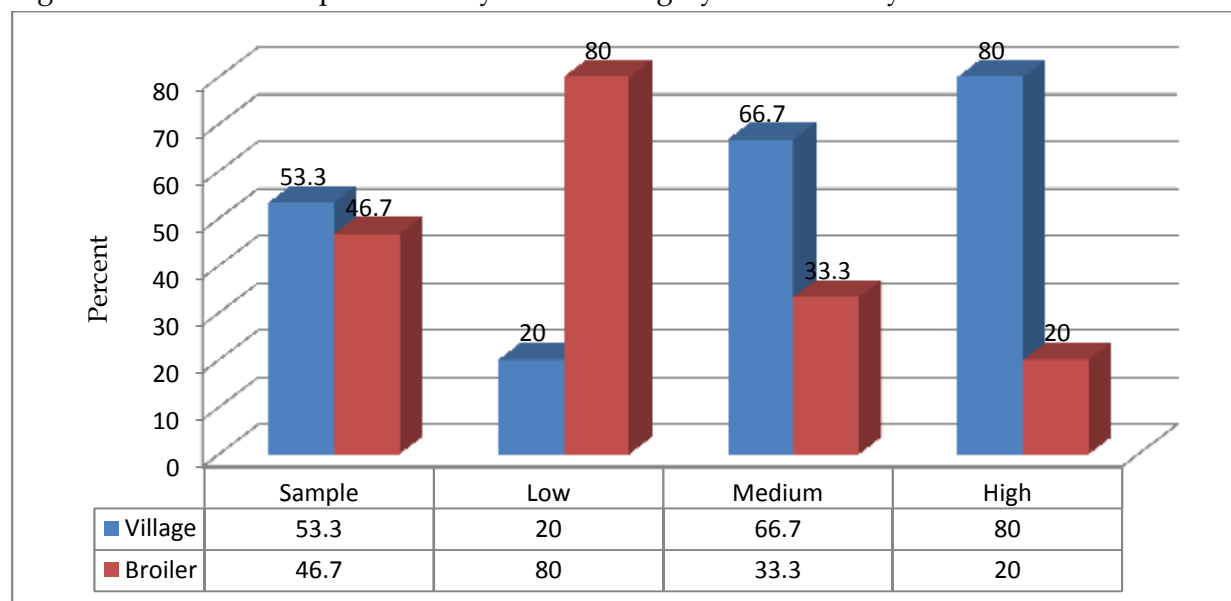


Table 16 shows comparisons between indigenous chicken and broiler chicken in terms of prices of nshima per plate, number of plates served from one chicken and how much money is realized from one chicken. The assumption made in making the comparison is that the cost of preparing nshima is the same for both types of chicken. However, there is likely to be slight variations in terms of costs incurred in preparing the two types of chicken. Because village chicken is purchased live and has to be slaughtered and dressed, it takes more time to prepare. On the other hand, whereas some restaurant owners prefer to purchase live broiler chicken, most of them procure dressed ones and incur less labor in terms of preparation. Furthermore, whereas most broiler chicken is grilled (which is less costly method of preparing), indigenous chicken has to be stewed (which is more costly). Consequently, the price differences between these two types of chicken could be partly a reflection of the costs of preparation.

Table 16: Comparison of prices and costs between broiler and indigenous chicken

Chicken type		Sample	Income category catered for		
			Low	Medium	High
Village	Price of nshima	13,916	7,500	13,000	19,600
	Number of plates served	7.56	10.33	7.8	5.4
	Amount of money raised	96,833	77,666	98,200	105,600
Broiler	Price of nshima	9,673	5,833	10,500	14,600
	Number of plates served	8.65	11.56	7.67	5.8
	Amount of money raised	75,300	67,200	77,600	84,600

In summary, restaurants are the only ones adding value to indigenous chicken through processing. However, the quantities processed are quite small compared to that sold live to consumers. Indigenous chicken is served in restaurants catering to all income categories, although it is mostly found in those restaurants catering to the high income categories. Compared to broiler chicken, it costs more to procure and prepare. However, the returns per chicken are also much higher than those for broiler as it fetches premium prices. The direct costs incurred during preparation of indigenous chicken include energy, ingredients (cooking oil, onions and tomatoes) and labor. However, per chicken this could amount to a maximum of K15,000. Based on this approximation, table 17 shows the approximate costs and prices involved in delivering indigenous chicken to consumers in a restaurant.

Table 17: Marketing costs from wholesale to retail markets

Marketing Activity	Average cost (Kwacha)	Share to total cost
Chicken cost	40,529	72.99
Processing	15,000	27.01
Total costs	55,529	
Selling price	96,833	

Table 18 shows the constraints faced by the restaurants in stocking indigenous chicken. The majority (30.5 percent) report that village chickens are too expensive followed by those who said they are not easy to find as well as small in size (16.9 percent). These constraints are consistent with those faced by consumer households and have important implications.

Table 18: Constraints faced by restaurant owners in stocking indigenous chicken

Constraint	Frequency	Percentage
They are expensive	18	30.5
Not easily found.	14	23.7
They are small in size	10	16.9
Difficult to prepare (cook)	7	11.9
Long distance to source	2	3.4
Consume more energy to cook	2	3.4
They eat dirt	2	3.4
Difficult to prepare (dress)	4	6.8

### 2.2.5 Consumers

This subsection describes the household consumption/demand for indigenous chicken. It starts with a description of demand for protein (i.e., beef, chicken and fish) and then describes the demand of indigenous chicken by region, income and gender. This is followed by an analysis of consumption patterns of indigenous chicken compared to its closest competitor broiler chicken. The factors (constraints) leading to non-consumption are also analyzed.

Zambia's population has been increasing rapidly and currently stands at about 13,000,000 (CSO, 2010). Furthermore, increased urbanization and high income elasticity has caused an increase in demand for livestock products such that supply is outstripped by local demand with the deficit being met through imports (World Bank AFDB Cattle Report, 2010). Although the poultry sector has performed relatively better (especially the broiler chicken), its growth is constrained by the high costs of feed which constitutes about 65 to 70 percent of the production costs (Sayila, 2007). Furthermore, unlike indigenous poultry, broiler chicken production and prices (and consequently consumption) is highly related to feed prices and disposable income of consumers. The primary consumers of indigenous chicken are households who purchase them live. Some indigenous chicken is also processed and sold in restaurants. Demand for indigenous chicken, especially among the affluent, is very high because of its low fat content compared to broiler chicken. The following section looks at demand and consumption of indigenous chicken.

The demand for indigenous poultry in Zambia can be divided into two major segments, urban and rural. According to Haazele et al. (2002), the rural markets characterized by low incomes and therefore low levels of chicken consumption. However, this market segment constitutes a large share of the village chicken market with chickens being sold within the villages for consumption (mainly on special occasions such as weddings, funerals, initiation ceremonies, and for special visitors). Within the rural areas, village chicken comprises the major source of protein as broilers are not produced in large quantities due to high feed costs and unavailability of day old chicks; while cattle are rarely slaughtered to meet the household demand for meat.

The urban segment of the indigenous chicken market comprises of Lusaka and Copperbelt. According to Haazele et al. (2002), there are several segments that can be identified within this urban market. These include (i) the high income groups, (ii) medium income groups, (iii) low income groups, (iv) and restaurants and lifestyle consumers. For the purposes of this value chain analysis, we concentrate on the high income, middle income, low income and restaurants. The consumer households comprised of high income groups (drawn from Kabulonga, Olympia, Rhodespark and Northmead areas; middle income groups (drawn from Chelston, Kabwata and Chilenje areas as well as those in the low income categories (drawn from Matero, Garden, Chaisa and Chainda compounds). Table 25 (appendix 1) summarizes the demographic characteristics of the aggregated sample as well as disaggregated by income group.

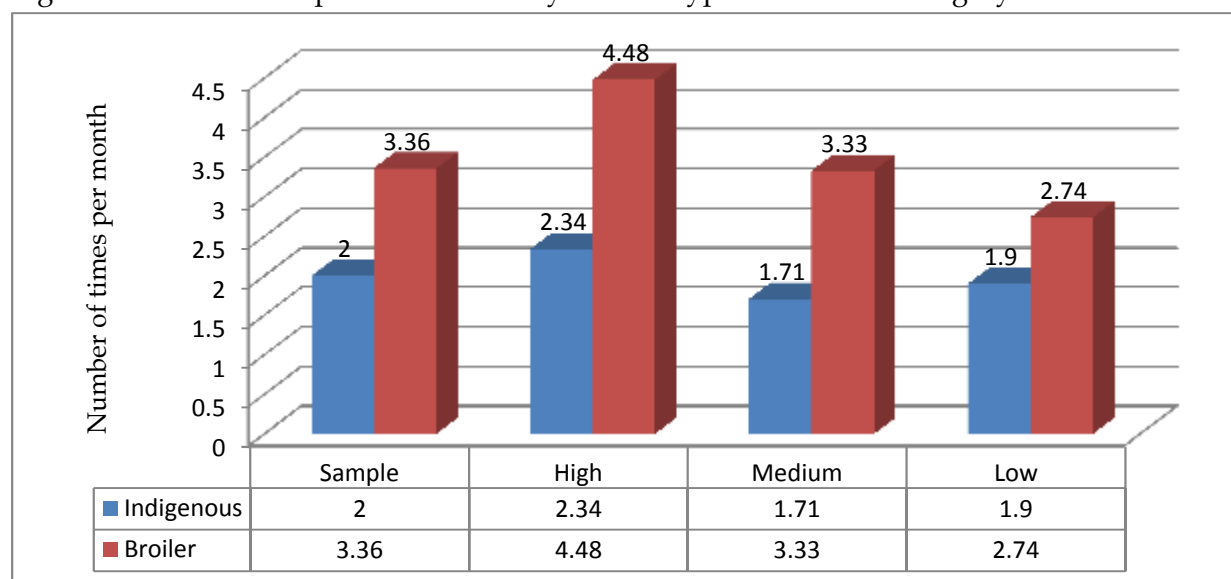
As regards gender of the household head for the aggregated data, the majority (78.8 percent) of the households were male headed. Disaggregated by income category, the high income category had the largest proportion (83.5 percent) of households headed by males. The average

age of the household head for the sample was 40.69 years. In terms of education of the household head, the majority for the sample had tertiary education (57.5 percent). Disaggregated by income category, the high income category had the largest proportion of household heads that had tertiary education (82.3 percent) while the low income category had the lowest 31.5 percent. As regards employment status (which has a bearing on one's income) the majority for the sample (33.3 percent) were running businesses (businessmen/women). Disaggregated by income, the high income households had the largest proportion (40.2 percent) employed in the public sector (table 25). For the entire sample, the average household size was 5 while the maximum was 16 and the minimum was 1. Finally, as regards income, the majority (30.3 percent) within the total sample were getting above 3 million and between 1 and 2.5 million. However, most of those getting above 3 million were from the high income group.

### Consumption of Indigenous Chicken (analysis of end-market preferences)

The majority of the households (87.7 percent) reported consuming indigenous chicken. High income households (figure 6) consumed more indigenous chicken per month on average (2.34 times) compared to low income households (1.9 times). Furthermore, the data shows that households consumed more broiler chicken (3.36 times per month) than to indigenous chicken (2 times per month).

Figure 6: Consumption of chicken by chicken type and income category



For those that did not consume indigenous chicken, among the reasons given included non-availability (29.8 percent), not easy to prepare<sup>7</sup>(19.3 percent), expensive (14.0 percent) and indigenous chickens eat dirt (12.3 percent) among others. Considering that availability was the main reason for not consuming indigenous chicken, the respondents were asked to provide information about where they sourced the chickens from. The data shows that whereas broiler chicken, which is consumed more often, is found markets (53.1 percent), supermarkets (22.2

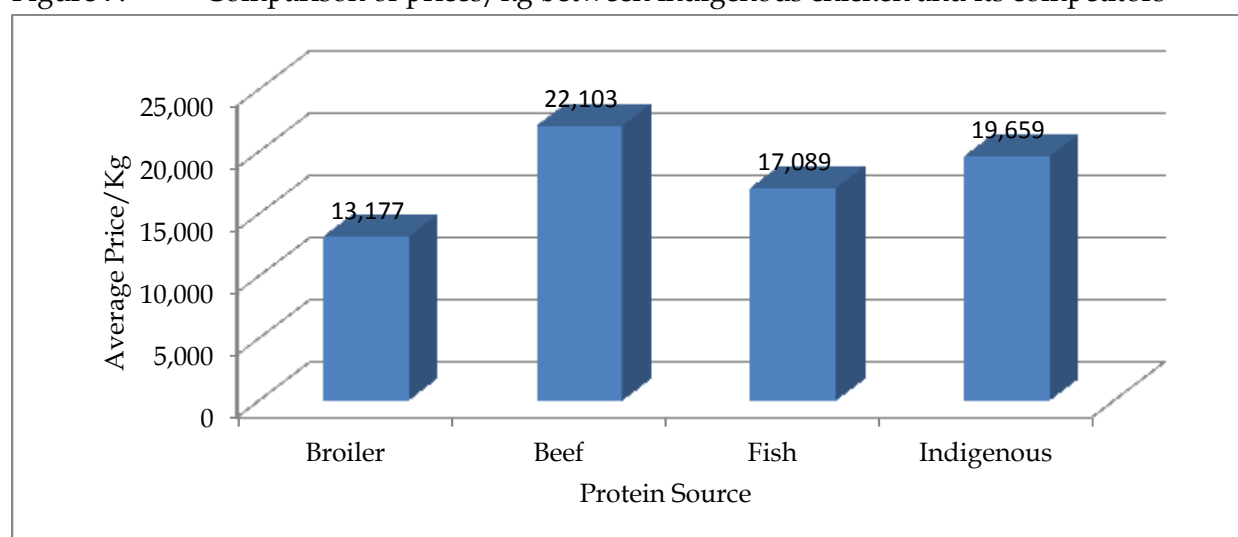
<sup>7</sup> Preparation includes slaughtering and dressing



percent) and among households who rear in the backyards (18.2 percent) indigenous chicken is mostly found in open markets (64.1 percent) and farms (12.9 percent) making it difficult to access. The other aspect related to availability was price. On average (table 26 in appendix 1), indigenous chicken was more expensive (K34,247) than broiler chicken (K26,354). Similarly, there were more consumers that perceived indigenous chicken as being too expensive (63.3 percent) compared to those that perceived broiler chicken as being too expensive (32.1 percent).

In order to assess how well indigenous poultry compared with its closest competitors, the respondents were asked to provide the prices for a kilogram of broiler chicken, red meat and fish. Figure 7 shows the average prices. Indigenous chicken costs more than broiler chicken and fish per kilogram. However, beef costs more than broiler chicken per kilogram.

Figure 7: Comparison of prices/kg between indigenous chicken and its competitors



The respondents were asked to provide information on which type of chicken they preferred (i.e. comparison between broiler chicken and indigenous chicken). There were more people that preferred indigenous chicken (52.5 percent) compared to broiler chicken (40.8 percent). This pattern is consistent even across income categories (table 19).

Table 19: Type of chicken preferred most

Type of chicken	Sample (%)	Income categories (%)		
		High income	Medium	Low
Broiler	40.8	42.5	37.9	41.1
Village	52.5	49.4	53.0	54.5
Same	6.8	8.0	9.0	4.5

Comparison of attributes of chicken (table 20) shows that broiler scores high on price (75.9 percent) as opposed to indigenous chicken (13.7 percent). Similarly, broiler chicken scored high

on availability (93.5 percent) compared to indigenous chicken (27.3 percent). However, indigenous chicken scored highly on taste (98.6 percent) as opposed to broiler (44.4 percent).

Table 20: Reasons for preference by chicken type

Reason	Chicken type	Frequency	Percentage
Price	Broiler	82	75.9
	Village	19	13.7
Availability	Broiler	101	93.5
	Village	38	27.3
Good taste	Broiler	48	44.4
	Village	137	98.6
Sale by pieces	Broiler	60	55.6
	Chicken	4	2.9

For those that purchased indigenous chicken, the majority (35.9 percent) cited health reasons, followed by good taste (35.1 percent) and size (12.9 percent). Only a few (5.8 percent) mentioned availability and affordability (4.4 percent) as the reasons for purchasing indigenous chicken (table 22). Similarly, those that did not consume village chicken cited not being readily available (32.3 percent), being too costly (29.0 percent) and not easy to cook (16.1 percent) among others as the reason for not consuming village chicken (see table 27 in appendix 1).

Table 21: Reason for purchasing indigenous chicken

Attribute	Frequency	Percent
Likes the taste	128	35.1
Looks good	9	2.5
Readily available	21	5.8
Affordable	16	4.4
Easy to prepare	9	2.5
Easy to cook	4	1.1
Size (big)	47	12.9
Health reasons	131	35.9

\*Preparation involves slaughtering and dressing

In conclusion, the data shows that indigenous chicken is consumed across all households, although not in similar proportions as broiler. Among the reasons why households do not consume indigenous chicken include not being available in formal outlets such as supermarkets, high cost as well as difficulties in preparing as it is sold live and has to be slaughtered and dressed. For those that consumed indigenous chicken, the reasons include health reasons, and good tastes.

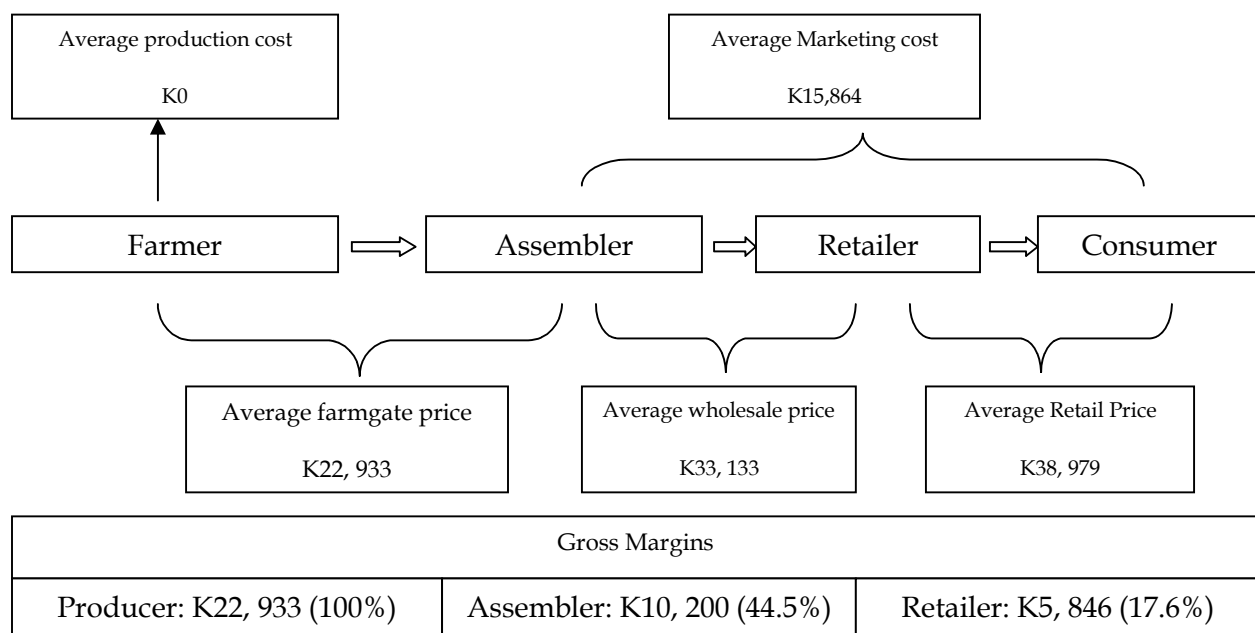
## 2.3 Value Chain Analysis

The following section sums up preceding sections by giving a detailed value chain analysis of indigenous chickens from production to consumption (detailed costs from production, wholesaling, retailing and processing) are also provided while the margins accruing to the different players along the chain are also provided. The value chain analysis is followed by analysis of information flow, capital flows and finally the environment (i.e. rules, regulations, policies and technology).

Based on the costs incurred and prices paid for indigenous chicken, the following value chain was derived. Considering that most farmers did not use any purchased inputs for production, the production cost at farm level is estimated at zero. The other costs are derived from the preceding sections (production, wholesaling, retailing and processing).

### 2.3.1 Margins at Household Consumer Level (Live Chickens)

Figure 8: Value Chain Analysis



### 2.3.2 Margins from Processing to Consumption level (Restaurants)

As earlier indicated, the costs at processing include the cost of purchasing the chicken, labor cost of preparing (i.e. slaughtering, dressing, cooking as well as serving) and cost of ingredients (tomatoes, Onions, oil and energy for preparing).

- ✓ Average cost of purchase: K40,529
- ✓ Average cost of processing: K15,000
- ✓ Total cost of (chicken + processing): K55,529
- ✓ Selling price K96,835, Margin= K41,306 (74.4 percent)

Other than the producers who are assumed to almost get 100 percent margins from the enterprise (because it is assumed that they incur zero cost of production), processors get the next highest margins (74.4 percent) followed by the assemblers (44.5 percent). Of course it is worth noting that for the processors, the margins include the processing skills, services provided as well as food innovations. The value added does not only involve food quality but also customer service (which if included in the cost is likely to reduce these margins).

In conclusion, it is worth noting that across the value chain, all the players get positive margins with the farmers getting the highest followed by processors. However, it is worth noting that the proportions that are processed by the restaurants are quite minimal (less than 10 percent).

### **2.3.3 Analysis of Information Flow**

#### **2.3.3.1 Training and Knowledge Levels**

The low emphasis that small-livestock (in particular indigenous poultry) has received from policy-makers and other agencies supporting agriculture manifests through low levels of trainings received by the households on techniques of indigenous chicken production. The data shows that only 13.5 percent of the households reported having received any training on indigenous production. Of those that received these trainings, these were provided by government extension workers (52.4 percent) and Non-governmental Organizations (47.6 percent). Furthermore, although a good proportion of the farmers (66.3 percent) said they had sufficient knowledge levels on good feeding practices, only 33.3 percent reported having sufficient knowledge on disease control methods and only 22.8 percent reported having sufficient knowledge on breed improvements. This is likely to have contributed to the observed low production for indigenous chicken (Haazele et al., 2002 shows that mortality is largest constraint to chicken production. Results from this survey showed similar findings) and consequently low sales at farmgate level. On the other hand, a good proportion of retailers (73.2 percent) reported having knowledge on how to take care of chickens in storage.

#### **2.3.3.2 Pricing and Market Information**

Other than information on production, pricing and market information is important in ensuring a well-functioning value chain. In the instance where certain players lack information, they are likely to be exploited leading to that section of the chain not operating at full potential. Those players with information are likely to capture most of the benefits from the improved prices leading to failure in the price transmission mechanism to trigger increased production should demand increase. For the producers in this survey, the sources of market information included neighbors and friends (77.1 percent), radio (8.3 percent) and producer groups (14.6 percent). Other than having access to several sources of market information, a good proportion (68.6 percent) of the respondents also reported having a choice of outlets where they could sell their chickens. Furthermore, the majority (82.0 percent) of the respondents reported knowing the prices at which the chickens sale in the markets before-hand. As a result, 94.4 percent of the producers reported that they determined the price at which the chickens are sold. The pattern was similar for wholesalers. The majority (66.7 percent) obtained market information from

friends/fellow wholesalers, followed by those who received from radio (20.0 percent). Consistently across the chain, the owner of the chicken determined the price.

#### **2.3.4 Analysis of Money/Capital flow**

The current form of chicken production does not require much capital. All a farmer needs is to buy a hen, build a crib using local materials (some chickens stay sleep in trees or in the kitchens) and all is done. However, for wholesalers, they require some minimum level of capital for them to engage in the business. On average, the capital required to get into the indigenous retail business was K511, 379 while the maximum was K1, 200, 000 and the minimum was K70, 000. However, regardless of the small relatively little amounts of money required to start the business, only a few wholesalers reported accessing loans (10.0 percent from microfinance institutions and 6.7 percent) from friends and other private sources. Among the retailers, 36.6 percent reported having access to credit. The major consequence of lack of credit (as reported by those who did not have access to credit) was inability to expand the business.

#### **2.3.5 Analysis of the Enabling Environment, Rules, Regulations and Policies**

Agricultural policies in Zambia have been highly biased towards maize production with the aim of ensuring food security. For instance, the Farmer Input support Programme (FISP), a programme under which fertilizers and maize seed are distributed to farmers for maize production, has always accounted for about 40 percent of the total agricultural budget (Kamwanga et al., 2012). Similarly, extension delivery has been tailored towards maize production at the expense of other crops and livestock. However, in the Sixth National Development Plan (SNDP) 2011-2015 (Ministry of Finance and National Planning, 2011) there is a change in the policy direction with livestock development receiving significant attention.

Under the SNDP, the policy focus for the livestock subsector is increasing livestock numbers through creation of disease free zones, agricultural infrastructure development and rehabilitation as well as processing of livestock and livestock products. Furthermore, the government aims at promoting the development of competitive, efficient and transparent public and private sector driven marketing system for agricultural commodities and inputs. Among the many strategies include facilitation of market infrastructural development such as feeder roads, storage and market facilities; promotion of improved agricultural commodity processing, marketing, distribution and storage. Furthermore, the government is targeting increasing quality livestock numbers through enhancement of breeding stock to farmers for increased small ruminants, pigs, poultry and cattle. However, regardless of these pronouncements, financial allocations within the budget to actualize these pronouncements are still low. Nevertheless, there is renewed hope for growth of the livestock subsector (poultry inclusive).

#### **2.3.6 Socio-economic characteristics: production and consumption patterns**

Raising free range is considered as part of small farmers' lifestyle as this activity does not require as much time, effort and resources as other livestock such as cattle. Furthermore, unlike other livestock, ownership of poultry translates more in improved household well-being as it

can be easily slaughtered for meat or battered to meet other household cash requirements. Consequently ownership has more impact on nutritional well-being of households compared to cattle. Ownership of indigenous chicken also has a gender dimension. This is because unlike cattle which are predominantly owned by men, chickens can be owned by women and children.

#### **2.3.7 Technology**

At the production level, usage of improved technologies for producing indigenous chicken is very low. Most producers have not been exposed to any modern technologies that could raise productivity and consequently producer knowledge of methods of disease prevention and breeding practices is quite low. Farmers are still using traditional herbs for prevention of diseases while chickens are housed in unconventional houses that exposes them to adverse weather elements such as rainfall and cold leading to high mortality (especially among chicks) and seasonality of production. Despite some NGOs conducting trainings on how to raise small-poultry under their nutritional programmes, these efforts have not been widespread. At the wholesale/assembler level, low levels of technology adversely affect the indigenous poultry value chain through poor infrastructure such as roads. This raises the cost of assembly and transportation. At retail level, there is also low usage of modern technology such as refrigeration leading to most indigenous chicken being retailed live in open markets excluding potential consumers who do not have time to go to open markets that are usually far.

### 3.0 CONCLUSIONS

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Even though over 95 percent of the households in rural areas keep indigenous poultry while demand for is very high among urban households, there is not much information on the operations of the subsector. Particularly, majority of the studies done on the subsector have concentrated on the production side while the marketing aspect has been largely ignored leading to underdeveloped marketing structures despite the enormous potential that the subsector has. Consequently this study aimed at analyzing the indigenous chicken value chain and thus highlighting potential areas of intervention thus improving the operations of the subsector. Using a value chain analysis framework, the study aimed at developing a subsector value chain map, identify key players within the chain as well as analyze current and potential markets. The following key conclusions can be made based on the study findings:

1. Although over 95 percent of smallholder households keep indigenous poultry, these are kept as part-time activity and there are few, if any, that are keeping indigenous poultry on commercial basis. Furthermore, productivity and production is very low leading to low and unplanned sale at the farmgate level. However, looking at the differences between the mean production (10 hens) and the maximum (50 hens), and considering that it is a low input activity, potential for growth exists.
2. The indigenous poultry value chain mainly consists of producers, assemblers/wholesalers and retailers. The absence of processors along the chain means that chickens are sold live and consequently cannot be retailed through formal channels like supermarkets leading to exclusion of potential customers in the middle and high income categories who normally shop from supermarkets. The majority of the household that did not consume village chicken cited non-availability as the reason.
3. With increases in the population as well as growing incomes due to the growing economy, demand for indigenous chicken has been growing especially among the high income groups who not only prefer it for its taste, but also for health reasons due to its low fat content.
4. Although the value chain for indigenous chicken shows positive margins for all the players along the chain, there are various constraints which if addressed would improve the operation of the chain leading to increased incomes for the value chain members and at the same time ensuring cheap delivery of indigenous chicken in a more convenient form and in formal outlets. The key challenges faced by farmers include lack of knowledge leading to low productivity and production. The wholesalers face the challenge of low supply of indigenous chicken which is compounded by poor rural road networks making the cost of assembling very high. Retailers face the challenge of high prices and seasonality of supply for indigenous chicken.

## 4.0 RECOMMENDATIONS

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Based on the survey findings, the following key recommendations and interventions are proposed under broad category based on the above analysis:

1. **Capacity Development on Improved Production Process:** During the field survey it was observed that most farmers lacked knowledge on improved production techniques leading to high mortality rates, seasonality of production and consequently low production. Knowledge and information on improved production methods (i.e. proper housing, provision of medications and supplementary feeding) of indigenous chicken is one of the critical constraint of the subsector that, if addressed can profoundly improve the growth, profitability and income opportunities to a large number of farm households (over 95 percent) who are engaged in indigenous chicken production, and provide employment to those involved in the marketing process.
2. **Value Addition in the marketing process:** unlike its closest competitor, village chicken marketing is still at rudimentary level. Because they are sold live, they are never stocked in supermarkets and mostly found in isolated markets making them highly inaccessible. Value addition along the marketing chain can be done through addition of another link in the chain in the form of processing. This could involve slaughtering, dressing and packaging the chickens in such a way that they can be sold in formal retail outlets such as supermarkets. This is not only going to bring the product closer to consumers but also provide it in a more convenient form for those busy urban households hence increasing demand. Furthermore, this is likely to reduce the cost of storage, as currently the chickens are stored live and have to be fed leading to losses, as well as ensure a more steady supply as dressed processed chickens can be kept in cold storage hence avoiding seasonality of supply.
3. **Group marketing:** survey findings show that at the farm level, the best prices were obtained when farmers marketed their chickens through cooperatives (bulking centers). Group marketing not only gives the farmers bargaining power but also reduces the search costs for the assemblers. These groups can also serve as avenues for sharing information on improved production methods. These producer groups can also play an active role in sharing and exchanging critical backward and forward linkage information in collaboration with the various value chain actors. Unlike cattle whose ownership is mostly restricted to men, women and children own chickens and were also found to be highly involved in the marketing process. This provides an opportunity for gender mainstreaming in the value chain. It is important to develop women's capacities, knowledge and awareness so that they can take a front seat as true entrepreneurs. Some of the key activities could be:



- a. Incorporate indigenous poultry enterprises in women farmers' groups activities
  - b. Actively link women's groups with knowledge service providers (NGOs, universities, extension department, embedded services of large private sector enterprises such as supermarkets)
  - c. Link them with micro credit institutions
4. Access to finances: although indigenous poultry is low cost enterprise, productivity in the sector can be highly improved through modernizing the production system (i.e. provision of modern veterinary drugs, proper housing and supplementary feeding. Similarly unlike its closest competitor (broiler), the current marketing system is very rudimentary making it impossible for the product to enter the modern marketing system such as supermarkets. One way in which this can be addressed is to increase access to finance both at the production level (leading to increased production) and the marketing level (leading to improved services). Microcredit institutions could boost some of the traders who could then be able to procure larger quantities and process (i.e. slaughter, dress and package) the chickens into a form that can be stocked in modern supermarkets
5. Infrastructure development: this involves development of feeder roads for linking the farm with main access road to market or growth centers. Lack of these roads increases cost for head load carrying and at the same time increases losses in transit. Unlike for cattle, most markets do not have specialized places for keeping live chickens until they are sold. They are normally kept in crowded cages under the sun with little food leading to stress, weight loss and consequently deaths. Provision of a live poultry sections within market structures where chickens could be received, labeled treated for disease while awaiting purchase would reduce losses due to deaths in storage.
6. Policy issues: over the years, agricultural policies in Zambia have been biased towards crops production (particularly maize). Even the little attention paid to livestock has been directed at cattle leading to a total neglect of small livestock like chickens. Consequently, extension and resource allocation has also been biased towards maize and large livestock. We would recommend inclusion of small livestock like poultry on the agenda. Activities such as allocation of resources towards research in indigenous poultry breeds development, improved production systems as well as marketing systems. This will not only benefit over 96 percent of the rural households, but also the majority of urban consumers who are currently unable to access the indigenous poultry products.
7. Creating linkages among value chain players: one way in which search costs for assemblers could be reduced is through producers having market days on which they bring chickens in one place where assemblers could purchase them.

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## APPENDICES

### Appendix 1: Additional Tables

Table 22: Summary of village poultry sales-related issues

Sales related issue	Sample	Chicken type	
	Combined	Cocks	Hens
How many village chickens do you have now			
- Average	11.3	7.37	15.6
- Maximum	110	120	100
- Minimum	0.0	0.0	0.0
How many village chickens have you sold today			
- Average	4.86	3.27	7.06
- Maximum	30	30	30
- Minimum	0.0	0.0	0.0
How many chickens do you sale per day?			
- Average	7.43	5.17	10
- Maximum	27	25	50
- Minimum	2	1	1
How many do you sale per week?			
- Average	35.85	21.85	58.19
- Minimum	135	120	250
- Maximum	5	4	5

Table 23: Reasons for preference by chicken type and income category

Reason	Income category	Chicken type	Frequency	Percent
Price	High	Broiler	28	75.7
		Village	9	20.9
	Medium	Broiler	23	92.0
		Village	3	8.6
	Low	Broiler	8	57.1
		Village	7	11.5
Availability	High	Broiler	33	89.2
		Village	11	25.6
	Medium	Broiler	25	100.0
		Village	6	17.1
	Low	Broiler	43	93.5
		Village	21	34.4
Good taste	High	Broiler	20	54.1
		Village	42	97.7
	Medium	Broiler	8	32.0
		Village	35	100.0
	Low	Broiler	20	43.5
		Village	60	98.4

Table 24: Retailers perceptions of demand for indigenous chicken

How do you rate the demand for local chicken?	
- Low	22.0
- Average	24.4
- High	36.6
- Very high	17.1
Are you able to meet this demand?	
- Yes	70.7
If no, what do you suggest needs to be done to meet this demand?	
- Increase supply at the farm level	32.0
- Reduce wholesale prices	28.0
- Harmonize the prices	4.0
- Improve the rural road networks	8.0
- Remove council levies	8.0
- Cut out the middlemen	4.0

Table 25: Summary of characteristics of consumers for sample and income category

Demographic characteristic	Sample	Income category		
		High	Medium	Low
Gender of household head				
- Male	78.8	83.5	74.3	77.8
- Female	21.2	16.5	25.7	22.2
Age of household head				
- Average	40.69	40.95	39.87	40.95
- Maximum	82	70	82	80
- Minimum	20	24	24	20
Education level of household head				
- None	2.0	2.1	1.4	2.4
- Primary	9.9	2.1	4.1	19.4
- Secondary	30.6	13.5	25.7	46.8
- Tertiary	57.5	82.3	68.9	31.5
Employment status of household head				
- Privately employed	28.9	27.8	39.7	23.6
- Public/Civil servant	25.5	40.2	21.9	16.1
- Businessman/Woman	33.3	24.7	31.5	41.1
- Unemployed	9.2	3.1	4.1	16.9
- Others	3.1	4.1	2.8	2.4
Household size				
- Average	5.38	5.41	5.11	5.52
- Maximum	16	14	16	14
- Minimum	1	1	1	1
Income category (Kwacha)				
- 0 to 1 million	20.6	4.3	5.6	43.8
- Between 1 million and 2.5 million	30.0	16.1	36.1	37.5
- Between 2.5 million and 3 million	19.1	18.3	34.7	9.8
- Above 3 million	30.3	61.3	9.8	8.9

Table 26: Summary statistics on consumption of chicken

Demographic characteristic	Sample	Income category		
		High	Medium	Low
Do you consume broiler chicken				
- Yes	91.9	89.7	91.9	93.7
- No	8.1	10.3	8.1	6.3
Sources of broiler chickens included				
- Market place	53.1	34.1	45.6	70.5
- Supermarkets	22.2	31.8	27.9	12.3
- Individual suppliers who rear at home	18.2	30.6	22.1	7.4
- Others	6.5	3.5	4.4	9.8
Prices paid for broiler chicken				
- Average	26,354	26,835	26,647	25,851
- Maximum	19,000	20,000	19,000	20,000
- Minimum	40,000	40,000	30,000	40,000
Perceptions on the prices paid for broiler				
- Cheap	11.3	17.6	13.2	5.8
- Fair	56.6	58.8	61.8	52.1
- Expensive	32.1	23.5	25.0	42.1
Do you consume village chicken				
- Yes	87.7	84.4	84.7	91.9
- No	12.3	15.6	15.3	8.1
Why don't you consume village chicken?				
- Not easily available	29.8	34.5	40.0	16.7
- They are more expensive than broiler	14.0	6.9	20.0	22.2
- The meat is had (not easy to cook)	19.3	17.2	20.0	22.2
- They are dirty	12.3	17.2	10.0	5.6
- Does not like the taste	10.6	6.8	10.0	16.6
Sources of village chickens include:				
- Market place	64.1	51.2	68.8	70.5
- Supermarkets	0.4	0	0	1
- Individual suppliers	9.8	13.8	10.9	6.2
- Along the streets	4.7	3.8	3.1	6.2
- Farm	12.9	13.4	12.5	10.7
Prices paid for village chicken				
- Average	34,247	34,628	36,000	33,026
- Maximum	12,000	15,000	15,000	12,000
- Minimum	50,000	50,000	45,000	50,000
Perceptions on prices paid for village chicken				
- Cheap	3.6	5.1	1.6	3.6
- Fair	33.1	44.9	32.8	25.0
- Expensive	63.3	50.0	65.6	71.4

Table 27: Attributes of village chicken and proportion ranking them on scale of 1 to 3

Attribute	Frequency	Percentage
Does not like the taste	2	6.9
Not readily available	10	32.3
Too costly	9	29.0
Difficult to prepare*	3	9.7
Not easy to cook	5	16.1
Size (carcass too small)	2	6.5

\*Preparation involves slaughtering and dressing

## Appendix 2: Study Tools

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### Appendix 2.1 WHOLESALERS QUESTIONNAIRE

No. \_\_\_\_\_

CONSENT: Hello, My name....., we are from the University of Zambia and conducting a survey on consumption of village chicken in Lusaka. The survey will help in the development of the chicken industry in Zambia. Your participation is voluntary. You can choose to answer any questions and you can stop the interview at any time. All of your responses will be confidential. Do you have any questions about the survey? Do you agree to participate in the survey?

#### I. Basic information and product flow

1. Locality (market) \_\_\_\_\_
2. Sex of respondent
  - a) Male [ 1 ]
  - b) Female [ 2 ]
3. Age of respondent \_\_\_\_\_
4. Education background
  - a) Primary [ 1 ]
  - b) Secondary [ 2 ]
  - c) Tertiary [ 3 ]
  - d) Others (specify) [ 66 ] \_\_\_\_\_
5. Who do you buy your chickens from?
  - a) Middlemen [ 1 ]
  - b) Farmers [ 2 ]
  - c) Others (specify) [ 66 ] \_\_\_\_\_
6. Which areas do you source your chickens from?
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
7. How much do you buy the chickens at?
  - a. Cocks K \_\_\_\_\_
  - b. Hens K \_\_\_\_\_
8. How many days does it take you to assemble sufficient quantities of chickens before you can transport them to Lusaka? \_\_\_\_\_
9. How much do you spend on accommodation and food per day during the process of assembling chickens K \_\_\_\_\_
10. How much does it cost you to procure cages for transporting chickens K \_\_\_\_\_
11. How much does it cost you to feed these chickens before they are sold? \_\_\_\_\_
12. How much does it cost you to transport these chickens to Lusaka
  - a. Per cage K \_\_\_\_\_
  - b. Per Chicken K \_\_\_\_\_
13. How much council levy (Council Levy) do you pay?
  - a. Per chicken K \_\_\_\_\_
  - b. Per cage K \_\_\_\_\_
14. How much do you pay as market fees per day? K \_\_\_\_\_
15. How much does it cost you to transport chickens from the villages to the roadside? K \_\_\_\_\_ per cage
16. Roughly, how many chickens do you transport per trip? \_\_\_\_\_
17. How much does it cost you in total per trip K \_\_\_\_\_

18. How many losses do you incur (through deaths and thefts) per trip? \_\_\_\_\_
19. How much do you sale a chicken for?
  - a) At wholesale (those who buy more) \_\_\_\_\_
  - b) At retail \_\_\_\_\_
20. What means of transport do you use to transport chickens to the market?  
\_\_\_\_\_
21. Number of chickens sold per day? \_\_\_\_\_
22. Number of days he or she sales chicken in a week? \_\_\_\_\_
23. Number of chickens sold per week? \_\_\_\_\_
24. How many days does it take for you to sale all the chickens? \_\_\_\_\_
25. What is the selling price of chicken?
  - a) To retailers \_\_\_\_\_
  - b) To restaurants \_\_\_\_\_
  - c) To consumers \_\_\_\_\_
26. What are the costs incurred in per chicken until it's sold to the buyer?
  - a) Market fees \_\_\_\_\_
  - b) Transportation cost \_\_\_\_\_
  - c) Storage cost \_\_\_\_\_
  - d) Other costs (specify) \_\_\_\_\_

## II. Information flow

27. Where is the source of market and price information got from?
  - a) Radio [ 1 ]
  - b) Fellow wholesaler [ 2 ]
  - c) News papers [ 3 ]
  - d) Fellow traders [ 4 ]
  - e) Others(specify) [ 5 ] \_\_\_\_\_

## III- Financing analysis

28. What was the amount of capital used to start the business? \_\_\_\_\_
29. Finance source for the running of the business?
  - a) Saving group [ 1 ]
  - b) Own resources [ 2 ]
  - c) Private loan [ 3 ]
  - d) Local micro-finance agency [ 4 ]
  - e) others (specify) [ 5 ] \_\_\_\_\_

## IV- Constraints

30. What challenges are involved in the marketing of village chickens?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

31. What can be done to overcome the challenges mentioned above?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



*CONSENT: Hello, My name....., we are from the University of Zambia and conducting a survey on consumption of village chicken in Lusaka. The survey will help in the development of the chicken industry in Zambia. Your participation is voluntary. You can choose to answer any questions and you can stop the interview at any time. All of your responses will be confidential. Do you have any questions about the survey? Do you agree to participate in the survey?*

**Basic information**

1. Name of the restaurant \_\_\_\_\_
2. Location of the restaurant \_\_\_\_\_
3. Do you sale village chicken?
  - a) Yes
  - b) No
4. Where do you source the chickens from?
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
5. How much do you buy village chickens?
  - a) At farm gate \_\_\_\_\_
  - b) From wholesalers \_\_\_\_\_
  - c) From retailers \_\_\_\_\_
6. How many do you buy per day? \_\_\_\_\_
7. How many local chickens do you sale per day? \_\_\_\_\_
8. How many broilers chickens do you sale per day? \_\_\_\_\_
9. How much does nshima with village chicken cost? \_\_\_\_\_
10. How much does nshima with broiler cost? \_\_\_\_\_
11. How do you serve chicken?

**Broilers**

- a) Sold with Nshima
- b) Sold with rice
- c) Sold with chips
- d) Any other \_\_\_\_\_

**Local chicken**

- a) Sold with Nshima
- b) Sold with rice
- c) Sold with chips
- d) Any other \_\_\_\_\_

12. What type of chicken breed is preferred by the customer?
  - a) Village chickens
  - b) Broilers
13. Give reasons why the above the above type of chicken is preferred?
   
\_\_\_\_\_
   
\_\_\_\_\_
   
\_\_\_\_\_

14. What kinds of customers normally buy chicken?
  - a) Low class
  - b) Middle class
  - c) High class
15. How much do you sale per plate of nshima with village chicken? K \_\_\_\_\_
16. How many plates of nshima do you serve from one village chicken? \_\_\_\_\_
17. So in total approximately how much money do you make from one village chicken K \_\_\_\_\_
18. How much do you sale per plate of nshima with broiler chicken? K \_\_\_\_\_
19. How many plates of nshima do you serve from one broiler chicken? \_\_\_\_\_
20. So approximately how much money do you make from one broiler chicken K \_\_\_\_\_
21. Does the restaurant buy dressed chicken or they dress them there selves?
   
\_\_\_\_\_

22. What are some of the constraints faced by the restaurant in regards to indigenous chickens?

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23. What should be done to reduce the above named constraints?

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24. How much do you make from your business in a day K\_\_\_\_\_

25. How many clients do serve in a day? \_\_\_\_\_

### **Appendix 2.3: RETAILER QUESTIONNAIRE**

No. \_\_\_\_\_

*CONSENT: Hello, My name..... We are from the University of Zambia and conducting a survey on consumption of village chicken in Lusaka. The survey will help in the development of the chicken industry in Zambia. Your participation is voluntary. You can choose to answer any questions and you can stop the interview at any time. All of your responses will be confidential. Do you have any questions about the survey?*

#### **Identification Information**

1. District \_\_\_\_\_
2. Name of suburb/ Area \_\_\_\_\_
3. Name of Market \_\_\_\_\_

#### **I. Background Information**

1. First Name: \_\_\_\_\_
2. Gender of retailer:
  1. Male
  2. Female
3. Marital Status
  1. Married
  2. Single
  3. Divorced
  4. Other specify \_\_\_\_\_
4. How old were you as at last birthday? \_\_\_\_\_
5. What is the highest level of education attained?
  1. Lower Primary (grades 1 to 4)
  2. Upper Primary (grades 5 to 7)
  3. Junior Secondary (grades 8 to 9)
  4. Senior Secondary (grades 10 to 12)
  5. Tertiary (college, university)

#### **Chicken Business Related Information**

6. For how many years have you been trading in chickens? \_\_\_\_\_
7. Why did you start this business?
  - i. It is very profitable
  - ii. It does not require too much capital
  - iii. Did not have any other alternatives
  - iv. Had connections with friends/relatives who were in the business
  - v. Others (specify) \_\_\_\_\_
8. Do you have any other source of livelihood?
  - i. Yes [2] No
9. If yes, what else do you do to earn your livelihood apart from trading in local chicken?  
\_\_\_\_\_

10. Looking at all the income that you get in a month, what proportion comes from the local chicken business
- Less than half the total income
  - About half the total income
  - More than half the total income
11. Where do you source (buy) your chickens from? *(Multiple responses possible)*
- Soweto
  - Chibolya
  - Chongwe
  - Mumbwa
  - Traders bring to this market
  - Others (specify) \_\_\_\_\_
12. How do you procure your chickens?
- Directly from farmers (producers)
  - From middlemen (assemblers)
  - Others (specify) \_\_\_\_\_
13. On average, how much do you pay for
- Cock \_\_\_\_\_
  - Hen \_\_\_\_\_
14. Who decides the price at which you buy the chicken?
- The seller
  - Myself as buyer
  - We negotiate
  - Other specify \_\_\_\_\_
15. How do you buy these chickens
- From the same seller who you know every time
  - From any seller who has the product as long as they have the chickens
  - Other (specify) \_\_\_\_\_
16. What means of transport do you use to transport chicken from source to market
- Bicycle
  - Wheel barrow
  - Hired taxi
  - Minibus (bus)
  - Pickup truck (canter)
  - Other (specify) \_\_\_\_\_
17. How much do you pay to transport chickens from the source to the market?
- K \_\_\_\_\_ per cage/ chicken
18. What other costs do you incur in the process of marketing chickens?
- Market fees [1] Yes [2] No
    - If yes, how much? K \_\_\_\_\_ daily/weekly/monthly
  - Levy to the council whilst transporting chickens [1] Yes [2] No
    - If yes, how much? K \_\_\_\_\_ per chicken/cage
  - Storage costs [1] Yes [2] No
    - If yes, how much? K \_\_\_\_\_ per chicken/ cage
  - Other costs (specify) \_\_\_\_\_
    - How much? K \_\_\_\_\_ per chicken/ cage
19. Do you have sufficient supply of village chickens throughout the year?
- Yes
  - No
20. If No, during which season do you face challenges sourcing chickens?
- Hot season
  - Cold season
  - Rainy season
21. Who do you mainly sale your chickens to?

- i. Households
  - ii. Restaurants
  - iii. Hotels
  - iv. Others (specify) \_\_\_\_\_
22. How many chickens do you have with you right now?
- i. Hens \_\_\_\_\_
  - ii. Cocks \_\_\_\_\_
23. How many have you sold today
- i. Hens \_\_\_\_\_
  - ii. Cocks \_\_\_\_\_
24. How many chickens do you sale per day on average
- i. Hens \_\_\_\_\_
  - ii. Cocks \_\_\_\_\_
25. How many chickens do you sale per week?
- i. Hens \_\_\_\_\_
  - ii. Cocks \_\_\_\_\_
26. On average, how much do you sale per chicken?
- i. Hens K \_\_\_\_\_
  - ii. Cocks K \_\_\_\_\_
27. In terms of households, which households buy village chicken most?
- i. Middle income households
  - ii. Low income households
  - iii. They consume similarly
28. Who decides the price at which you sale the chickens
- i. Buyers
  - ii. Myself (trader)
  - iii. We negotiate
29. How do you rate the demand for local chicken
- i. Very low
  - ii. Low
  - iii. Average
  - iv. High
  - v. Very high
30. Are you able to meet this demand
- i. Yes
  - ii. No
31. If no, what do you suggest needs to be done for you to meet this demand?
- i. \_\_\_\_\_
  - ii. \_\_\_\_\_
  - iii. \_\_\_\_\_

#### **Constraints**

32. What are the major constraints that you face in your business
- i. High market charges
  - ii. Lack of market space
  - iii. Lack of good/secure storage facilities
  - iv. High mortality (deaths) in storage
  - v. Lack of demand for local poultry (competition with broiler)
  - vi. Competition from other traders (too many chicken dealers)
  - vii. Others specify \_\_\_\_\_
  - viii. \_\_\_\_\_
33. On average how many chickens do you buy/stock at a time? \_\_\_\_\_
34. How many days does it take for all the chickens bought to sale? \_\_\_\_\_
35. How many die in storage per week? \_\_\_\_\_
36. Do you have specialized cribs/stalls for storage/selling chickens
- i. Yes
  - ii. No

37. Do you have a specially designated place for selling village chickens
- Yes
  - No
38. Do you feel you have enough knowledge on taking care of poultry in storage
- Yes
  - No
39. Do you have access to credit for poultry
- Yes
  - No
40. If no what are the problems arising from that? \_\_\_\_\_  
\_\_\_\_\_
41. Do you have problems sourcing chickens?
- Yes
  - No
42. If yes, what are the key challenges?
- High buying prices
  - High transportation costs
  - High mortality rates
  - Low demand
  - Competition from broilers
  - Others \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_

END

#### Appendix 2.4: CONSUMER QUESTIONNAIRE

No. \_\_\_\_\_

*CONSENT: Hello, My name..... We are from the University of Zambia and conducting a survey on consumption of village chicken in Lusaka. The survey will help in the development of the chicken industry in Zambia. Your participation is voluntary. You can choose to answer any questions and you can stop the interview at any time. All of your responses will be confidential. Do you have any questions about the survey?*

##### Identification Information

- Province \_\_\_\_\_
- District \_\_\_\_\_
- Constituency \_\_\_\_\_
- Ward \_\_\_\_\_
- CSA \_\_\_\_\_
- SEA \_\_\_\_\_
- Household number \_\_\_\_\_
- Name of suburb or area \_\_\_\_\_

##### II. Background Information

- What is the gender of the household head? \_\_\_\_\_
- Is the household head married? 1=Yes 2=No \_\_\_\_\_
- What is the age of the household head in years? \_\_\_\_\_
- What is the educational level of the household head? \_\_\_\_\_  
(1) None (2) Primary (3) Secondary (4) Tertiary

47. Which church denomination does the household head go to? \_\_\_\_\_  
 (1) Catholic church  
 (2) United Church of Zambia,  
 (3) Reformed Church of Zambia  
 (4) Watch Tower  
 (5) Seventh Day Adventist  
 (6) Pentecostal Churches  
 (7) Other (specify) \_\_\_\_\_

48. What is the occupation of the household head? [ \_\_\_\_\_ ]  
 1. Privately employed  
 2. Public civil servant  
 3. Business man/woman  
 4. Unemployed  
 5. Others (specify)

49. What is the size of household? \_\_\_\_\_

50. Is there any household member with diabetes? \_\_\_\_\_  
 1=Yes 2=No

51. What is the income level of the household? (kwacha)  
 0 -500,000  1m – 1.5m   
 2.5m – 3m  3 m and above

52. Does the household consume broiler chicken?  
 1. Yes [ 1 ]  
 2. No [ 2 ]

53. If No, give reasons why \_\_\_\_\_  
 \_\_\_\_\_

54. If yes how many times  
 1. In a week? [ ]  
 2. In a month [ ]

55. Where do you buy the most of the broiler chickens from?  
 1. Market place  
 2. Supermarkets (Shoprite/Spar/private owned supermarkets)  
 3. Sellers' home  
 4. Along the street/s  
 5. Other (Specify)

56. How much do you pay for a broiler chicken? \_\_\_\_\_

57. In your opinion, do you think this price is  
 1. Cheap  
 2. Fair  
 3. Expensive

58. Do you consume village chicken? 1=Yes [ ], 2=No [ ]

59. If No, give reasons  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

60. If Yes, how many do you consume
1. In a week [       ]
  2. In a month [       ]
61. Where do you buy most of the village chicken from?
1. Market place (specify \_\_\_\_\_)
  2. Supermarkets (Shoprite/Spar/private owned supermarkets)
  3. Sellers' home
  4. Along the street/s
  5. Farm
  6. Other (Specify) \_\_\_\_\_
62. What is the distance in km to your homestead from the points you have mentioned in question 19?
1. Market place (Specify \_\_\_\_\_) [       ]
  2. Supermarkets (Shoprite/Spar/private owned supermarkets) [       ]
  3. Sellers' home [       ]
  4. Along the street/s [       ]
  5. Farm [       ]
  6. Other (Specify) \_\_\_\_\_ [       ]
63. On average, how much do you pay for a village chicken? \_\_\_\_\_
64. In your opinion, do you consider this price as being
1. Cheap
  2. Fair
  3. Expensive
65. On average, what is the weight of the village chicken? \_\_\_\_\_
66. On average, how much do you pay per kg for the following products?
1. Red meat [       ]
  2. Fish [       ]
67. Which type of chicken does the family prefer most?
1. Broiler [       ]
  2. Village [       ]
68. Tick three main reasons for your preferences.
1. Price [       ]
  2. Availability [       ]
  3. Taste good [       ]
  4. Sales by pieces [       ]
69. If you do not consume or purchase village chickens, what are the three major reasons? *(Rank reasons accordingly with 1 being the most important, 2 second most important and 3 third most important)*
1. Do not like the taste [       ]
  2. It does not look good [       ]
  3. Not readily available nearby [       ]
  4. Too costly [       ]
  5. Not easy to prepare (slaughter and dress) [       ]
  6. Not easy to cook (takes long to prepare) [       ]
  7. The carcass is small (size) [       ]
  8. Any other reasons? \_\_\_\_\_

70. If you do purchase/consume village chicken, what are the three major reasons? *(Rank reasons accordingly with 1 being the most important, 2 second most important and 3 third most important)*

- |  |       |   |
|--|-------|---|
| 1. It tastes good                        | [     | ] |
| 2. It looks good                         | [     | ] |
| 3. Readily available nearby              | [     | ] |
| 4. Affordable                            | [     | ] |
| 5. Easy to prepare                       | [     | ] |
| 6. Easy to cook                          | [     | ] |
| 7. Big in size and sufficient for family | [     | ] |
| 8. Healthy reasons                       | [     | ] |
| 9. Others (specify)                      | _____ |   |

71. What needs to be done as regards marketing village in order for you to purchase more?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_