

ANALYSIS OF THE GUINEA FOWL MEAT VALUE CHAIN TO IDENTIFY STRATEGIES FOR IMPROVING
PROFITABILITY OF FARMERS.
A CASE STUDY OF THE NORTHERN REGION OF GHANA



Research Thesis Submitted to Van Hall Larenstein, University of Applied Sciences in Partial Fulfilment of
the Requirements for Degree of Master in Agricultural Production Chain Management, Specialization
Livestock Chains

BY

WUMBEI DRAMANI

11th SEPTEMBER 2019

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DEDICATION

I humbly and unreservedly dedicate this work of mine, to my dad, Mr. Shaibu Dramani and Mum, Mrs. Wumbei Fusheina, for their love and care for me, their son.

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LIST OF ABBREVIATIONS

Abbreviation/Acronym	Meaning
FAO	Food and Agricultural Organisation
NGOs	Non-Governmental Organisation
VHL	Van Hall Larenstein
GSS	Ghana Statistical Services
GWSL	Ghana Water Company Limited
GIZ	German Corporation for International Cooperation
MOFA	Ministry of Food and Agriculture
PESTEC	Political, Economic, Social, Technological, Environmental and Competiveness
SWOT	Strengths, Weaknesses, Opportunities,, Threats
ANOVA	Analysis of Variance
MADU	Municipal Agricultural Development Unit
ADU	Agriculture Development Units
AEAs	Agricultural Extension Agents
VCA	Value Chain Analysis
SADA	Savanna Accelerated Development Authority
AfDB	African Development Bank
SPSS	Statistical Package for Social Sciences
WUSC	World University Service of Canada
UDS	University for Development Studies
HACCP	Hazard Analysis Critical Control Points
WAAPP	West African Agricultural Productivity Program
CLWs	Community Livestock Workers
FDA	Food and Drugs Authority
GSA	Ghana Standards Authority
NORGFFA	Northern Region Guinea Fowl Farmers' Association
SAPIP	Savanna Zone Agriculture Productivity Improvement Project
VSD	Veterinary Services Directorate
APD	Animal Production Directorate

ABSTRACT

The research main aim was to analyse the guinea fowl meat value chain to identify upgrading strategies to improve the profitability of farmers in the northern region of Ghana and the inclusion of women in production. The research was carried out in Savelugu, Tamale and Kumbungu Districts of the Northern region involving 120 smallholder guinea fowl farmers as respondents using a questionnaire survey and in-depth interviews of important stakeholders in the chain. It also applied desk research to obtain relevant literature and secondary data on guinea fowl chain from journals, reports, and published books using Greeni and Google Scholar search engines.

The research findings indicate guinea fowl is an important bird to the people of the north as it fulfils cultural, social and religious obligations in addition to its intrinsic quality of tasty meat attracting a high market for the producers. The producers are mostly subsistent keepers with flock size 5-100 but there is a growing interest to expand flock size of which 4.2% are currently investing in intensive production, keeping between 100-1000 and more birds. The guinea fowl production, however, is challenged with high chick mortality, low technical support to producers, who are disorganised, resource-poor and resorting to the traditional technology of keeping the birds such as use of unimproved breed, use of brooder hen in hatching and brooding culminating in low production and weak relations in the chain.

The study found that women in production were only 2.5% of the producers. However, women were involved as chain actors in processing and retailing of the guinea fowl meat as food vendors and not the live bird. The reasons attributed to this were their perception that the guinea fowl is a difficult bird to keep and taking care, as owners are difficult. Another reason is the asymmetric power relations at the household between men and women where the man/husband hijack and control the production, marketing and the proceeds since guinea fowl products in the study area are highly commodified at the household level leading to this situation.

Despite these challenges, the sector has unique strengths and available opportunities. There was a huge market opportunity for producers, on-going government support in training technical staff, Department of agriculture planned to revive and facilitate the formation of farmer-based organisations, and NGO support available.

Through word of mouth and phone calls, farmers exploit four market channels such as selling to aggregators, or processors or retailers or consumers directly. Producers were relating with actors in trust-based relationships and the chain was governed by market governance mechanism or captive linkage with buyers as dominant coordinators of the chain but with weak existing chain relations.

Producers mostly sold birds as live and reaching consumers as live, and processed in the form of grilled/roasted, or fully dressed. The medium-scale farmers had high productivity whereas the small-scale farmers had the lowest productivity.

The suggested upgrading strategies for the guinea fowl chain towards an improvement in profitability for farmers include: the building chain relations between producers and chain actors and chain supporters; process upgrading through paying attention to hatching, brooding and husbandry activities, regular service provision, capacity building; functional upgrading by specializing in production; product upgrading through value addition on products such as sorting and grading and processing instead of selling live birds and finally social upgrading through promoting gender equality by inclusion of women in production and promoting their well fare.

The researcher recommended the above strategies advising the commissioner to implement by taking the lead facilitator role to initiate implementation through periodic stakeholder meeting/engagements, seminars, workshops, training/capacity building, and farmer group formation and to encourage other stakeholders to take up their respective roles.

CHAPTER ONE: INTRODUCTION

1.1 Background Information

The Northern region is one of the ten regions in Ghana. The region has a total population of 2,479,461 in 2010 with more females (1,249,574) than males (1,229,887). The population of the region increased by 36.2 percent between 2000 and 2010, making it the second fastest growing region in the country. Northern region is Ghana's largest in terms of land area (70,384km²), constituting about 30 percent of the country's land mass (GSS, 2012, page 12).

The climate is hot and dry, with one rainy season that begins in May and ends in October. The amount of rainfall recorded annually varies between 750 mm and 1050 mm. The dry season starts in November and ends in March/April with maximum temperatures occurring towards the end of the dry season (March-April) and minimum temperatures in December and January due to the cold winds of harmattan. The harmattan winds, which occur during the months of December to early February, have considerable effect on the temperatures in the region, which may vary between 14°C at night and 40°C during the day. Agriculture, hunting and forestry are the main economic activities (GWCL, 2019).

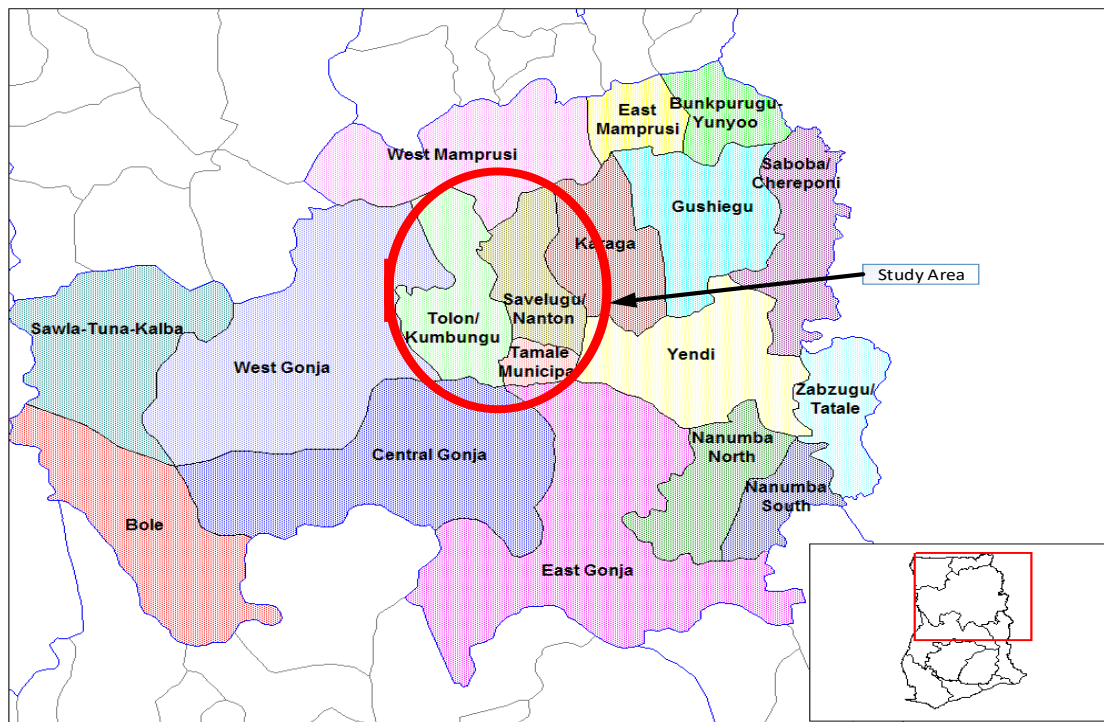


Figure 1. 1: Districts Map of Northern Region of Ghana

Source: https://upload.wikimedia.org/wikipedia/commons/8/8c/Northern_Ghana_districts.png

It has a single rainfall pattern; there is only one crop season in a year. The climate also supports rearing of livestock such as guinea fowl and village chicken, cattle, sheep and goat, which supports households in income generation (GSS, 2010).

In Ghana, poultry production has a large component of village poultry involving local chickens, guinea fowls and ducks. Most rural households keep chicken and in the savanna zone of northern Ghana, rural guinea fowl (*Numida meleagris*) production is common (FAO, 2014) next to the local chicken (Anning, 2008). The population of Guinea fowl is about 25% of the total population of poultry in that zone and the average household in suburban farming areas and in the villages would keep 5-25 Guinea hens and a Guinea cock for a period of one year (Annor, et al., 2012).

The guinea fowl is an excellent poultry type that is valued by Ghanaians especially Northerners. Guinea fowls production plays an important role in increasing food and nutritional security of the poor, reducing livelihood vulnerability and insecurity (Ahuja and Sen, 2007). The birds provide for the protein requirements of the family, serve the invaluable function as source of cash and fulfilment of social and cultural obligation.

However, the production is mostly small scale in nature of which most farmers have flock sizes ranging between 5-25 birds and farmers rear the birds semi-intensively. The major problem faced by guinea fowl producers in production and marketing of their products (live birds and meat) are high chick mortality and low price of products respectively (Abdul-Rahman & Adu, 2017).

Even though, government and non-governmental organizations such as GIZ see the sub-sector as a strategy to improving household income and reduce poverty in Northern Ghana, the guinea fowl meat value chain as a whole is not well developed. In this direction, there have been some attempts at large scale guinea fowls production in northern Ghana, but these have failed largely and there is not much to show for it (Issaka & Yeboah, 2016).

The (Annor, et al., 2012) believe that, the rearing of Guinea fowls, if given the necessary boost can act as an income generating activity for most rural poor women in the North. Nevertheless, Abdul-Rahman & Adu (2017) have found out that, despite this potential, the guinea fowl production enterprise is male dominated (97%) in the northern region of Ghana. The above observation requires investigation as to why the huge percentage difference between male and female participation in guinea fowl production. *Bringing all the issues together, it can be realized that, the problem of the sub-sector has to do with low productivity, low profitability and gender imbalance at the producer level.*

The earlier attempts by government programs and NGO interventions as indicated above have largely failed to uplift production, profitability and incomes of the producers largely due to a combined effect of economic, sociopolitical and environmental constraints within the sub-sector. Those interventions all failed to investigate beforehand, the local needs and conditions of the chain.

The analysis of the guinea fowl meat chain in terms of the producers' relationships with other actors, supporters and enablers, their performance and profitability in the chain as well as the strategies to upgrading in the chain have not been studied. Thus, the gap identified here is the lack of context analysis of the producer's needs and conditions within the chain and their interrelationship with other downstream actors and kind of support required to remain resilience and productive.

For example, several studies on guinea fowls production in Ghana largely looked into areas of biology and reproductive performance. These include the works of Teye *et al* 2003, Dei *et al* 2006, Dei *et al* 2009, Dei and Nsowah, 2009, Adjetey *et al* 2014, and Alidu, 2014 (Issaka and Yeboah 2016) but not the socio-economic aspects of the guinea fowl chain.

Northern region is one of the poorest regions in Ghana. Governments have recognized guinea fowl production as a strategy to improving incomes and reduction of poverty. However, the sub-sector has not played the expected role in the income generation and reduction of poverty. This situation has been of great concern to government, actors and all the stakeholders (Abdul-Rahman & Adu, 2017).

The preliminary analysis of the guinea fowl value chain in the Northern Region revealed some causes and effects (see figure1.2) to the low profitability of the sector. Some of those studies include (Issaka & Yeboah, 2016) that looked into some aspects of the guinea fowl value chain in the Northern Region of Ghana and found that, high guinea keet mortality rates, inadequate access to veterinary services, low productivity of local breeds, unstable prices and poor management practices as constraints confronting farmers (Issaka & Yeboah, 2016). The visual presentation of the causes and effects of this situation of the smallholder guinea fowl farmers in the study area is given in Figure 1.2 below.

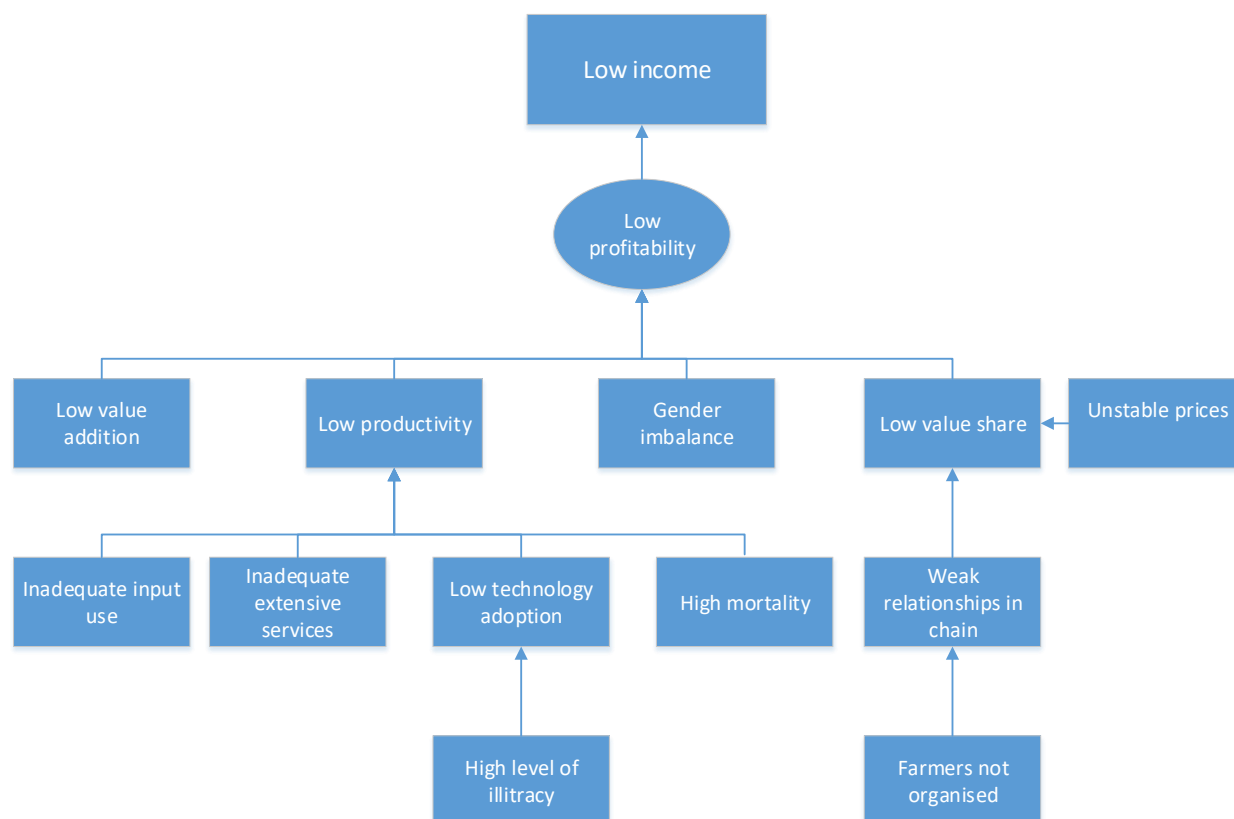


Figure 1. 2: Visual diagram of guinea fowl meat value chain in Northern region of Ghana

Source: Author, Desk study (2019)

1.2 Problem statement

Annor *et al* (2012) hold the view that, guinea fowl production is relatively lucrative as there is high demand for eggs and meat of the guinea fowl. Abdul-Rahman and Adu (2017) confirmed this stating that, the guinea fowl industry has a huge potential for growth in the northern region of Ghana. Despite this potentiality, there remains the constraints of seasonal price fluctuation and low farm gate prices, high chick mortality in addition to other factors that lower the performance and profitability of the producers (Abdul-Rahman & Adu, 2017) and (Abdul-Rahman, et al., 2019). The sub-sector is generally male dominated with women involvement as household heads while in male-headed households, wives do not rear guinea fowls due disputes over ownership or lose full control over the birds; but are reduced to providing care to the birds. Besides, the sub-sector is very much at subsistent level with small flock sizes ranging between 5-25 birds and use of primitive management practices (Issaka & Yeboah, 2016) and (Abdul-Rahman & Adu, 2017). Thus, the gap identified here is the lack of clear

understanding of why producers are unable to expand their productions and are unable to take the opportunities in the sector to increase their value share and the reasons for the seasonal price fluctuations and the low farm gate prices and less women involvement.

1.3 The problem owner

The problem owners are the smallholder guinea fowl farmers in the Northern Region of Ghana. Ministry of Food and Agriculture (MOFA) is the commissioner of this research. MoFA's core mandate is to implement programs and projects through extension and advisory service, monitoring and evaluation and in collaboration with stakeholders in the agriculture sector to contribute to achieving the Ministry of Food and Agriculture's objective of modernizing agriculture, in structurally transformed economy and evident in food security, employment opportunities and reduced poverty (MOFA, 2007). Ministry of Food and Agriculture (MOFA) is represented by the Departments of Agriculture in all districts of the northern region of Ghana that are the implementers of the recommendations. My institution, Animal Health and Production College (AHPC) on the other hand supported the researcher in kind during the research. The role of AHPC is training, conducting research and advising MOFA for implementation.

1.4 Research objective

The purpose of this research was to analyse the guinea fowl meat value chain to identify the upgrading strategies which will contribute to the value share and profitability of guinea fowl farmers and to increase the participation of women in the chain at level of production and to make recommendations to the Ministry of Food and Agriculture for implementation.

1.5 Research questions

Main Question 1: What is the current structure of the Guinea Fowl Meat Value Chain in the Northern Region of Ghana?

- 1.1 What are the roles of stakeholders in the chain?
- 1.2 What are the governance structures in the chain?
- 1.3 What is the level of women participation in the chain?
- 1.4 How are cost prices and value share distributed in the chain?

Main Question 2: What is the current performance of the guinea fowl meat value chain operators in the Northern Region of Ghana?

- 2.1 What are the performance gaps in the guinea fowl meat value chain influencing value share?
- 2.2 What are the strengths and opportunities of the guinea fowl meat value chain influencing value share?

Main Question 3: What are the most appropriate strategies to improve value share and profitability of guinea fowl farmers of Northern Region of Ghana?

- 3.1 What are the production activities in the guinea fowl meat value chain?
- 3.2 What is the role of extension services in stimulating productivity?
- 3.3 What are the existing market segments and requirements for guinea fowl products?
- 3.4 What business strategy (model) is required to improve value share for farmers?

1.6 Conceptual framework

The core concept for this research is chain upgrading elaborated in three dimensions based on the current structure of the chain, current performance and strategies towards improving value share among chain actors. In this study, focus was on identifying major constraints for value chain upgrading and strategies for upgrading the chain based on the following aspects: stakeholders, gender and their roles within the chain, chain coordination, power relations, information flow in the chain, value share of actors, strengths and available opportunities, internal and external challenges affecting performance, current and potential marketing channels of guinea fowl meat products, quality requirements of guinea fowl meat products for various market segments, and the supporting business model. It was envisaged that studying the concepts stated above was enable the researcher to identify the strategies that will contribute to improving the value share of guinea fowl farmers(see figure 1.3).

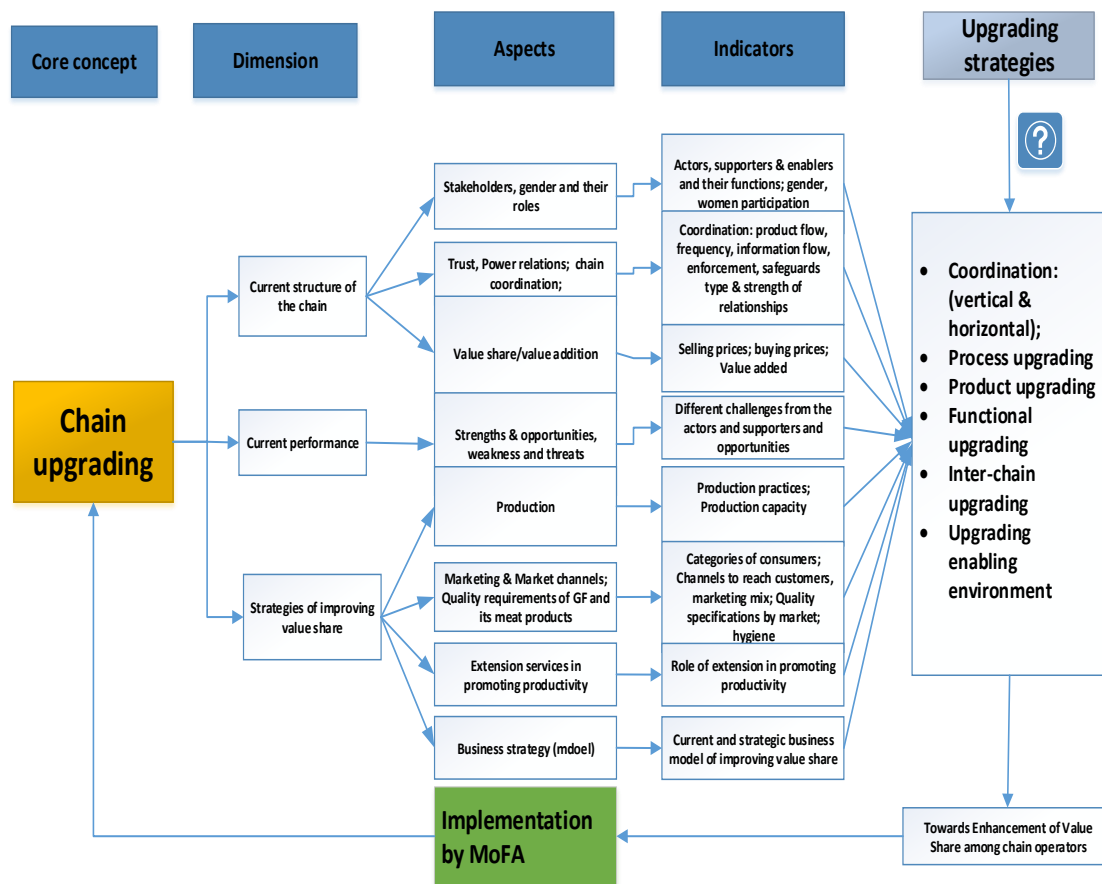


Figure 1. 3: The Research Conceptual Framework

Source: Author, Desk Study (2019)

1.7 Definition of concepts

Value chain refers to the full range of activities that are required to bring a product (or a service) from conception, through the different phases of production, to delivery to final consumers and disposal after use (Kaplinsky & Morris, 2001). The product or services pass through different stages of transformation that include production, aggregation, processing, packing, storage and distribution and then consumption. For this to happen requires a well functioning of chain operators aimed at delivering a valuable product or service in the sustainable way. The value is added to the product at each stage (Nang'ole, Mithöfer and Franzel, 2011 as cited in (Mukandekazi, 2014)

Chain Actors are those who directly deal with the products, i.e. produce, process, trade and own them (Senders, et al., 2012). Those who directly produce, process, trade or consume the product and those indirectly involve which provide financial or non-financial support services (KIT, Faïda Mali and IIRR, 2006)

Value chain supporters are the services provided by various actors who never deal directly with the product, but whose services add value to the product (Senders, et al., 2012). These individuals and organizations often supporting the chain actors and providing them with services such as capacity building, access to information on production and marketing and finance. Chain supporters include financial institutions, input suppliers, transporters, business services, certification, livestock departments, veterinary departments, and nonbanking financial institutions.

Value chain influencers are the regulatory framework, policies, infrastructures, etc. at the local, national and international level (Senders, et al., 2012).

Value creation is the process of improving products with the intention of increasing returns for operators in the value chain.

Stakeholders are those persons (chain actors, supporters and enablers) who are directly or indirectly involved in producing and delivering a product or service to the final consumer.

Added value is the difference between the price received by the actor and price paid by the actor (KIT and IIRR, 2008).

Value share refers to the percentage of the final retail price that the actor earns (KIT and IIRR, 2008)

Quality means meeting or exceeding customer's expectation (Luning & Marcelis, 2009)

Quality requirement refers to the quality of the products that is demanded by the markets.

Value chain governance refers to the relationships in which buyers, sellers, service providers and regulatory institutions that operate within or influence the range of activities required to bring a product or service from inception to its end use.

End market refers to the people and not location. They determine the characteristics (price, quality, quantity and timing) of the product (MarketLink, 2019). They are important sources of demand information.

Strategy is the main instrument for resolving bottlenecks observed in the chain. It is turn base on *good practices* and other sources of knowledge, analysis and reflection, interviews with specialists or experts (Pérez & Oddone, 2016).

Upgrading is acquiring technological, institutional and market capabilities that allow chain operators to improve their competitiveness and move into higher-value activities (Mitchell, et al., 2009). It is an option that farmers and other chain actors can take to obtain higher and more stable returns (KIT, Agri-ProFocus and IIRR, 2012)

Horizontal coordination is the process of creating intra-nodal organisation such as among producers or processors (Mitchell, et al., 2009). For example, this happens when unorganized farmers are facilitated to come together to align their objectives towards enhancing their bargaining power.

Vertical coordination is the move away from one-off spot transactions toward longer-term inter-actor relationships usually between producers and processors or processors and exporters (Mitchell, et al., 2009).

Functional upgrading refers to changing (i.e. upgrading or reducing) the mix of functions performed by actors in the value chain (Mitchell, et al., 2009).

Process upgrading involves improvement in value chain efficiency through increasing output volume or reducing cost per unit of output by enhancing processes within or between nodes e.g. shift to organic production, improvement in husbandry resulting in higher yields, higher production and increased sales (Mitchell, et al., 2009). Producers can also improve their links with other chain actors such as signing contract with input suppliers or processors (KIT, Faïda Mali and IIRR, 2006).

Product upgrading is an upgrading in terms of improvement in product quality e.g. farmers can improve their guinea fowl meat quality by rearing new breeds of the birds that have more desirable characteristics (KIT, Faïda Mali and IIRR, 2006). This has become increasingly important as economies become more quality conscious and as standards rise. Products upgrading allow for market access (Mitchell, et al., 2009).

CHAPTER TWO: LITERATURE REVIEW

This chapter reviewed literature on the topic guinea fowl meat value chain and definition of concepts that were used in the research. It reviewed the works of other authors to understand what has been done on the subject and to know the gap thereof.

2.1 Value Chain Analysis

A “value chain” describes the full range of activities required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers and final disposal after use (Kaplinsky & Morris, 2001).

Value chain concept is an approach that tries to mimic the tangible reality. A framework that explains how the world works. It is rooted in the real world of production and exchange, focusing on a practical approach towards supporting specific target groups to access particular value chains (Mitchell et al., 2009). Mitchell et al., 2009 also conceptualises value chain as a methodology and framework used by researchers, businesspeople and donors, with quite different goals: from increasing commercial profits to improving the competitiveness

Value chain analysis involves mapping the activities of key actors involved in the functions of production, processing, wholesaling, and retailing of a particular product. VCA assesses the characteristics of actors, profits, and cost structures, flows of goods, employment characteristics and the domestic and foreign sales. Thus, it identifies the distribution of benefits and performance among actors in the chain through the analysis of the margins and profits (Kaplinsky and Morris, 2001). These details can be gathered from a combination of surveys, focus group discussions, case studies and secondary data. It also assesses the possibility of upgrading in a chain through the assessment of the current situation including the constraints and profitability within the chain (Afutu, 2011). A value chain analysis can also be used to highlight the type of governance system in relation to coordination and relationships that exist between actors in a chain (Kaplinsky and Morris, 2001). Therefore, value chain analysis provides the understanding of the problems in the chain and possible strategies to improving the situation of the “weaker” links in the chain or actors with low returns or little bargaining power (Rudenko, 2008).

2.1.2 Stakeholders

Stakeholders refers to people who have interest in the development of the chain. Stakeholders in a chain are divided into two groups: external and internal stakeholders. The internal stakeholders are the chain actors who directly deal with the products while external stakeholders are the supporters who deal indirectly with the product but rather provide services such as financials, extension, set policy framework for the product to be produced or marketed (Mukandekazi, 2014).

2.1.3 Chain governance and Coordination

The terms *governance* and *coordination* sometimes appear as synonymous or interchangeable terms in the literature. However, governance to some extent is defined as the set of institutional arrangements in which a transaction is organized while coordination is defined as the vertical organization of activities (Fromm, 2007). (Raikes, et al., 2000), proposed the existence of the following forms of coordination in value chain:

- Domestic coordination which is where business relations are based on mutual trust and shared long-term orientation (long-term relationships between agents).

- Industrial coordination is where uncertainty about quality is solved through the actions of an external party that sets standards and enforces them via instrument-based testing, inspection and certification.
- Market coordination is where the difference in price are equated with quality, and price is the main market management form. Therefore, there is no uncertainty about quality, and prices are sufficient indicators.
- Civic coordination is collective commitment to avoid conflicts, and identity of a product is often related to its impact upon society

Afutu (2011), studying the broiler value chains in Ghana found that, in terms of governance in terms of coordination of the chain, farmers were the coordinators with the reason that, the farmers were the organisers of their own input supply and marketing of their products themselves.

2.1.3.1 Power Relations

Value chain governance refers to the relationships between the actors of the different chain that operate the range of activities required to bring a product or service from inception to its end use (Dietz, n.d.). Governance is about power and the ability to exert control along the chain. At any point in the chain, some firms set and/or enforce parameters under which others in the chain have to operate. According to (Gereffi, et al., 2005), there are five linkage typologies depending on the predictable combination of three variables such as 1) complexity of information exchange, 2) codification of the information and 3) capabilities resident in the supply base relative to the requirements of the transaction (see Figure 4). These five generic ways that lead actors set up and govern linkages in value chains as explained below.

Simple market linkage is a governance mechanism where transactions are governed by price.

Modular linkage is where complex information about the transaction is codified and often digitized before being passed to highly competent suppliers governed by standards.

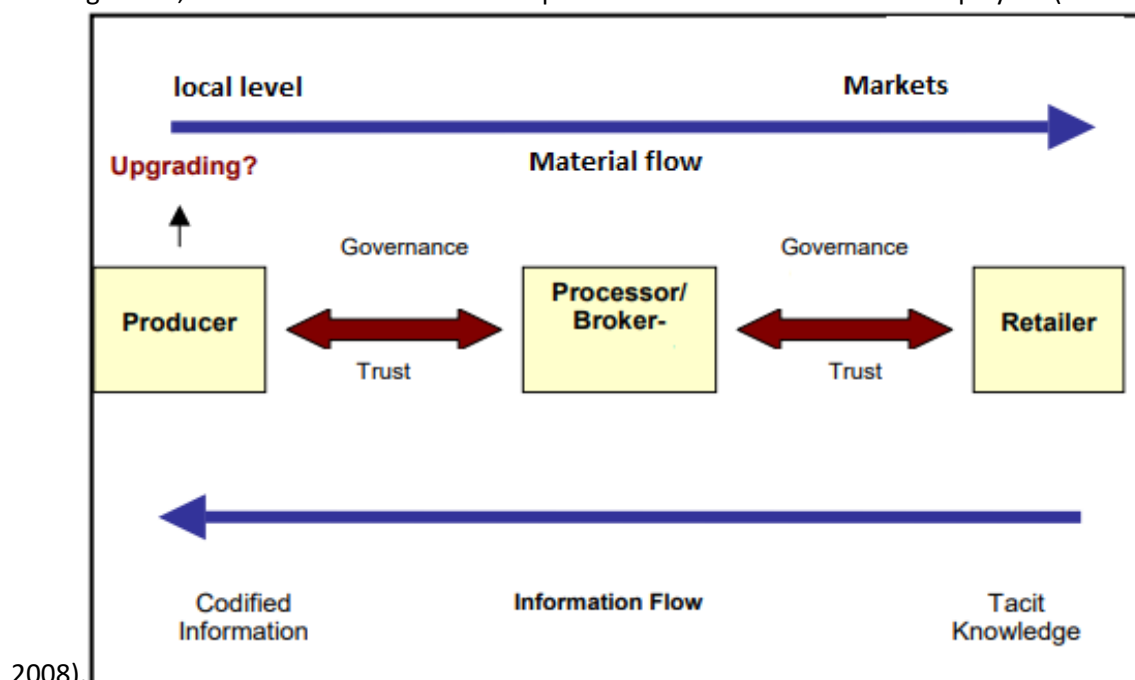
Relational linkage is where tacit information is exchanged between buyers and suppliers with unique capabilities governed by trust and reputation.

Captive linkage is where very dominant buyers provide less competent suppliers with detailed instructions. In this structure, the lead actor/firm dominate the supplier's business to the point where they (suppliers) are unlikely to act in opportunistic ways (the captive form).

Hierarchical linkages is a governance mechanism within the same firm, governed by management hierarchy.

In short, according to Gereffi, *et al.* (2005), five governance structures are possible which governs chain relations. Therefore, in this study, depending upon the characteristics of the chain relations existing between farmers and other actors or among farmers and their associations or a combination of the three variables characterized in the chain, as defined by Gereffi, the governance structure of the guinea fowl meat value chain will be defined accordingly.

not organised, amidst lack of trust and few permanent relations between the players (KIT and IIRR,



2008).

Figure 2. 2: Relationships and interactions in value chains

Source: Fromm, 2007

According to KIT, Faida Mali and IIRR, 2006, buyers and sellers prefer to deal with those who have proved reliable in the past. They have indicated that mistrust sometimes arose due to the bridge of contract usually when buyers or sellers opportunistically trade with others instead of sticking to the agreement. They attributed this behaviour to the nature of the contract that is mostly expressed in a form of implicit agreement, often leading to varying levels of uncertainty and transaction costs. They reiterated the need for intermediary organisation facilitating chain development at the initial stages to play a role of building confidence among the chain actors. A typical example of such possibility is that of SNV's steering a facilitation role of building partnerships between private-sector enterprises and honey producers in Kenya.

2.1.4 Gender aspects in value chains

In Ghana, women constitute 52% of the national Agricultural labour force; contribute 46% to the total GDP (MOFA, 2002). In the SADA zone, women play a major role in farming and food processing. Women are involved in the agricultural processing and contribute at more than 70% of agriculture transformation. In the agricultural sector, there are gender gaps along value chains with women as the disadvantaged side. Many of the gender gaps along the chain are inaccessibility to land and farming equipment's, extension services delivery, agricultural technologies, agriculture processing, credit and financial services (AfDB, 2017).

In a value chain, women often involve in least valued functions e.g. as home-based workers or informal workers more generally (Senders, et al., 2012). They tend to be invisible in agricultural settings while they do a large part of the farm-activities (KIT, Faida Mali and IIRR, 2006). In addition, women-owned agribusinesses mostly face so many constraints but often receive fewer services and support than those of their male counterparts. Since women often play important but invisible roles in value chains, it often leads to gender inequity. Gender inequity often creates missed business opportunity in value chains. Thus, it makes sense to look into the different roles and tasks of men and women in value

chains and to use a gender lens while identifying and addressing bottlenecks for value chain development (Senders, et al., 2012).

Among the guinea fowl keepers in the northern region of Ghana, males constitute the majority (Issaka and Yeboah, 2016; (Kolan & Avornyo, 2013). Issaka and Yeboah reported that, most females rearing guinea fowls were household heads. Wives do not rear guinea fowls because of disputes over ownership that is probably the restricting factor against married women keeping the birds. Nonetheless, male keepers' wives help their husbands in taking care of guinea fowls, especially guinea chicks. Issaka and Yeboah are also of the view that, females are capable of rearing guinea fowls if given the adequate support.

2.1.5 Distribution of Value added and value share in the chain

Value added is the difference between the price obtained by a value chain operator and the price that operator paid for the inputs delivered by operators of the preceding stage of the value chain. That is, the worth that is added to a products/service at each stage of its production or distribution. Analysing value share along the chain provides information about the contributions of chain segments to the total value and the profitability of the chain operators (GIZ Value Links Manual)

In a typical value chain, there are series of stages of related productive and commercial activities ranging from primary production to processing and storage to marketing and sales (wholesale, retail) and finally to the consumption of final products by end consumers. At each stage of the chain, the product under consideration gains some value simply by becoming more accessible and/or more attractive to targeted consumers (Schrader, et al., 2015). The value added can be related to quality, costs, delivery times flexibility in delivery, innovation etc. (Trienekens, 2011).



Source: Schrader et al., 2015

Figure 2. 3: Value chain operations and value addition

The function of value addition is the responsibility of the chain operators. Each operator creates value and owns the (primary, processed, or packaged) product at a particular step in the chain. Together they bring the product “from field to fork” (Schrader et al, 2015). According to Schrader et al, 2015, in Sub-Saharan Africa, agribusiness currently adds little to the value of food after it is harvested. This mean value created by primary production take precedence over value created by post-harvest value-adding activities. Concerning distribution of value added in the chain, according to Trienekens, 2011, depends on governance mechanism, information flow, and production technology in use, power and bargaining position of actors.

According to (KIT and IIRR, 2008), value shares is calculated from the value added which is a percentage of the final retail price that each actor receives from the sale of the product. The size of the value share reflects the amount of costs and risks that an actor has put into the chain. The distribution of value share reflects the consumer perceives the type of product and whether the products has been transformed into valuable state, as it. Usually, when a product like guinea fowl is bought by a consumer in more or less the same state as it was taken from the farm (such as not live bird, not weight and graded and slaughtered and packaged or processed into some form), it attains

little value added in the chain. In that case, the farmer is likely to have the highest value share, at least in a fair market condition.

However, when the product (guinea fowl) is bought in a processed form such as dressed, packaged or dressed and frozen or grilled and spiced, then there has been more value added in the chain and we can expect downstream actors to have higher value shares.

In a chain whereby there is smaller value share, actors may be able to compensate for it by increasing their efficiency or by handling higher volumes of the product. They added, the value share in a chain requires interpretation in relation to the costs and risks of the chain. In addition, any discrepancy may be a reason for intervention in the chain (KIT and IIRR, 2018). According to Addisu et al. (2017) and Hailegiorgis (2017), producers get the highest profit per unit when they directly sell to traders in a short marketing channel. These authors also added that, farmers share become lowest when they sell to a traders in a longest channel.

2.1.6 Information flow

Market information refers to the information that sellers can get and help them to know where they can sell their products and at which price. In addition, the sellers can know what time, quantity and quality a product is required by the markets (Mukandekazi, 2014).

Market segments demand for specific quality of product to deliver. The information about such quality requirement has be communicated throughout the chain for actors to use as shown in Figure 7. Usually retailers, wholesalers, processors, traders and exporters are better informed about consumer demand, quality requirement and even price fluctuations than farmers are as they are closer to the market. This information can be translated into product and market development strategies. Lead firms/actors communicate this information to farmers and their organizations in the form of details about demand for primary products (volume, quality and time of delivery). The farmers in turn use this information to make production decisions (to grow certain crops or varieties and to ensure quality through, for instance, improved product hygiene, less contamination) (Schrader et al, 2015).



Source: Schrader et al., 2015

Figure 2. 4: The use of information on market requirement

According to (Rashed, et al., 2010) , the information flow could be ideas or knowledge shared among the actors and their supporters in the chain in relation to the requirement to bring a product to its end user. For example, Abdul Rahman et al, 2019, found processors obtained food safety information from other processors.

2.2 Upgrading in Value chains

Trienekens, 2011 quotes (McDermott, 2007)to have defined upgrading as “the shift from lower- to higher-value economic activities by using local innovative capacities to make continuous improvements in processes, products and functions”.

Several methodologies are applicable in strengthening chains. Whichever, method it is, they all aim at resolving bottlenecks in the chain such as improving associations between links, the incorporating new actors and a process of social and economic upgrading.

Economic upgrading is the productive transformation of the links and the chain as a whole toward better products and services, superior production processes or activities that generate greater value added.

Social upgrading is where participants in the chain and their communities raise their living standards through decent working conditions with social protection, labour rights and a safe working environment that occurs in a context of environmental sustainability and attention to gender equality (Pérez & Oddone, 2016). Both concepts are very relevant to the current research focus of looking into upgrading possibilities of the smallholder guinea fowl farmers to improve profitability and inclusion of women in production.

Market institutions and governance regimes play a key role in determining the type of upgrading process to embark on. (Kaplinsky and Morris, 2001). According to Kaplinsky and Morris (2000), actors in a chain can upgrade four ways: to increase efficiency of operations/processes within links or between links using perhaps improved technologies or management methods; enhance inter-firm relationships, introduction of new products and to change the mix of activities of the actor.

Based on these points, actors can upgrade by: 1) Process upgrading: transforming input into output more efficiently through the re-organisation of the production system or use of improved technology; 2) Product upgrading: the actors move into producing more desirable/quality products; 3) Functional upgrading: actor add value to their production and 4) Chain upgrading: the actor move to new value chains.

2.2.1 Quality Requirements of Markets

Concerning quality requirement of the guinea fowl market, Abdul Rahman et al, 2019, indicated that all categories of consumers demand live guinea fowl for consumption. Domestic consumers demand for live bird in order to slaughter on their own since they cannot be sure about the quality of dressed birds on the market. Usually there is market demand for live birds that are domestically raised (Killebrew & Plotnick, 2010) or as processed whole birds. The guinea fowl if sold as processed products, consumers require that, it is well packaged and price is more a determinant than the quality attributes of guinea fowls and its products.

Consumers preference for live birds seem to be related to uncertainty about conforming to halal standards in slaughter of birds by processors and poor meat handling and hygiene standards among processors (Abdul Rahman et al, 2019). Consumers show a preference for the tough meat that characterizes local poultry varieties. Most poultry meat is used in soups, and meat from non-local birds is too tender to hold up under long cooking times (Killebrew & Plotnick, 2010). In the northern region, the guinea fowl meat is hardly processed for sale. This marks a major challenge confronting local agricultural production in general. Thus, they are unable to compete favourably with processed imported meat products that have seen an increase in recent years (Abdul-Rahman et al, 2019).

2.2.2 Marketing Mix

The marketing mix is a tool according to (Afutu, 2011) popularly known as 4Ps referring to Product, Price, Place and Promotion. The tool examines market possibilities, either existing or new markets in

order to exploit the opportunities thereof. Actors are able to assess the market opportunities and to make choices in the process of bringing a product or service to the market.

Products: In the northern region, keepers of guinea fowl sell live birds in open market to traders. The birds are ready for marketing at about 28-52 weeks of age. The annual offtake is low that accounts for 52% of total flock size (Issaka and Yeboah, 2016).

Place: Guinea fowls are sold live in local markets, on market days, in urban centers and major cities in Ghana.

Price: Consumers of guinea fowl meat indicated fluctuating prices as major obstacle to their patronising of the guinea fowl. Farmers on the other hand indicate low farm gate prices of their birds. Consumers indicate seasonal fluctuations in the price of guinea fowl as reason leading to the use of products that are substitutes for guinea fowl (Abdul-Rahman, et al., 2019).

Promotion:

Sales promotion is a means by which farmers advertise market for their birds. The commonly used promotional activities by farmers of poultry are discounts, word of mouth, signboards and radio. The promotion type done by retailers of processed guinea fowl meat is through signboards and open display at vantage joints. Retailers of live birds may not have any signboards or engage in a pragmatic promotional activity.

2.2.3 Market segments

Agricultural/food products are marketed through long fragmented supply chains in an Africa in a volatile, high-risk business environment with poor physical infrastructure and little support from formal legal or financial institutions (KIT and IIRR, 2008). Value chains become more diverse when there are different market segments to deliver the product/service (Schrader et al, 2015).

When there is more demand for traditional staple foods, there is an associated increased demand for animal products from the middle class. A growing number of consumers will want processed and packaged products and convenience food and will be more sensitive to quality and food safety (Diao & Hazell, 2004); (World Bank, 2013)). There is a growing number of consumers who are concerned with food safety. Schrader et al, 2015 indicated that diversified and better-organized value chains would generate more value-adding activities.

2.2.4 Value Chain Business model and strategies

According to Alexander Osterwalder, *“a business model describes the rationale of how an individual firm creates, captures and delivers value”* (Lundy, et al., 2014). Based on this definition a business model in this research is defined as a model that describes a type of relationship it wants to establish with each customer segment, channel of distribution, key partners to work with, key resources to use, value of product/service on offer, relationships to establish with customers and support service providers, the key activities to be carried out in a cost-effective manner.

2.2.5 Guinea fowl production

Guinea fowls are raised as free range scavenging birds (Dougnon, et al., 2012) and relatively resistant to most poultry diseases as adults making them easier to manage by resource poor farmers. Housing is rudimentary and health management practices depend largely on ethno-veterinary medicine.

Generally, guinea fowl production is restricted to the Northern Savannah zones, Northern, Upper East and Upper West Regions of Ghana. It is an integral part of the farming system in these areas. The birds,

apart from contributing to household income, play an important role in the sociocultural lives of the people of Northern Ghana (Abdul-Rahman and Adu, 2017). They have demonstrated that farmers in the northern region rear guinea fowls mainly for cash beside the need to meet social and cultural obligations. Issaka and Yeboah, 2016 indicated that only a small fraction of the keepers keeps the bird for subsistence (i.e. for meat and eggs for home consumption). These authors emphasised that, guinea fowl production is commercially viable. They also indicated that, the guinea fowl industry in the northern region has a huge potential for growth given the youthful nature of the farmers aged between 26-35 years.

However, (Moreki & Radikara, 2013) holds a different view, that the commercial viability of the guinea fowl on the African continent is yet to be realised in full. Issaka and Yeboah, 2016, calculating the profitability of the guinea fowl production in the northern region of Ghana, indicated that, overall, the production of the birds is profitable (benefit-cost ratio = 8.2) and will provide a good return on investment. Issaka and Yeboah (2016), holds the view that, the potentials of the guinea fowl production as a commercial venture are enormous due to increasing demand for guinea fowl meat as meat of choice by most Ghanaians. Besides, the production and demand for exotic guinea fowl production in Ghana is low (FAO, 2014). Issaka and Yeboah concluded that, potentials could be realised if guinea fowl production is developed under smallholder farmer conditions and not necessarily large scale intensive management conditions.

In describing the production system, (Abdul-Rahman & Adu, 2017), mentioned that all the guinea fowl farmers rear the birds semi-intensively, where the birds are provided with housing to roost at night. In addition, supplementary feed and water are provided on daily basis and the flock sizes ranges from 5 to 25 birds. They use brooder hens for incubation of eggs. In this system, there are high keet mortalities mostly in the second quarter of the year. For health management of the flock, majority of the farmers do not vaccinate their birds against poultry diseases and rather rely on ethno-veterinary practices. In terms of production challenges in this system of production, producers face high keet mortality and low price of products. Producers decide to sell their birds mostly to aggregators when they are in need of cash. This is their main motive for rearing the bird beside the need to meet the social and cultural obligations.

2.2.6 Extension services and their role in chain upgrading

According to Issaka and Yeboah (2016), access to extension services is a key driver in technology adoption in agricultural innovations. They indicated however, unfortunately, access to extension services by guinea fowl farmers in the northern region of Ghana is very poor. Amankwah, et al. (2014), found that agricultural extension in Ghana, though a driver for agricultural innovation has witnessed dwindling prospects over the years due to a major drift in agricultural policies over the years. This affected public delivery of veterinary services and the amount of services received by keepers. There have been a progressive dwindling in financial and human resources and investment in physical infrastructure.

In Ghana, largely keepers depend heavily on public veterinary extension services rather than private service providers (FAO, 2014) and (Amankwah, et al., 2014). It has been observed that, private extension service provided by the third sector, notably NGOs, is lacking for the case of guinea fowl production in Ghana (Issaka and Yeboah, 2016).

CHAPTER THREE: RESEARCH METHODOLOGY

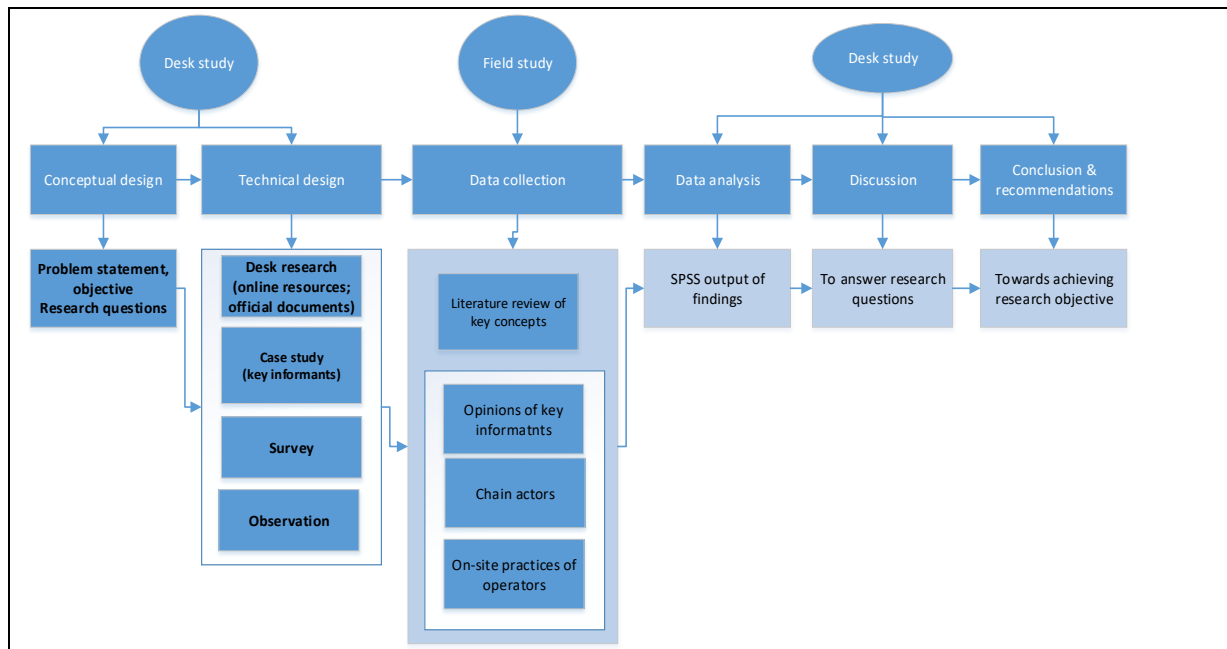
3.1 Study locations

This research was conducted in the Northern Region, which is one of the 10 Administrative regions of Ghana. The Region has 26 districts and this study was carried out in Savelugu Municipality, Tamale Metropolis, Kumbungu districts (Figure 1.1, page 1).

These areas are the major production and marketing centres for guinea fowl in Northern Ghana. They share some common characteristics where majority of their respective populations depending on crop and livestock farming as their main source of livelihood. More so, they share similar vegetation and climatic conditions as they all fall within Northern Savannah Zone of Ghana. Apart from Tamale, the study area is largely rural with majority of its population depending on subsistence agricultural as the main source of livelihood.

3.2 Research design and strategy

The research was to analyse the guinea fowl meat value chain in order to identify the upgrading strategies to contribute to the value share and profitability of guinea fowl farmers. In order to achieve this, the research framework shown in Figure 3.1 was adopted. The research first conducted a desk study into the background information of research problem and key concepts of the study topic through online resources and official documents using Greeni and Google Scholar. The desk study continued throughout the research process in order to update and enrich as well as provided sufficient evidence of literature backing for the methodology used and the key findings of the research.



Source: Adapted from (Verschuren & Doorewaard, 1999) and modified by Author (2019).

Figure 3. 1: The research framework

In addition to the desk study, the primary data collection adopted survey on smallholder guinea fowl farmers, key informant interviews alongside observations for in-depth study of the guinea fowl meat value chain case. The research tools such as checklist and questionnaires used to aid key informant interviews and survey respectively. The questionnaires for the survey pretested on farmers within the

study area and adjusted to ensure its relevance, conformity and clarity. The researcher trained six data enumerators for the survey data collection to allow for quick data collection since the study area was vast and the selected communities were far apart.

3.3 Data collection

The research adopted three major research strategies to collect the data. This include desk study, survey, interviews. This combination of strategies allowed the researcher to validate the findings by way of triangulation with different data collection tools. An overview of the research strategies is indicated in Table 3.1.

Table 3. 1: Overview of primary and secondary data collection

Research Strategy	Purpose	Data collection Tool	Respondents/sources
Secondary data collection			
Desk research	To carry out literature survey about: Stakeholders Chain context Concept and concept dimensions	Google Scholar; Greeni Search engine; Reading printed documents	Library, internet
Primary data collection			
Survey	Obtain a broad overview of the core concept (chain upgrading) and all aspects of the guinea fowl meat value chain in the study area in relation to the key questions of current structure, current performance and most appropriate upgrading strategies.	Structured questionnaires	Random sample of Guinea fowl Farmers (120) scattered across the study area
Interview	To dig deeper in to opinion of stakeholders and experts; their roles in the chain	Semi-structured questionnaires	Guinea fowl Farmer's Association, AEAs, Expert, NGO, Input dealer, Processor, Collector/aggregator; consumer (see Annex 3 for details)

Sampling and sample size

The study population was the guinea fowl farmers in the Northern Region of Ghana and the sampling frame was the guinea fowl farmers in three districts within the northern region of Ghana. The number of research units from each district was 40 respondents randomly selected. Hence, a sample size of 120 guinea fowl farmers in the three districts was selected for the survey. In order to obtain better understanding of the chain characteristics value share and profitability of the smallholder guinea fowl farmers in the chain and for the sake of triangulation, a supportive information was sought from 13 key informants, consisting of 1 expert in Guinea fowl chains, 1 Guinea fowl Farmers' association, 1 NGO, 2 AEAs, 5 processors, 1 input dealer, collectors/wholesaler, 1 retailers, and 2 consumers.

The three districts of the northern region of Ghana from which this research was conducted included Tamale Metropolis, Savelugu Municipality, and Kumbungu district. These districts were purposively selected because of the relative abundance of guinea fowl farmers in those districts.

Table 3. 2: Research questions and methods of data collection

Research question	Type of data	Data Source	Method/tool
What is the current structure of the Guinea Fowl Meat Value Chain in the Northern Region of Ghana?			
1.1 What are the roles of stakeholders in the chain?	Qualitative data	Internet; printed documents Interview of stakeholders	Content analysis; Face-to-face interview; Survey of farmers;
1.2 What are the governance structures in the chain?	Qualitative data	Literature materials; Chain actors, supporter and enablers Survey questionnaire	Content analysis; Face-to-face interview
1.3 What is the level of women participation in the chain?	Quantitative data;	Farmers AEAs NGOs Expert Farmers' Association	Survey questionnaire Face-to-face interview
1.4 How are cost prices and value share distributed in the chain?	Quantitative data	Farmers	Survey questionnaire
2. What is the current performance of the guinea fowl meat value chain operators in the Northern Region of Ghana?			
2.1 What are the performance gaps (Weaknesses & Threats) in the guinea fowl meat value chain influencing value share?	Qualitative data;	Farmers; Farmers' association; AEAs; Processors, Traders.	Content analysis of results; Survey questionnaire

2.2 What are the strengths and opportunities of the guinea fowl meat value chain influencing value share?	Qualitative data;	Farmers; Farmers' association; AEAs; Processors, traders	Content analysis;
3. What are the most appropriate strategies to improve value share and profitability of guinea fowl farmers of Northern Region of Ghana?			
3.1 What are the production activities in the guinea fowl meat value chain?	Quantitative data; Qualitative data	Farmers; Experts;	Survey questionnaire
3.2 What is the role of extension services in stimulating productivity?	Qualitative data	AEAs	Face-to-face interviews
3.3 What are the existing market segments and requirements for guinea fowl products?	Qualitative data	Traders; Farmers; Consumers; Processors; Expert;	Face-to-face interview Survey questionnaire
3.4 What business strategy (model) is required to improve value share for farmers?	Qualitative data	Farmers;	Face-to-face interviews Survey questionnaire

3.3.1 Desk research

Desk research was planned and conducted prior to the fieldwork and continued until closed of the study. The desk research reviewed literature on the research problem and background and research key concept; as well as secondary data on the guinea fowl value chain. The secondary data was collected from sources such as the annual reports of Agriculture Development Units (ADUs) of the three study areas and through internet resources. Moreover, with the desk research, technical background information on guinea fowl production systems in the study areas and any relevant literature on stakeholders, socio-political and economic environment was obtained as well.

3.3.2 Surveys

A survey questionnaire with both closed ended and open-ended questions (see Annex 1) was used as a tool for collection of primary data from a sample of guinea fowl farmers in three study locations in the northern region of Ghana. The questionnaires were hand delivered to respondents at the time of data collection. The survey strategy was chosen in order to obtain an overview of the farmers' performance, their roles in production, marketing, constraints they encounter, value share, and upgrading activities. Simple random sampling was used to select the respondents and a minimum of 40 farmers were selected from each of the three study locations giving 120 respondents. However, the three study areas were purposively selected for the field study because guinea fowl farmers mostly dominate those areas.

3.3.3 Case Study

A case study that involving face-to-face interviews with various actors in the chain was conducted, using a checklist with open-ended questions. This was done with content analysis of various

documents or reports on guinea fowls in order to obtain an in-depth information on the chain characteristics and strategies to upgrade the chain for improvement of the value share and profitability of guinea fowl farmers in the northern region of Ghana.

3.3.3.1 Key informant interviews

With the use of semi-structured interview guides, key informant interviews were used to collection data on stakeholders and their roles, women participation in the chain, governance mechanisms, business strategy/model, role of extension and marketing requirements. The key informants were purposively selected to include, consumers, experts, service providers and support institutions in the Guinea fowl meat value chain. With this strategy, the opinions of the various stakeholders were collected using tailor-made questionnaires for each group of stakeholder (see Annex 3.2). This yielded qualitative and quantitative primary data concerning the structure of the chain, performance and strategies of upgrading the chain to improve the value share and profitability of the guinea fowl farmers. Key informant interviewees for this research are indicated in Annex 3.

3.4 Data processing and analysis

The survey data was compiled using codes for responses for every survey question and statistical data analysis software, Statistical Package for Social Sciences (SPSS version 25), used to generate results in the form of simple distribution tables, bar graphs and pie charts for analysis and interpretation. Besides, the inferential statistical analysis in the form of one-way ANOVA was used to find the similarity or difference between the test variables and correlation analysis was used to establish a relationship between variables. Analysis involving calculations such as value share was done using Microsoft excel. Qualitative data was analysed based on Grounded theory technique to summarize transcripts into themes and establish patterns. Besides, other qualitative data from the interviews were further analysed using a chain map, PESTEC, SWOT and stakeholder matrix.

Table 3. 3: Summary of Data analysis techniques

Strategy	Purpose	Analysis Tool
Desk research, interview and survey	Stakeholder analysis	Stakeholder matrix
	Chain context analysis	Chain mapping PESTEC
	Diagnosis of constraints and opportunities	SWOT
Interview	Qualitative analysis of opinion of informants	Ms. Excel, Grounded Theory
Survey	Quantitative analysis of the responses	SPSS Software version 25, Ms. Excel

CHAPTER FOUR: RESULTS

4.1 INTRODUCTION

This chapter on results of the research presents the results of the methods used in the data collection; which are the questionnaire survey on farmers in the guinea fowl production, and the in-depth interviews of the chain actors and supporters as well as chain enablers/regulators. The researcher presents quantitative results with simple statistical tables and charts and thereafter explains the most interesting issues. The interview results basically illustrates the ideas and opinions of stakeholders, their roles and interactions with chain actors and supporters as well as expert opinions are presented as in-depth explanations of the survey data. For the questions that the survey results did not tackle are illustrated with only interviews results.

4.2 ANALYSIS OF CURRENT STRUCTURE OF THE GUINEA FOWL VALUE CHAIN

4.2.1 Socio-economic characteristics of the guinea fowl farmers

As indicated in Table 4.1, in terms of gender, most (97.5%) of the respondents surveyed were males and only 2.5% were females. It indicates the level of women involvement in the chain at point of production. The respondents aged between 31-45 years (48.3%) were the predominant group of farmers interviewed. Those aged above 45 years were the second largest group (38.3%) while the least were those less than 30 years (13.3%) of age (Table 4.1).

Table 4. 1: Socio-economic characteristics of the guinea fowl farmers

Characteristic	Frequency	Percent
Sex		
Male	117	97.5
Female	3	2.5
Age of respondents		
Less than 30 years	16	13.3
31-45 years	58	48.3
>45 years	46	38.3
Educational background		
Never been to school	84	70.0
Primary school	18	15.0
Certificate/vocational/diploma	15	12.5
Degree/Master/PhD	3	2.5

Source: Author, Field Data (2019)

As indicated on the Table 4.1, most guinea fowl farmers (70%) never had formal education, 15% of them had elementary education while 12.5% and 2.5% had certificate/vocational/diploma and degree/master/PhD respectively. Of those who have not had formal education, 34.2% fall within the age group of those above 45 years while 30.8% and 5.0% are within the age groups of 31-45 years and 30 years respectively as shown in Figure 4.1.

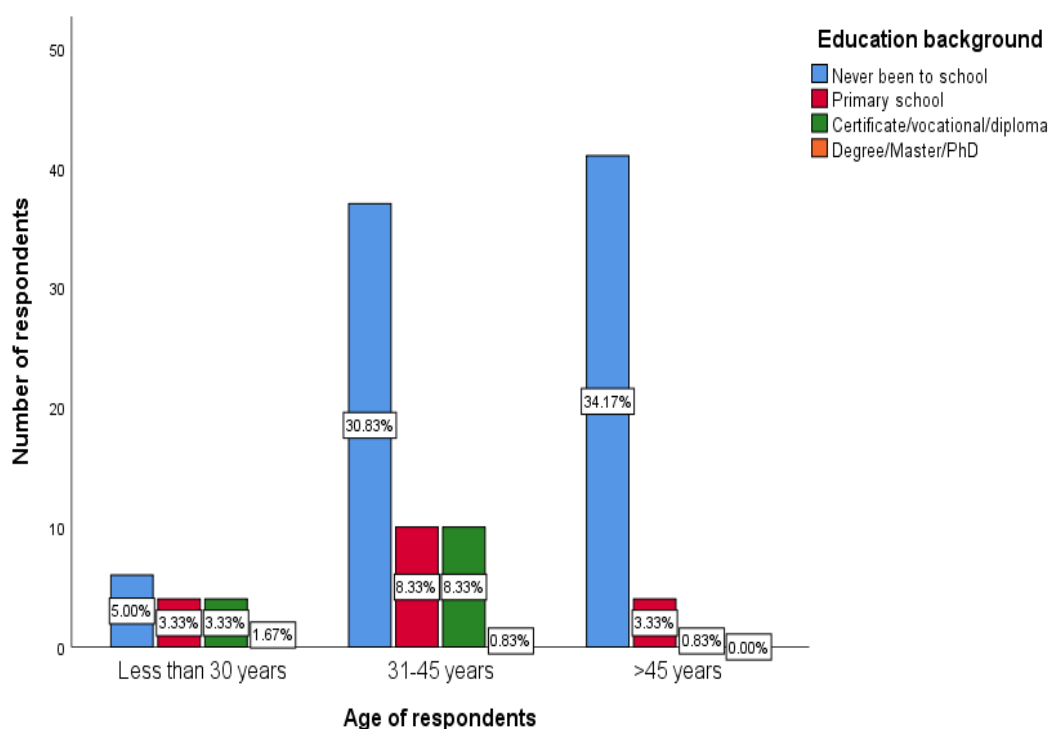


Figure 4. 1: Age distribution of respondents and their educational background

Source: Field Survey, 2019

Sources of income

Most (76.3%) of the respondents were into farming of rearing guinea fowls as main source of income without any form of business or employment. About 5.1% of them are in formal employment, while 11.5% of them were in business as main source of income. Some of them (2.5%) were into farming and business and 2.5% were in to business and formal employment as shown in the Table 4.2.

Table 4. 2: Main sources of income of respondents

	Frequency	Valid Percent
Farming	90	76.3
Formal employment	6	5.1
Business	14	11.9
Farming and business	3	2.5
Formal employment and business	3	2.5
Farming and formal employment	2	1.7

Source: Field Survey, 2019

Economic reasons for rearing guinea fowls

From Figure 4.2, majority of the respondents (77.5%) reared guinea fowls for cash/income and 20% of them reared the birds because they think they it requires relatively low capital of investment and so easy to manage by the resource-poor farmers. Among the rest of the respondent, 1.7% thinks there is a high demand for guinea fowl and 0.8% considered the bird for food. However, in-depth interview with key informants 1, 2 and 3, indicated that, many of the smallholder farmers, ventured into guinea

fowl production as a way of life, they do it because their fathers were into it while some are now taking it as a business, wherein they rear the birds and sell to various outlets in order to make a living (key informant 2). Majority of the producers are smallholder farmers, meaning they are into it at subsistence level, but if they need cash, they easily sell the birds (key informants 1, 2 and 3).

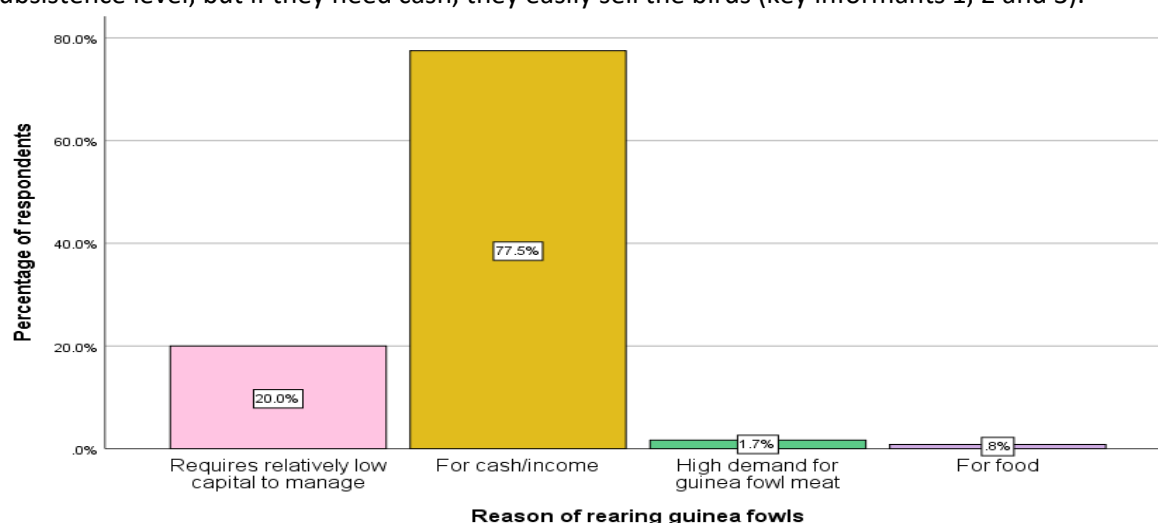


Figure 4. 2: Reasons for rearing guinea fowls in the northern region of Ghana

Source: Field Survey, 2019

4.2.2 Stakeholder analysis of the guinea fowl meat value chain

The main stakeholders, which were involved in the guinea fowl meat value chain in the study area, the northern region of Ghana, consisted of chain actors and chain supporters and influencers/enablers. The main chain actors include input dealers, producers, aggregators, wholesalers, retailers and consumers. The chain supporters of the chain include Animal Research Institute, Non-Governmental Organisations (such as GIZ, WUSC), and Influencers/enablers such as MoFA departments like Veterinary services and Animal Production Directorates and regulators such as Food and Drugs Board and Ghana Standard Authority. The detail information on chain actors, supporters and enablers are presented below.

4.2.2.1 Chain actors

Input dealers

The main input dealers are categorized into the types of input they supply to farmers. They were the Feed input dealers, veterinary drugs, chemicals input dealers, and poultry equipment input dealers. The common input dealers in the study area include Agricare Feeds Ltd, Koudijs Ghana Ltd, Multivet Ltd, and several small shops and kiosks keepers dealing in poultry feeds, drugs and chemicals. Day-old guinea chicks and fertile eggs are the other key inputs for both backyard subsistence production and small-scale commercial producers. In Figure 4.3 shown below indicates that more than half of the guinea fowl farmers surveyed do not acquire their inputs from the same supplier. They either acquire them from private input dealers, through extension agent or own inputs. Among these options, 31.43% sourced their inputs from private input dealer, 3.81% from an extension agent and 6.67% through their means. Therefore, in the study area, smallholder farmers preferred to use their inputs. However, some of them get their supplies from private input dealers mentioned as well. Those farmers who use their feed rely on whole grains, unmixed ground grains and termites. There is an appreciable number of the respondents, who used formulated rations (27.4%).

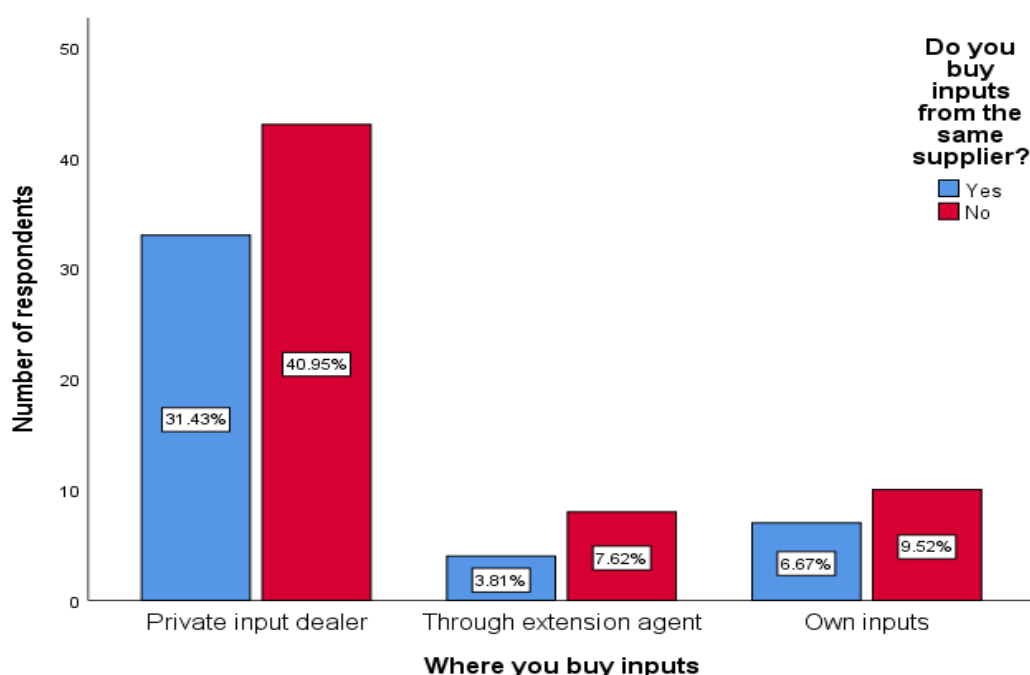


Figure 4. 3: Sources of inputs for rearing guinea fowls

Source: Field Survey, 2019

Producers

Guinea fowl producers in the study area were engaged in other forms of income-earning activities for a source of income (see Figure 4.4) such as formal employment, agribusiness. They primarily are into farming or rearing of guinea fowls, chicken and ruminants. Some of the guinea fowl farmers were into other agribusinesses such as crop farming.

The guinea fowl producers in the Northern region of Ghana are mainly subsistent farmers that raise on average 5–25 birds forming the majority. However, there are small to medium scale commercial producers keeping 100 and above birds under an intensive system of management. These smallholder producers are resource-poor local farmers who cannot afford the expensive conventional feed ingredients and tend to depend on the local feed sources such as termites, whole grains or unmixed ground grains. These farmers hatch their stocks from fertile eggs from their farms or obtain from the open market. Most of them set the local female domestic fowl (a hen) to incubate to hatch guinea chicks.

However, now commercial Guinea fowl farmers are emerging in the north. Typical examples are Jamilullah Farms, Malik Farms, Tib Zaa Farms, Ometech Consult, Potters Farms & Consult, Anvil Engineering and Hatchery, Flow Farms and AniBird Feeds and Drugs. Most of these commercial producers are rearing local breeds with few of them rearing exotic breeds imported from Europe.

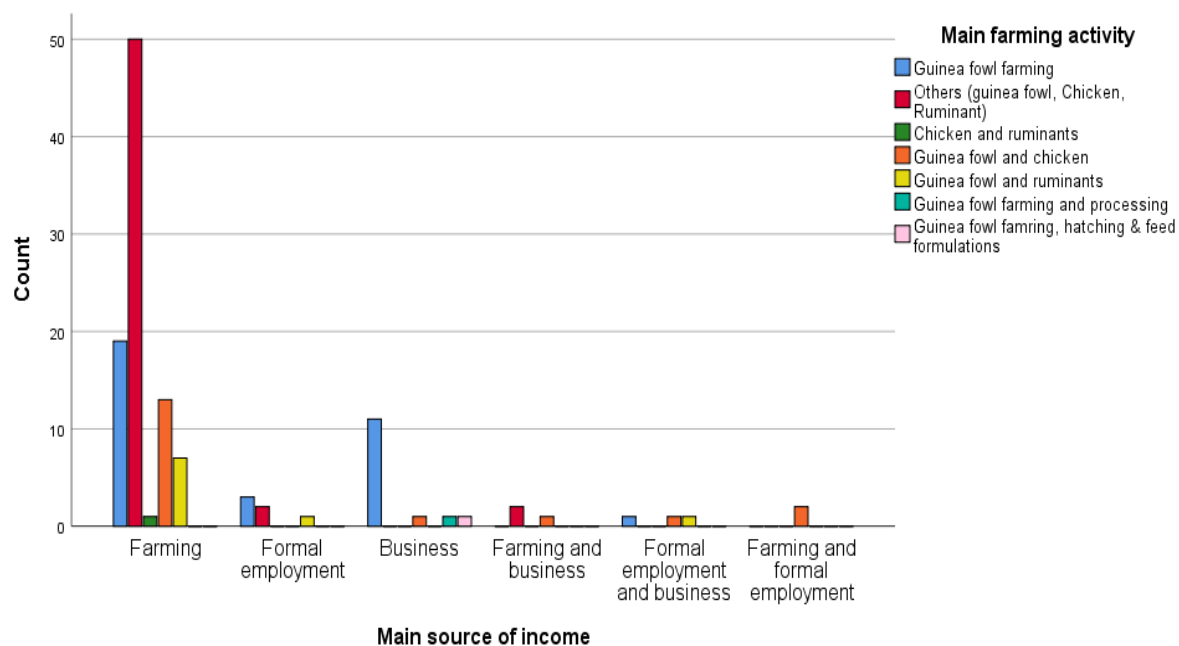


Figure 4. 4: The main sources of income for respondents

Source: Field Survey, 2019

Aggregators

The aggregators were mostly those traders who have the capacity, to travel to farming communities in the rural areas to buy guinea fowls at the farm gates. The minimum distance they travel was about 5 kilometres and up to 20 kilometres or more. The common means of their transport to the communities are bicycles, motorbikes, tricycles and market trucks. The particular carrier for the birds is made of sorghum stocks or bamboo. The aggregators were mobile and usually did not own shops for selling the birds.

The aggregators sometimes can buy 10 or 20 guinea fowls from one farmer and then move to another. This is done until they get enough to return with. Some of them have client farmers from whom we buy live birds. Some of the aggregators pre-finance the smallholder farmers; this can glue the farmer to them to keep on selling to them. According to the aggregators, some processors place an order for supplies from them and when they return from their trip, they deliver to them. Usually, it is based on mutual trust and not contract. The payment is not upfront but takes some time before they are paid (2).

Wholesalers

Wholesalers were also part of the chain. There were purchasing live birds in bulk from aggregators in the open village markets centres or from some farmers who carry their birds there on market days, which come off every six days. The wholesalers in the chain are an important link as they travel to the urban and peri-urban areas to supply their range of clientele.

However, some aggregators where themselves wholesalers taking up the functions of purchasing, transporting and sale of live birds to their customers such as processors (e.g. Gees Fresh Point Ltd, Farm Gates Meats, UDS Meats Unit, Mba Yahaya Guinea Fowl Processing Enterprise and many other Barbecue Stand operators), retailers, and institutional consumers (e.g. hotels, guesthouses, chop bars/restaurants etc.).

Retailers

The retailers were found in both rural and urban areas. The retailers get their supplies from wholesalers or aggregators or sometimes from farmers directly depending upon where they were. Some retailers have regular suppliers who bring them live birds.

In the towns and the city of Tamale, the retailers locate their cages by the roadside to attract individual passers-by. They sell to individuals, households, Food Vendors, and chop bars/restaurants operators. Sometimes, the grillers/processors also buy some number of birds from these retailers usually during periods of scarcity. According to the retailers, sometimes, the guinea fowls are in short supply and becomes quite difficult to obtain even one guinea fowl for retail. During those times of scarcity, (usually in festive seasons like Eidul Adha, Christmas), the retailing price is raised and despite that, the demand is still high and one will see customers waiting on turns to be served. There are other times they will struggle to sell their supplies.

There is a range of retailers for the live guinea fowl and processed products such as frozen, roasted/grilled meat and kebabs. Some retailers are at the same time processors. The roadside grillers/barbecue stands are such examples of retailers. There is yet to be any supermarket dealing in the sale of guinea fowl and products in the northern region of Ghana.

Their customers were individual passers-by buyers, households, and chop bars/restaurants.

The retailing point for the live guinea fowl is at open fowl markets in the cities, towns and villages. Some of them also fixed their cages by the roadside to attract clients.

The peak of their sales is in festive occasions such as Eidul Adha, Eidul Fitr, and Christmas during which the demand increases (key informant 8). In those times, it becomes quite difficult to obtain even sufficient guinea fowls for retail. They become scarce sometimes during the rainy season too but demand is there and customers are waiting on turns to be served (key informant 8). Some of them have regular suppliers who bring to them live birds. Their main challenges as they stated to their business is inadequate financial support to invest. Many of them say they need financial support to purchase many birds for sale.

Consumers

The consumers of guinea fowl meat range from individuals, households to institutions such as hotels/guesthouses, chop bars/restaurants. The consumers of guinea fowl are found everywhere but more in the city of Tamale. They were categorized into low-income households and middle-income to high-income consumers who usually patronize hotels, restaurants and chop bars.

Some customers of processed guinea fowls sometimes call and place orders for kebab/barbecue or grilled guinea fowl to be served. Consumers are looking forward to buying heavier birds and expecting to have tastier meat (key informant 2).

However, more consumers demand more live guinea fowls than the processed guinea fowl. The institutional consumers such as hotels, guesthouses, restaurants arrange to wholesalers, aggregators, or sometimes, commercial producers to directly source live guinea fowls.

Processors

In Northern Ghana, local processing of guinea fowl into cut portions to facilitate quick and easy use by consumers is limited. Locally produced guinea fowls are sold to retailers and individual consumers as processed whole birds or cut portions. In Tamale are some key processors such as Gees Fresh Point Ltd, Farm Gate Meat Ltd and UDS Meats Unit who buy guinea fowls, process and sell to consumers.

Gees Fresh Point Ltd

The Gees Fresh Point Ltd is a medium scale processing and packaging company that purchases guinea fowls from about 500 smallholder guinea fowl farmers in the northern region of Ghana through 25 wholesalers/aggregators who supply the company on daily basis. The Gees Fresh Point Limited has a processing capacity of 1,500 birds daily but currently processes daily less than 300 birds. It slaughters, freezes, packages and markets frozen products or roasted or grilled whole guinea fowl in the southern and northern parts of Ghana. The company builds the capacity of these aggregators and these smallholder farmers through the partnership of NGOs such as WUSC, Farm Radio and GIZ produce to the quality and standards that the company needs. These aggregators then go to the smallholder farmers to buy the birds and sell to us for a margin.

Depending on the season, the price of a live bird varies. During the wet/rainy season, the birds are scarce, so prices go high. Aggregators buy from farmers and put a margin of about GHS 3.00 on it per bird. If the farm gate price is GHS 25.00 per bird of our standard weight, then they sell to the company at GHS 28.00. The final products are sold at GHS 32, GHS 35 and GHS 38 per bird depending on the weight. The value adding activities include slaughtering, dressing, evisceration, packaging, refrigeration and distribution to clienteles or the company's outlets at Tamale Airport and Kotoka International Airport.

UDS Meats Unit

The UDS Meats Unit Ltd, one of few standard meat-processing units also processes guinea fowl for their customers mostly the hospitality industry. It is for research, facilitate teaching and at the same time to run business. It also trains entrepreneurs from the meat industry in new methods of meat processing and food safety. The unit processes guinea fowl into just the dressed guinea fowl meat for clients such as restaurants that order for guinea fowl meat.

The unit procures live birds from aggregators through trust-based arrangements at prices ranging from GHS 25.00 to GHS 30.00 per guinea fowl at standard weight of 0.8kg -1.1kg per bird and after adding value through processing, it is sold at prices ranging from GHS 29.00 to GHS 32.00. The unit takes 100 guinea fowls a week through orders but has a capacity to take 500 birds per week.

The products are sold through an outlet at the unit's premises on Nyankpala Campus of UDS. Customers move from Tamale and surrounding areas to the outlet to purchase dressed guinea fowl. The unit planned to have more outlets outside its premises and with meat van delivering to customers. The unit follows the HACCP principles to ensure food safety. Personal hygiene is ensured; only healthy birds are procured, at processing, the unit's worker code of conduct is enforced - less talking to prevent saliva from contaminating the meat, wearing of gloves, the knife for evisceration should not be same knife as for cutting, cleaned freezers, wearing of PPE. They have certificates issued by FDA and GSA and from time to time, there is auditing on their operations.

Barbecue Stands

As side from these modern standard processors, there are numerous small-scale roadside guinea fowl grillers/Barbecue Stands mostly in Tamale. The most popular of such processors are the Mba Yahaya Guinea Fowl Processing Enterprise at the branches in Tamale - Victory cinema, Picorna Road and Lamashegu road. The live guinea fowls are sourced by order from aggregators.

About 200 guinea fowls are processed daily and up to 300 on peak days. The products include whole-grilled guinea fowl and split cuts such as half guinea fowl, quarter guinea fowl and various cuts. Customers place orders for grilled/roasted guinea fowl meat and choose from the range of the products mentioned. The whole, half, quarter and splits cuts go for GHS 40.00, GHS 20.00, GHS 10.00 and GHS 5.00 respectively. There are special stew and spices popularly called guinea fowl stew that goes with the products. The products range ensures that it meets different customers taste and ability to pay. These are wrapped with the guinea fowl stew and packaged in takeaway disposable containers. It is very tasty and affordable and its taste is exceptional (key informant 7).

These grillers usually have a network of suppliers from whom they source their supplies to ensure consistent supplies, as they will not get enough from a single supplier. Therefore, they buy small numbers from different suppliers to make up for the number required. They, however, do have some loyal and trusted suppliers whom they have done business with for a very long time. The arrangement is not contractual but based on the trust relationship between the wholesaler/aggregator and grillers. Sometimes, the supplies are delivered and payments issued on a later date (key informant 7).

The griller buy the live birds at GHS 25.00 or GHS 30.00 and the grilled whole guinea fowl is sold at GHS35.00 or GHS40.00 to consumers. Their selling prices ranges from GHS 30 to GHS 40.00 depending on the size of the product.

The grillers/barbecue stands have for their clientele a range of products such as whole guinea fowl, cut portions; some of them have ready-to-eat kebab or smoked. Some orders come as far as Kumasi or Accra.

4.2.2.2 Chain supporters

Animal Health and Production College (AHPC)

AHPC as practically oriented educational institution has model farm for teaching/didactic purpose. However, is involved in the guinea fowl chain because of its hatchery facility which has a capacity 28,000 guinea chicks hatching capacity. It is not able to operate to full capacity because of logistical and funding constraints, which is typical of Ghanaian public institution. The entity provides training and hatchery services to producers especially smallholder farmers.

Animal research institute

ARI is a chain supporter offering supporter services to the producers in terms of technology development and transfer. They conduct research and advise government. Their main clients are farmers, and as far as they are clients, institute has done a lot of guinea fowl research involving them. As a science and technology institute, they provide training services to farmers and champion technology development and implementation (key informant 1).

The institute is instrumental in coming out with technologies and making on-station and on-field trials on hatching and brooding of guinea keets to improve survivability. Under the GIZ project, the institute tried to extend these various technologies through championed guinea fowl farmers who have been trained, to extend the knowledge to other farmers (key informant 1).

The major challenge to the institute functionality as chain supporter is inadequate funding of its activities, so is unable to extensively and effectively extend the new technologies to farmers. The institute has identified that, there is still a technology gap in reducing chick mortality. On-station trials reduced chick mortality to 20% but on field has scored up to 90%. An inadequate funding is therefore, key issue, as the institute is unable to have ample training sessions with farmers; on-station and on-farms over a course of a period. The way forward to mitigate the problem is to implementation of technology extension strategy and with ample funding source, to stimulate participatory and inclusiveness as there are things that can be learnt from the farmers.

NGOs

Some government-donor funded programs such as NRGF, WAAPP, SADA etc. and with contribution of some NGOs like GIZ, WUSC, Farm Radio, Trias Ghana etc. tried to reorganize the guinea fowl value chain especially from the production side. In this direction, some smallholder farmers benefited from some capacity building training, startup grants, and various forms of support in order to improve upon the productivity. WAAPP program for example, supported some 20 guinea fowl farmers with started up investment capital and technical training and husbandry services; and they in turn to extend the knowledge and services to other farmers.

Northern Region Guinea Fowl Farmers Association

NORGFFA is the northern region branch of guinea fowl farmers group solely dedicated to improving their craft of keeping guinea fowls. It an association that helps to organise the farmers to benefit from government support programmes and projects. They link farmers to NGOs and some private sources of assistance. With this association, that alone shows that there some commitment the farmers intend to learn how to be better at what they do. It makes it easy for them to receive production improvement related technologies.

As membership is voluntary, the majority of northern region guinea fowl farmers are not members as they are of the view; the association procedure is not favouring them. The farmers are coming from a cross-wider community area making participation difficult by individual farmers and the executive board of the association does not have the resources to reach out to these farmers in the remote communities to educate them on the important benefit they stand to get from belonging to the association and from guinea fowl production.

There is the need for Guinea fowl farmers' association to aggressively organise the farmers is the first thing to do.

4.2.2.3 Chain enablers

Veterinary services directorate

The directorate is represented across the country at all the regions and districts by veterinary staff who are responsible for monitoring diseases of livestock and poultry. The veterinary department staff are in charge of operational zones across the study area. Due to the limited staff, a veterinary is made to man two zones, which consist of about 60 communities.

The CLWs (Community Livestock Workers) are contact persons stationed in some communities to attend to minor veterinary issues such as oral treatment and no injection and surgery in the absence of veterinary staff. The CLWs have been given some training to serve as a link between communities and qualified veterinary staff. The farmers need to be linked up to the veterinary services within the districts and veterinary services need to be resourced to serve the farmers as most farmers complain of the unavailability of such services.

Animal Production Directorate

It is the policy programme's implementer in the livestock sector in Ghana. The directorate is responsible for building the capacity govern sector livestock professional. It is responsible of coordinating livestock sector projects and programme by government. It directorate with the support of FAO, built the capacities of some guinea fowl producers in order to improve upon their production. It has established breeding centers equipped with necessary equipment for farmers to bring their eggs to hatch and brood the chicks. With the implementation of the flagship program dubbed Rearing for food and jobs, the directorate will be procuring guinea chicks and supply to productive beneficiaries in the pilot districts in the regions.

Ghana Standards Authority

Ghana Standards Authority contributes to the value chains by protecting consumers and facilitating trade through standardization, metrology and conformity assessment. They are mandated to inspect all measuring and dispensing instruments of businesses using such equipment. They supposed to verify the accuracy of measuring scales at all processing units and shops where agricultural commodities are sold.

They supposed to protect consumers and promote trade by collaborating with other stakeholders in the chain such as FDB, veterinary services, extension services and business associations to enforce compliance to standards. They are responsible for issuing certificates and to conduct auditing. However, there are no standards in the live guinea fowl marketing and even with the processed products. Hence, there are challenges in price determination in the chain as there is no GSA standard being enforced to ensure compliance with metrological requirements. Buyers and sellers visually appraise the fowl and based on that and the prevailing market conditions to quote the price. So, most of the off-takers have issues with buying from farmers as they often use their discretion to price the fowls (key informant 5).

Food and Drugs Board

Food and Drugs Board is responsible for the inspection of the premises and activities of processors. They visit business premises for inspection and advice concerning hygiene and food safety. According to key informant 7, the FDB officers inspect the processing of the meat and give necessary advice concerning personal hygiene, neatness, and cleaning of the premises. They issue a certificate of a permit for processors to operate as an entity of serving public with meat until they are sure the processors are capable of ensuring food safety, such a certificate will not be issued. FDB is there is a regulator in the guinea fowl meat value chain.

4.2.3 The level of women participation in the chain

In the chain, women are group of the marginalized stakeholders at production level as they are not much involved in the production. However, they are involved in other levels of the chain though majority of the actors are men (key informant 2). Their involvement is in terms of selling or marketing of the products such as eggs and meat but the live bird they are not involved (key informants 2 and 4).

The mobile vendors are mostly women, who purchase the live bird, and either smoke or grill or fry for sale to consumers. Most of the food joints/chop bars are mostly women who use guinea fowl meat in preparing stew or soup for sale to consumers. Men mostly undertake the kebab/barbecue processing (key informant 2).

There is no clear-cut reason why women participate less in the guinea fowl meat chain at the production level and other levels of the chain, even though some are of the view that there is no cultural barrier to their participation. An expert in the guinea fowl chain has this to say:

“I know there are no cultural barriers to women’s participation, but it is just mostly the men who keep the birds. Some of it may have to do with the perception they are difficult birds to keep. They just die and you do not know what to do. Even though there are no cultural barrier to it, but when guinea fowl farmers are invited to training, women are always not in attendance” (key informant 1).

Key informant 4 also thinks, taking care of guinea fowls is difficult for women that might be limiting their interest in rearing them.

“Women are not able to harvest termites from the bush as their do all the household chores and do not usually have enough time for the rearing of the guinea fowl. So scarcely will you see a woman rearing guinea fowls. Even if a woman has guinea fowls, the husbandry is taking care of them. Unless you investigate, then that you will get to know that the woman has share in the birds”.

The other reason given is that women are not allowed to raise guinea fowls or seen to be actively involved because of the asymmetric power relations at the household. In northern Ghana, this has something to do with power relations in the home, where the man/husband wield more control over the women and her property. At the household level, the men hijack the production, if the birds are doing very well and the woman is no longer in-charge. The statement below is included here for the purpose of illustration of the level of women marginalization in the guinea fowl sub-sector, especially in production; else the focus of this research is not on eggs but guinea fowl and its meat value chain. This is what an extension agent has to say about the reason why women are often involved as marketers of eggs:

“When the women are coming to the market, already the man knows the price of the eggs. He knows as he is giving the eggs to the woman, this is what he is expecting, usually that is easily entrusted to the woman to handle” (key informant 4).

According to key informant 1, the guinea fowl products such have been highly commodified at the household level so much that, only 13% of the eggs are consumed at the household. If a product is commodified, at the household level, usually the men take charge of everything and the women do not have control even if they own them in name. This is what an expert in guinea value chain has to say about women interest in participating in the chain:

“...it may inhibit women interest in it. Who wants to be taking care of birds and not really own them....they will lose interest. However, I have to say that you are only talking about northern region. In UER, the interest is more. You find the women have a higher level of interest” (key informant 1).

4.2.3 Existing guinea fowl value chain map

The current guinea fowl meat value chain map (Figure 4.5) was drawn according to the detailed information provided on the chain actors, supporters, and enablers and processes in the chain. The overlays on selling price and volume distribution used in the chain map have been drawn from the in-depth interviews and survey data. The price ranges have been indicated since prices varies from time to time. The selling price for aggregators ranges from GHS20 to GHS30 per bird. Farmers get large gross margin when they sell consumers directly than when they sell to aggregators, processor or retailers.

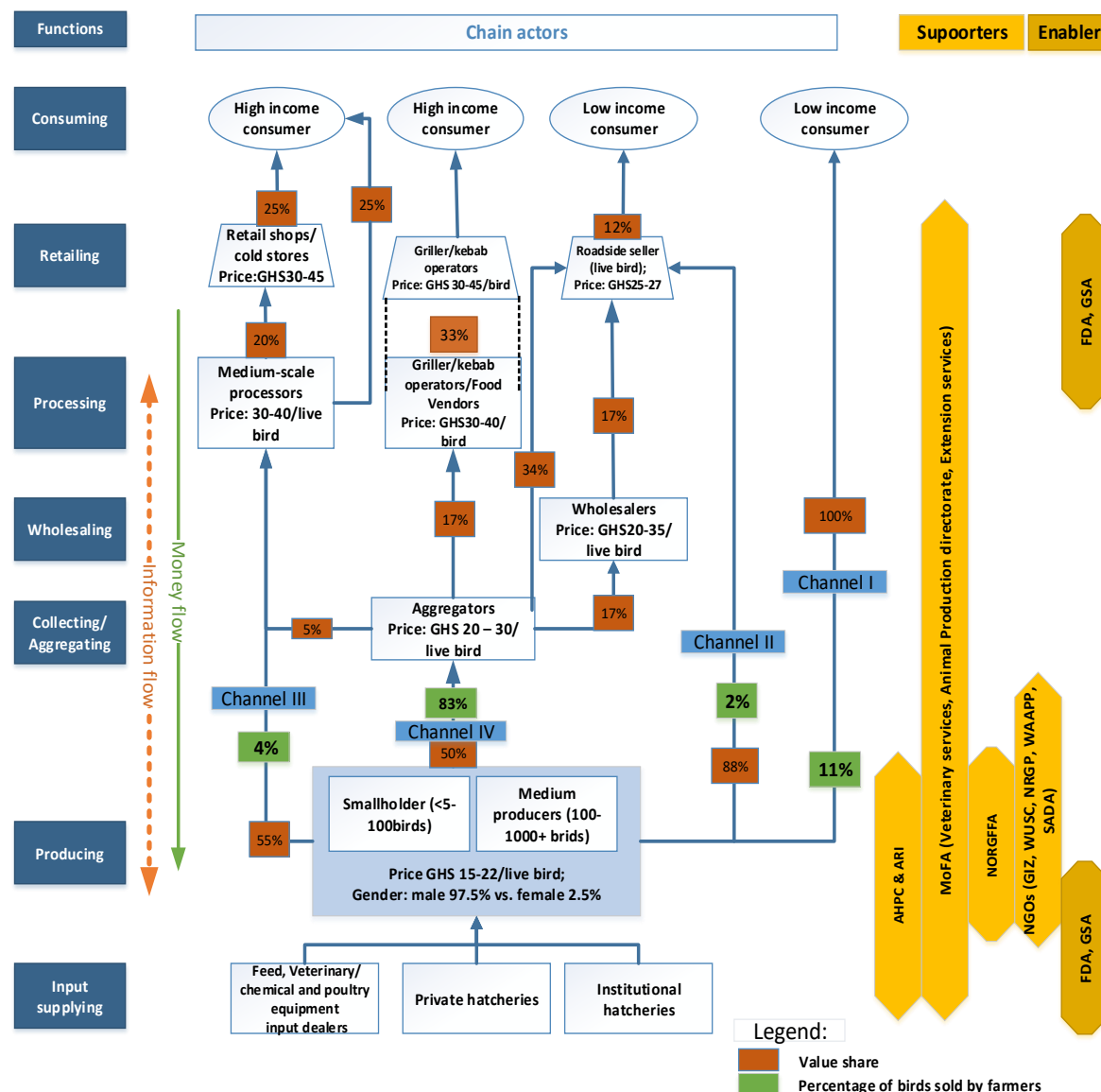


Figure 4. 5: The current guinea fowl meat value chain in the Northern region, Ghana

Source: Author, Field Data (2019)

Most farmers sell their live birds at the rural/village market and farm gates to collectors/wholesalers rather than taking them to the urban market (Figure 4.6). Again, according to the survey (Figure 4.5), even though majority of the farmers sell to collectors and wholesaler, some do sell to consumers directly.

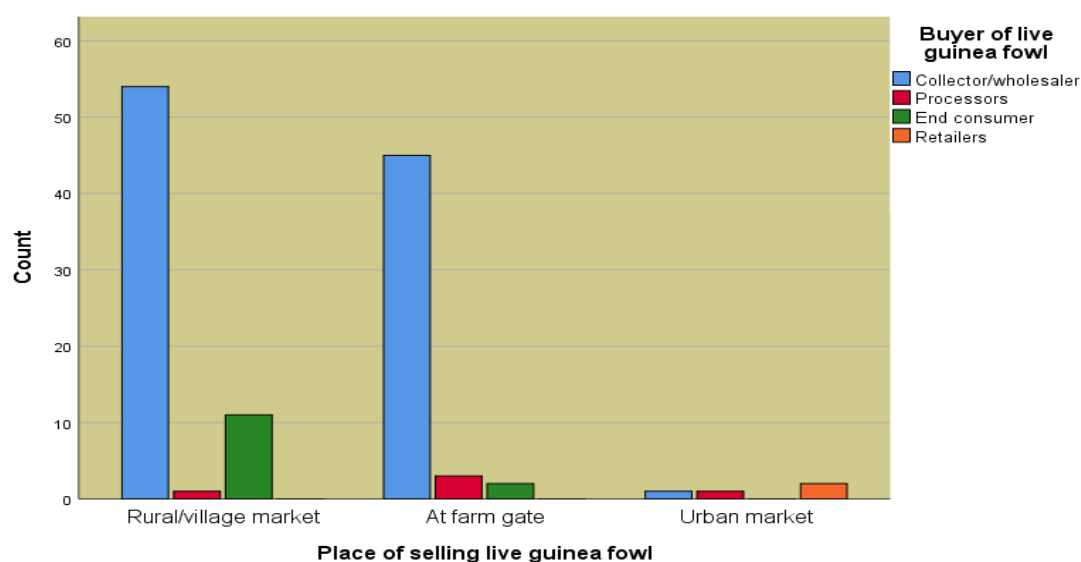


Figure 4. 6: Place of selling guinea fowls and type of buyers

Source: Author, Field Survey, 2019

4.2.4 Chain governance structure

4.2.4.1 Vertical and horizontal integration in the chain

The business transactions that go on between guinea fowl farmers and buyers are based on mutual trust as 89.1% of the respondents stated that they transacted business between themselves and buyers based on trust only while 8.4% of the respondents transacted business through contractual arrangements. However, some farmers (2.5%) did not believe in trust relationship nor contractual arrangement between themselves and buyers. The contractual relationships here is the informal verbal arrangements and not the formal written contracts, which is even very negligibly subscribed to in this chain.

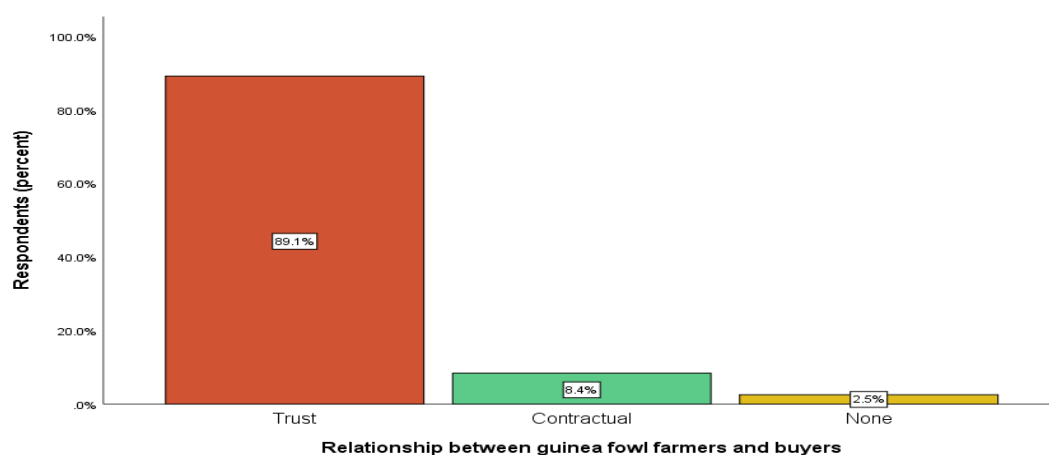


Figure 4. 7: Relationship existing between guinea fowl farmers and buyers

Source: Author, Field Data (2019)

The figure below indicates that contractual arrangements were mostly practiced amongst the medium scale produces and those smallholders farmers with flock size of 26-100 birds and their buyers.

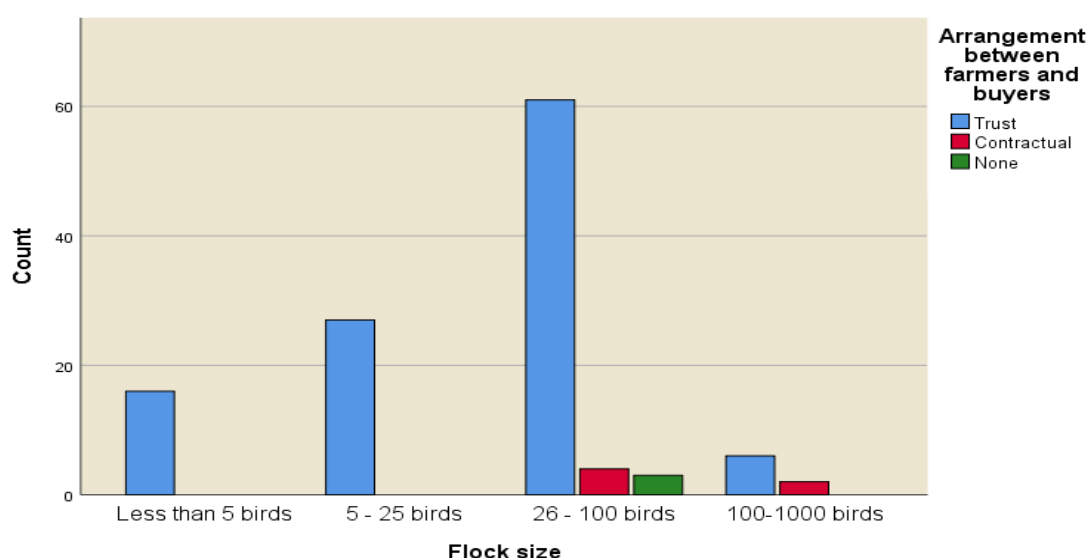


Figure 4. 8: Contractual arrangement between farmers and buyers

Source: Author, Field Data (2019)

Key informant 1, stated that some business relationships have been built between some producers and buyers. The key informant indicated that, to some extent, the trust relationship is established and the strength of the relationship depends so much on how long the parties have stayed doing business together (Key informant 2).

The relationships and level of interactions vary from place to place and how long the actors have known each other. However, some of them are seen, as acting individually or in a fragmented way (key informant 5). Even though there is a guinea fowl farmers' association, but it has not been effective. Members are not seen acting together as chain actors for the benefit of the chain. However, among the guinea fowl traders, they have chiefs in the markets, who when there are issues of disagreements, the chief settles them (key informant 2).

Besides the relationship between farmers and buyers, Key informant 5, indicated that the relationship between the service providers and the farmers is weak. Farmers are not organized and most of them do not see Guinea fowl value chain as a good business opportunity. Most of them just do guinea fowl rearing as backyard/subsistent activity and they are not organized to produce to meet the market requirement. To achieve this, the service provision and supporter systems have to be strengthened to support the production (key informant 5).

According to the survey results, some of the respondents (36.7%) belonged to guinea fowl farmers' association from which they somehow obtained some services. However, majority as indicated that they did not belong to any guinea fowl farmers' association.

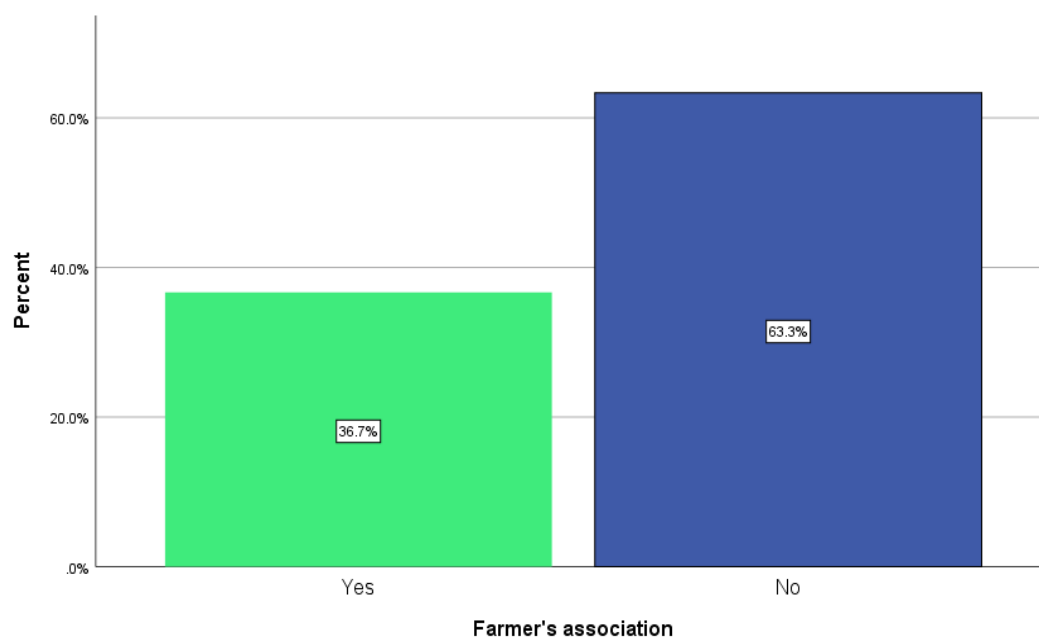


Figure 4. 9: Farmers belonging to farmer's association

Source: Author, Field Data (2019)

Those of the respondents, who indicated of belonging to guinea fowl farmers' association, mentioned that, they received some services from their association such as marketing services, input services and extension services (Figure 4.10).

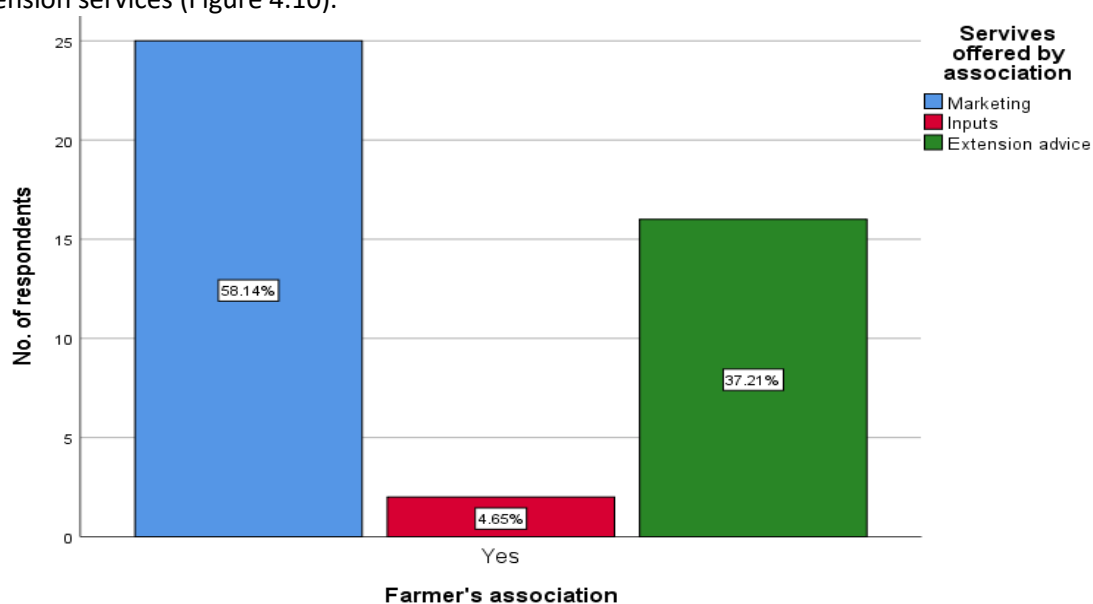


Figure 4. 10: Services farmers benefit from their association

Source: Author, Field Data (2019)

Now, those who do not belong the associations gave reasons for not associating with themselves in those groups as indicated in the figure below.

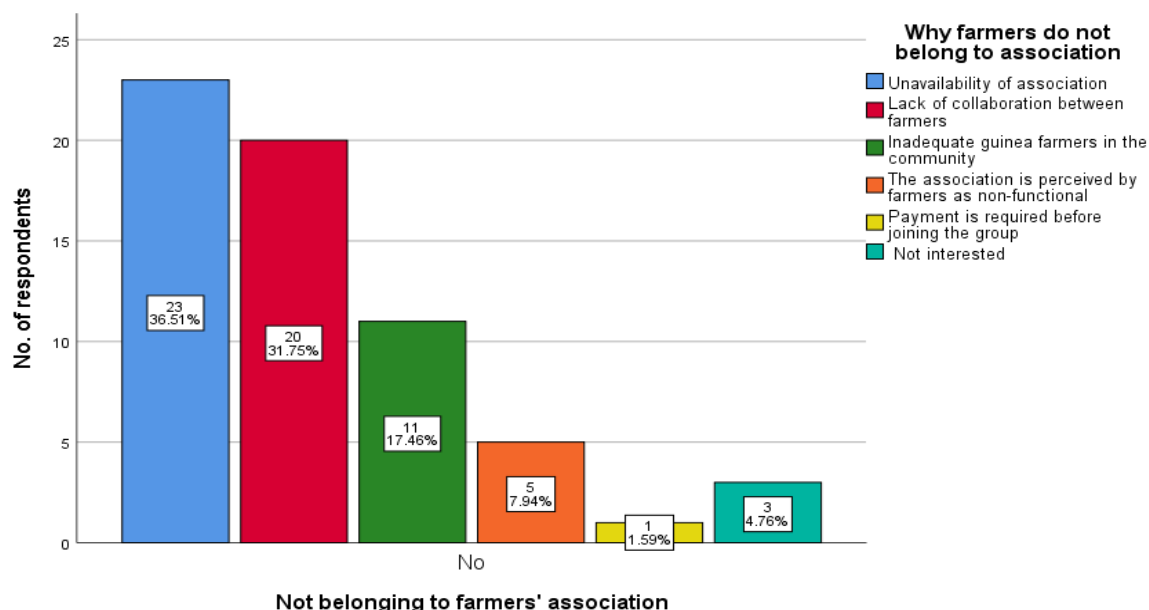


Figure 4. 11: Reasons farmers do not belong to the farmers’ association

As indicated in Figure 4.11, most (36.5%) of the farmers who did not belong to the farmers’ association believed that, there was no such associations in their communities. In addition, 31.8% of the respondents were not motivated to associate into such groups, because they believed there was not collaboration among members of those associations.

Some respondents (17.5%) mentioned that, they were not many of guinea fowl farmers large enough form an association in their communities. Interestingly, some respondents (7.9%) indicated that, the associations they know seemed to them as non-functional and therefore, not good enough to attract them. There were others (4.8%) who were simply not interested in joining the associations whiles some minority (1.6%) of the respondents did not join any guinea fowl farmers’ association for the reason that, some payment was required before joining the group.

4.2.4.2 Power relations and chain coordination

4.2.4.2.1 Chain coordination

The buyers and colleague farmers are the providers of information on market demand and commodity prices of guinea fowl products. According to Figure 19, 62.0%, 31.5% and 2.8% of the respondents indicated that buyers, their colleague farmers and commission agents respectively were resourceful in terms of providing them with market information specifically on demand and price of the guinea fowl products. However, majority of the respondents (62.0%) thinks buyers are in-charge in relating market information to farmers in the chain. Nearly 96.3% of the farmers had access to market information and only 3.7% of them did not obtain this information.

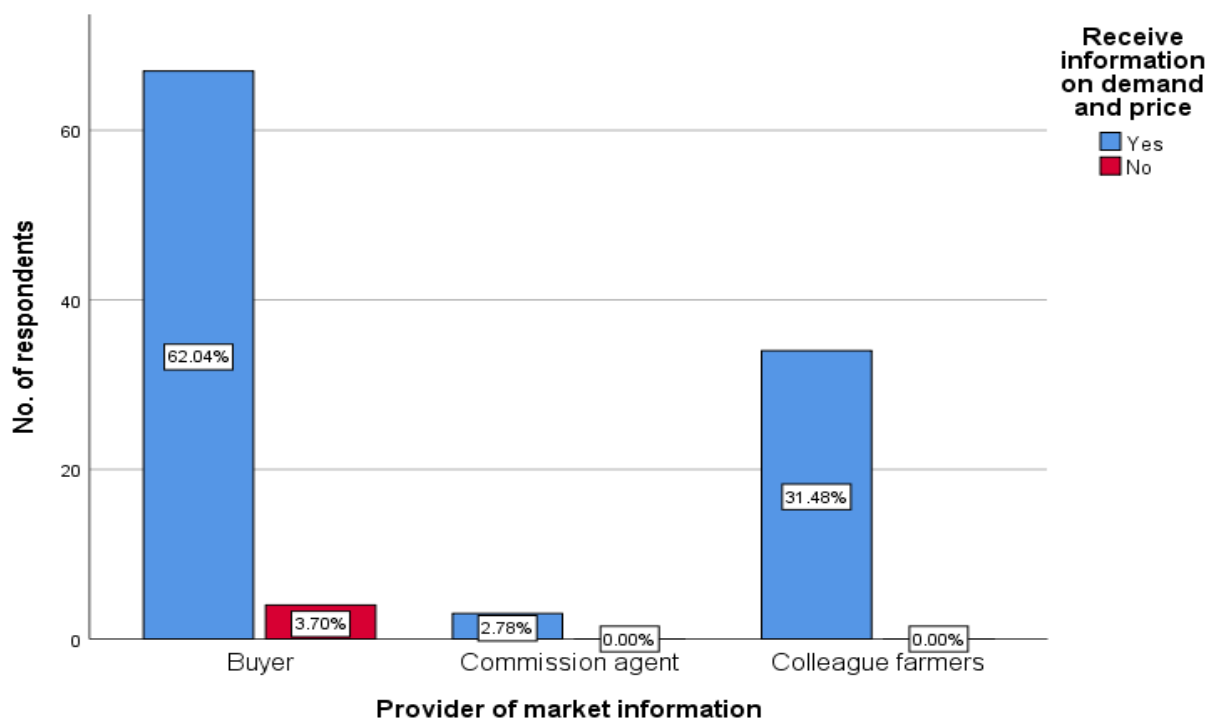


Figure 4. 12: Coordination of market information in the chain

Source: Author, Field Data (2019)

4.2.4.2.2 Power relations

Most (63.2%) of the respondents indicated that, buyers are the determinants of prices of guinea fowl and products. However, other respondents, 22.2%, 12.8%, and 1.7% of them respectively, think the farmer him/herself, farmer group and commission agents are the influential parties in determining prices of guinea fowl and products in the study area (see Figure 4.13).

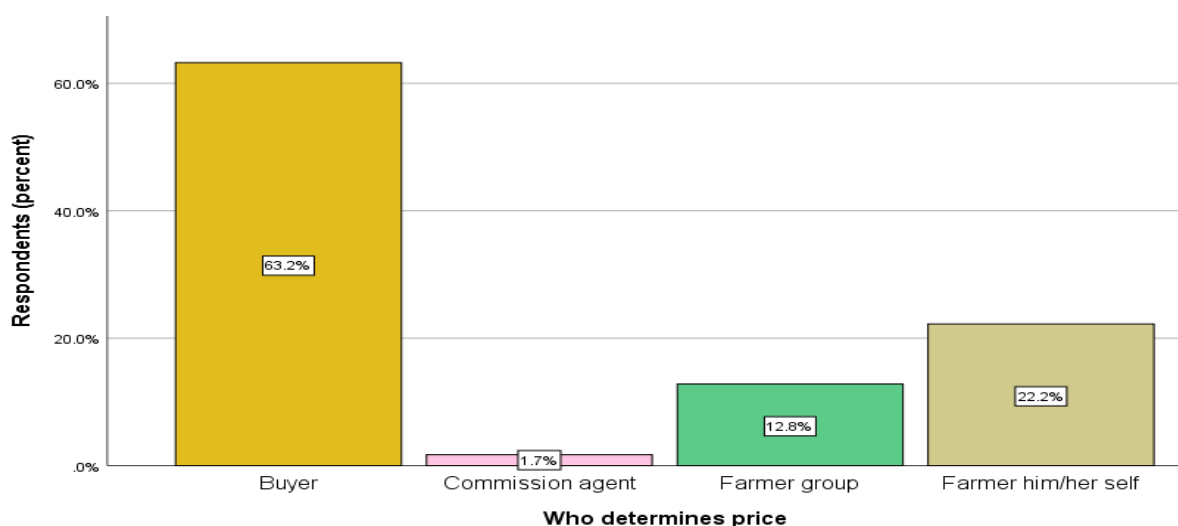


Figure 4. 13: Determinants of market price of guinea fowl products in the Northern region of Ghana

Source: Author, Field Data (2019)

In the chain, many respondents (62.5%) also indicated that buyers are those who dictate the quality of products to produce and to safety compliance. Some (21.7%) of them think the farmer him/herself

has that influence while others, 10.8%, 4.2% and 0.8% respectively indicated farmer group, consumer and government as those influential (Figure 4.14).

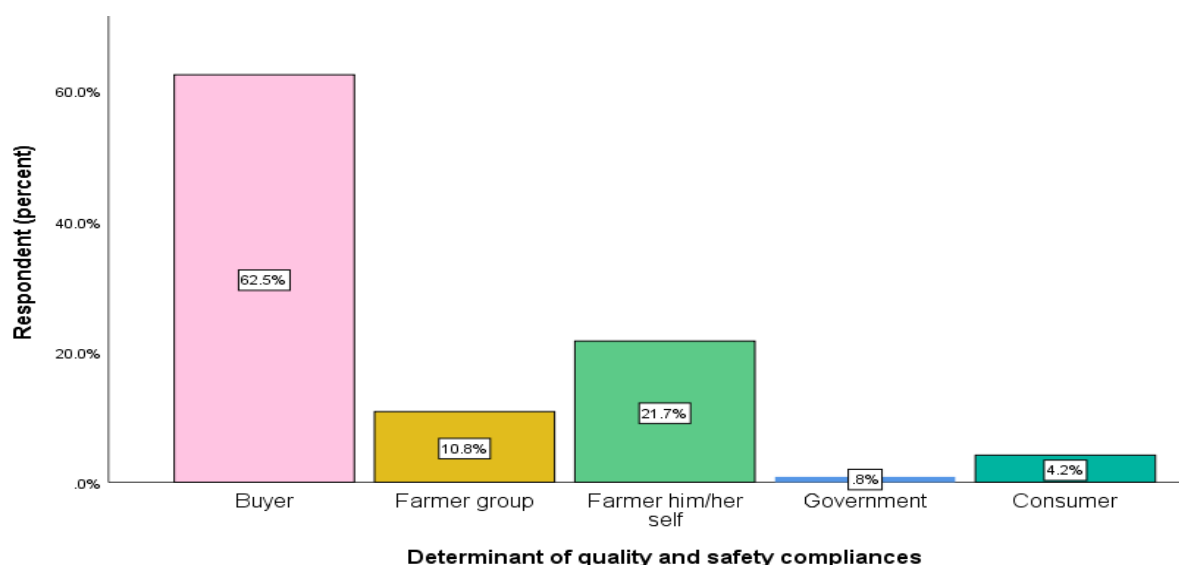


Figure 4. 14: Determinant of quality and safety compliance in the chain

Source: Author, Field Data (2019)

4.2.4.3 Types of governance system in the chain

The behaviour of buying and selling as well as attracting and keeping relationships in the chain typically signify the governance type that exists in the chain. In Table 4.4, it shows most of the farmers (63.6%) responded that they do not sell to the same customer but change customers as against 36.4% of them who indicated they, sell to the same customers most of the time. This is typical of a spot market governance structure that is based on informal mutual trust relationship and price as the main decided factor of relationship. There is no formal rules and formal contractual arrangements binding parties to supplying, buying and to respecting the conditions of the transaction.

Table 4. 3: Selling behaviour of the farmers

Farmer sells to the same customer	Number of respondents	Valid Percent
Yes	43	36.4
No	75	63.6

Source: Author, Field Data (2019)

4.2.5 Production systems and practices of the guinea fowls

4.2.5.1 Guinea fowl production in Northern region of Ghana

Guinea fowl is a particular bird of importance, culturally, economically and socially in the lives of the people in the Savana ecological zone of Ghana comprising of Northern region, Savana Region, North East region, Upper East region and Upper West region. The guinea fowls in some communities are used for dowry purposes and sacrifices in some festivals (Guinea fowl festival). The guinea is often

selectively used to welcome very important visitors to the home. The people of the savanna ecological zone also usually maintain relationships with the gift of guinea fowl especially between the elite and the poor rural dweller (key informant 2).

Economically, guinea fowls are often the first point of call when farmers are cash trapped. Guinea fowls are often classified as “walking cash” or “walking wealth”. They could easily be sold and converted into cash to meet the immediate cash needs of farmers. More often at the onset of the rainy season, some farmers will sell some few guinea fowls to raise money to fund the ploughing of their fields and purchasing of inputs(key informant 2).

Many smallholder farmers ventured into guinea fowl production as a way of life. They do it because their fathers were into it. Now, there were some respondents who took it up as a business, since 4.2% of the respondents were medium scale in production with a flock size of more than 100 birds and raising the bird for market in order to make a living (Table 4.5). The Table 4.5, further indicates that, majority of the producers are smallholder farmers, meaning they are into it at subsistence level.

Proportionally, 95.8% of the surveyed guinea fowl farmers were keeping between 5 to 100 birds. These smallholder keepers were comprised of those keeping less than five birds (13.3%), those keeping 5–25 birds (22.5%) and those keeping 26-100 birds (60.0%). The medium scale keepers who kept between 100-1000 birds were only 4.2% of the surveyed farmers in the study area (see Table 4.5).

Table 4. 4: The flock size of the guinea fowl farmers

	Frequency	Percent
Less than 5 birds	16	13.3
5 - 25 birds	27	22.5
26 - 100 birds	72	60.0
100-1000 birds	5	4.2
Total	120	100.0

Source: Author, Field Data (2019)

Flock management

Most (95%) of the respondents provided some form of housing to their birds while 5% did not (Figure 4.15). Besides, providing housing majority (92.5 %) of the farmers prepared feed themselves and treated their birds with veterinary drugs.

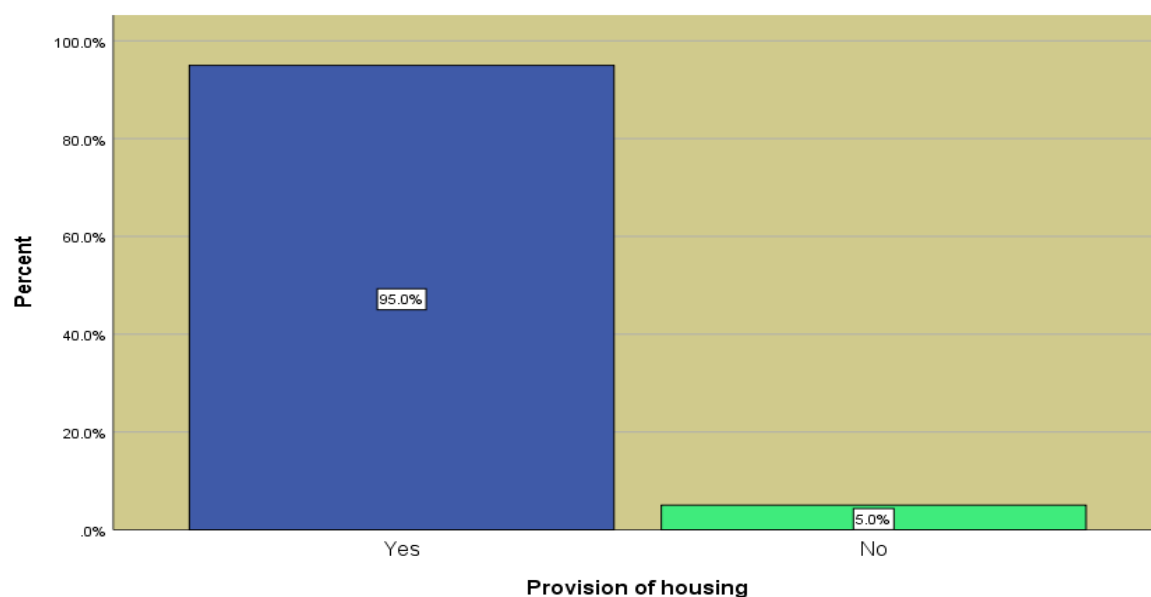


Figure 4. 15: Provision of housing for guinea fowl under the smallholder system

Source: Author, Field Data (2019)

Of them, 1.7% and 2.5% provided feeding or treated with drugs only, respectively (Table 4.16 below). The subsistent keepers treated their birds with veterinary drugs without supplementing with feed or provided supplementary feed without treating with veterinary drugs. The commercial keepers however provided commercial poultry feed and treated with veterinary drugs as indicated in Figure 4.16.

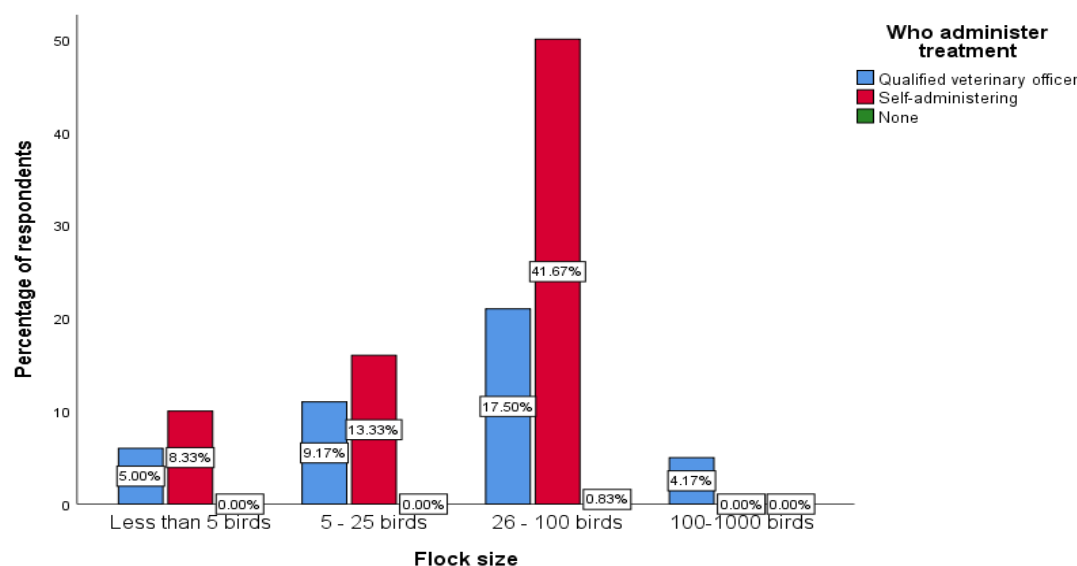


Figure 4. 16: Administration drugs by farmers on their birds

Source: Author, Field Data (2019)

As indicated in Table 4.6, of all the farmers interviewed, 56.1% of them used orthodox veterinary drugs while 30.8% of them used ethno-veterinary drugs. However, there were those (13.1%) who used both ethno-veterinary drugs and orthodox veterinary drugs in treating their birds.

In Figure 4.16, with the administration of drugs, 63.3.7% of the respondents do self-administering of veterinary drugs on their birds whiles 35.9% engaged qualified veterinary officers to administer the

drugs and only 0.8% of the respondents do no care . In figure 4.16, it can be observed that mostly, the smallholder farmers who raise between less than five birds to 100 birds do the self-administration of the drug. The commercial keepers, who raise between 100-1000 birds, engaged qualified veterinary officers.

Table 4. 5: Inputs used in guinea fowl production

	Frequency	Percent
Inputs use in production		
Feed	2	1.7
Drugs	3	2.5
Feed and drugs	111	92.5
Kinds of drugs used in treatment		
Ethno-veterinary drugs	33	30.8
Orthodox veterinary drugs	60	56.1
Ethno-veterinary & Orthodox veterinary drugs	14	13.1

Source: Author, Field Data (2019)

Supplementary feeding

Most (27.7%) of the farmers interviewed during the study offered supplementary feed to their birds in the form of whole cereal grains such as maize, millet and sorghum whiles 21.4% offered formulated rations to their birds of who were mostly the large scale commercial producers. The different feedstuffs commonly offered as supplementary feed included termites, whole grain, unmixed ground grains and formulated ration. There were different combinations of these feedstuffs by different respondents as indicated in Table 4.7.

Table 4. 6: Supplementary feeds offered to guinea fowls by the respondents

Supplementary feeds	Frequency	Percent
Whole grain	31	27.7
Formulated ration	24	21.4
Unmixed ground grains	4	3.6
Termites	8	7.1
Whole grains, unmixed ground grains and termites	8	7.1
Whole grain and termites	18	16.1
Whole grain and formulated ration	6	5.4
Whole grain, formulated ration and termites	4	3.6
Whole grain, unmixed ground grains and termites	3	2.7
Whole grains and unmixed ground grains	2	1.8
Formulated ration and termites	2	1.8
Unmixed ground grains and termites	2	1.8

Source: Author, Field Data (2019)

Breeds, hatching and sources of day-old guinea chicks

The guinea fowls farmers reared mostly the local guinea fowl breeds as 95.8% of the respondents indicated to have been rearing the local breed. However, there were those (4.2%) who reared both the local and exotic breeds (Table 4.8).

Table 4. 7: Breeds of guinea fowl reared by farmers

Breeds of guinea fowl reared by farmers	Frequency	Valid Percent
Local	113	95.8
Local and exotic	5	4.2
Total	118	100.0

Source: Author, Field Data (2019)

Most (74.6%) of the farmers obtained day-old guinea chicks from their own flocks (i.e. they hatch themselves), while the remaining (25.4%) purchase from either colleague farmers or commercial hatcheries (Table 4.9).

Table 4. 8: Source of guinea chicks for rearing

Do you buy day old guinea chicks?	Frequency	Valid Percent
Yes	30	25.4
No	88	74.6
Total	118	100.0

Source: Author, Field Data (2019)

According to Table 4.9, of those who purchase day old guinea chicks rather than hatching by hen on-farm, most of them (82.9%) obtained their day old guinea chicks from private hatcheries. Out of this, 7.3% of the respondents obtained their day old guinea chicks from institutional hatcheries while 9.5% just buy day old guinea chicks from the open market.

Table 4. 9: Sources of buying day old guinea chicks

Source of day old guinea chicks	Frequency	Valid Percent
Private hatchery	34	82.9
Institutional hatchery*	3	7.3
Buy DOC at the market	1	9.5

**Refers to government institutions producing day old guinea chicks for sale to farmers such as Animal Research Institute and Animal Health and Production College.*

Source: Author, Field Data (2019)

Challenges in guinea fowl production

Guinea chick mortality was recorded the most (92.3%) challenging factor affecting farm productivity of most guinea fowl farmers as indicated in Figure 4.17. Few farmers indicated low farm gate price (1.7%) and low productivity (1.7%), as the most challenging factors affecting their production. From figure 10, the results indicates that provision of housing was not enough to stop the major challenge that the producers were facing which is high chick mortality.

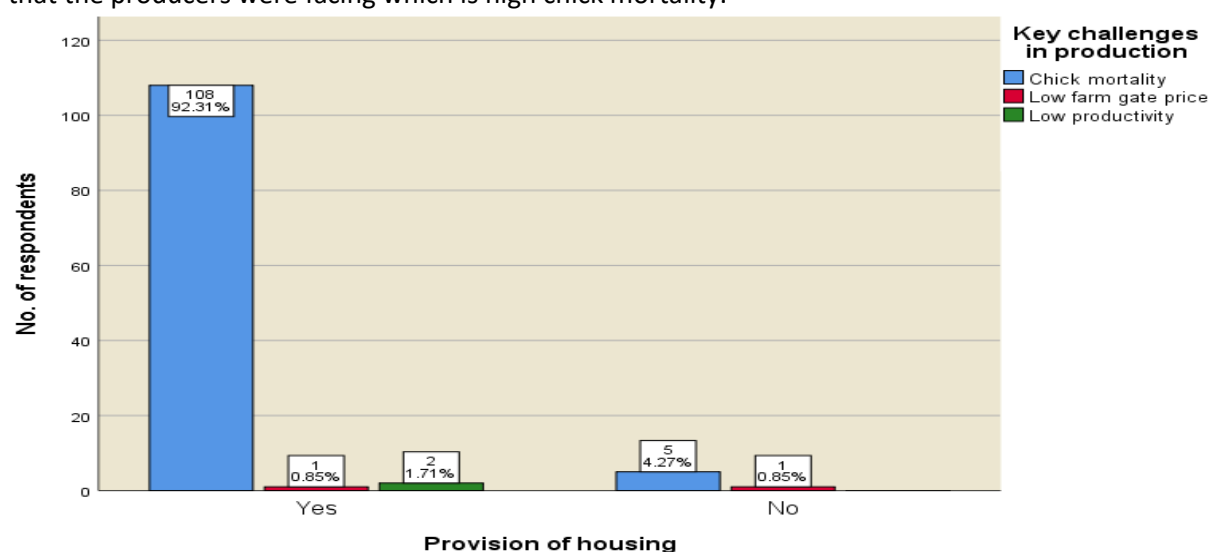


Figure 4. 17: Key challenges in guinea fowl production in the northern region of Ghana

Source: Author, Field Data (2019)

Productivity of guinea fowl under the smallholder system

As shown in the Table 4.11, the minimum output of guinea fowls raised per year among the respondents was 10 and the maximum was 1000. The minimum and maximum total number of guinea fowls sold were 0 and 2000, respectively.

The minimum number of birds sold per year among the respondents was 0 birds and maximum 2000 birds. The minimum production cycle per year among the respondent was 1 and maximum was 10. The highest cycles of 10 means that there were many mortalities per each cycle and farmers had to repeat the production as much as 10 times in a year. Comparing the maximum cycles among the four different production sizes among the respondents indicates that, the medium scale producers were more efficient in production than the other producers were as their maximum production cycle was 3, against 10, 9 and 5 for the smallholder farmers.

Table 4. 10: Productivity of guinea fowl under smallholder system

		No. of Respondents	Mean+SE	Minimum	Maximum
Number of birds sold	Less than 5 birds	16	36.2±8.6a	4	15
	5 - 25 birds	27	45.3±17.9a	4	50
	26 - 100 birds	71	100.9±31.6a	0	100
	100-1000 birds	5	990.0±416.7b	100	2000
p. value		119	0.000		
Average output per year	Less than 5 birds	16	59.2±10.4a	20	190

	5 - 25 birds	27	60.2±12.7a	13	350
	26 - 100 birds	71	77.9±10.3a	10	500
	100-1000 birds	5	505.0±203.2b	100	1000
p. value		119	0.000		
Number of cycles per year	Less than 5 birds	11	2.5±0.4ns	1	5
	5 - 25 birds	20	3.2±0.5ns	1	10
	26 - 100 birds	58	3.3±0.2ns	1	9
	100-1000 birds	5	2.2±0.4ns	1	3
p. value		94	0.327		

Note: ns = not significant; means with the same superscripts (a, a) are not significant and those with different superscript (a, b) are significant at the 0.05 level.

Source: Author, Field Data (2019)

As can be seen from Table 4.11, there were significant differences ($p < 5\%$) between smallholder farmers and the medium scale producers in terms of output per year and number of birds sold per year.

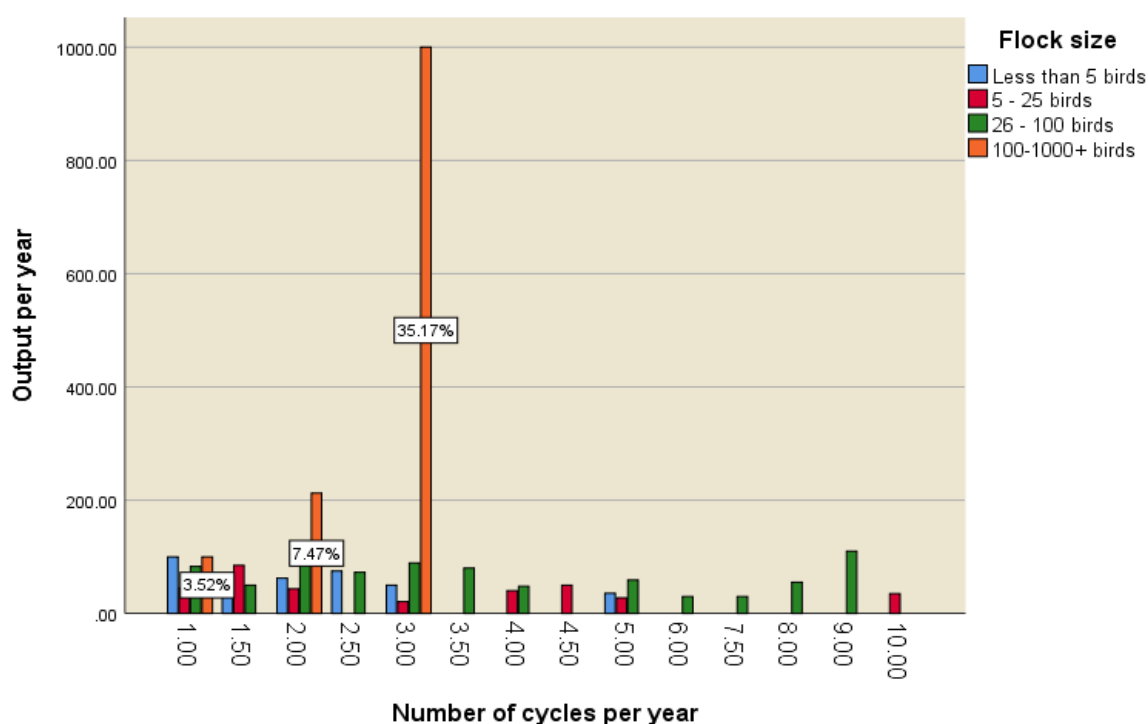


Figure 4. 18: Productivity of the guinea fowl producers

Source: Author, Field Data (2019)

Figure 4.18 indicates that, the highest production came from the medium scale producers (100–1000+ birds) and least production came from the smallholder keepers of less than 5-100 birds per year.

4.2.5.2 Production systems and practices

The system of production is mostly smallholder where farmers are keeping on average 5–25 birds. It is mostly semi-intensive system because most of them provide housing for the birds but usually not the most appropriate form of housing. Due to the wild nature of the local guinea fowl, the birds often do not go into the coop to roost in the night but perch on trees. The farmers' intention is often to have the birds housed in the night but on free range during the day. In this system, they house the birds, open them and give them feed and water in the morning and in the evening the birds move into the house again (Key informants 1, 2 and 3).

Supplementary feeds consisting of whole grains, and termites are provided in the morning and sometimes water to the birds. There is deliberate care given to the birds but are not the ideal for the best productivity. However, the birds most of the time are allowed to forage outside for their feed. Most of the birds' activities are spent feeding for themselves. Some of the birds do not even come home. There are some inefficiencies within this system of keeping guinea fowls (key informant 1).

The smallholder guinea fowl farmers stick to rearing the birds in the semi-intensive or extensive systems because it is less expensive to practice and to maintain (key informant 3). Aside from these smallholder arrangements of keeping the guinea fowls in semi-intensive with a free-range attached or extensive way, few farmers have attempted to keep the guinea fowls intensively. These are the commercial keepers. They often have between 100 and above to as much as 1000 and more birds. These keepers though keep them intensive but during the day, the birds are opened into a fenced area (key informant 2).

In both cases, farmers face the most challenges between day-old to the 8th week of age when the birds are most vulnerable. However, from the 8th week thereon, the birds become hardier and the farmers retain some control over them (key informant 1).

4.2.6 Marketing and Value Share in the guinea fowl meat value chain

4.2.6.1 Marketing of guinea fowls

The guinea fowls are marketed, as live birds or as processed products such as frozen or grilled/roasted products. Many actors were involved in marketing the live bird and its processed products to the end consumers. These actors include aggregators, wholesalers, processors and retailers (key informant 3). In this chain, there were traders who go round communities to buy guinea fowls from producers since many of them are smallholder farmers off taking small numbers at a time. Even some processors have a team of traders who supply them, as many as 400 birds a day. There is always higher demand for the guinea fowls but production is low. The farmers also look for better price; if traders are not giving them good prices, the farmers switch to alternative market or buyers. As for market, there is always ready market for guinea fowl (key informant 2).

4.2.6.2 Existing market channels

The smallholder guinea fowl farmers usually offer birds for sale only when they are cash trapped. They take few birds themselves to the market center to sell to prospective buyers. Alternatively, the aggregators will buy from them and take to town centers to sell to consumers. Another channel in the chain is from farmers to the market through processors. The channels are illustrated in Figure 4.21.

There are some large-scale processors such as Gees Fresh Point Ltd and Farm Gate Meats all based in the capital city of the Northern region. These processors also do large scale purchasing of the birds through their aggregators/wholesale suppliers. They freeze and sell frozen guinea fowl meat to institutional consumers. Other small-scale processors buy the live guinea fowls through aggregators and grill the meat for sale. There are so many of such small-scale processors scattered all over the township in the capital city and towns who process and sell directly to consumers, the guinea fowl meat. There is huge market offered by these small-scale processors like Mba Yahaya Guinea Fowl Processing Company Ltd, in Tamale.

The aggregators use motor bikes, tricycles or bicycles and move to the rural settings on market days to purchase from the farmers. Some of them even have the contacts of the farmers and they go directly to the farmers or the farmers call them or they roam within the communities and any farmer who is interested in selling his or her birds, negotiate the price and then they buy. Some wholesalers go to the village markets, aggregate the birds and bring to the town markets, such as Tamale guinea fowl market to sell where interested buyers come to purchase from the wholesalers (key informant 2).

4.2.6.3 Value addition in the chain

The respondents think that to achieve quality supply, reliable supply and both quality and reliable supply of the guinea fowl products, require that farmers undertake hatching, brooding, and husbandry activities very carefully. Majority of the respondents (60.2%) however, think that hatching and brooding combined is the most important activity to ensure quality and reliable supply whiles 38.7% of them indicated that the brooding activity is the key activity to ensure quality and reliable supply of guinea fowl products by farmers. Last but not the least, 0.9% of the respondents indicated husbandry activities as key in ensuring reliable and quality supply of guinea fowl products (see Figure 4.19).

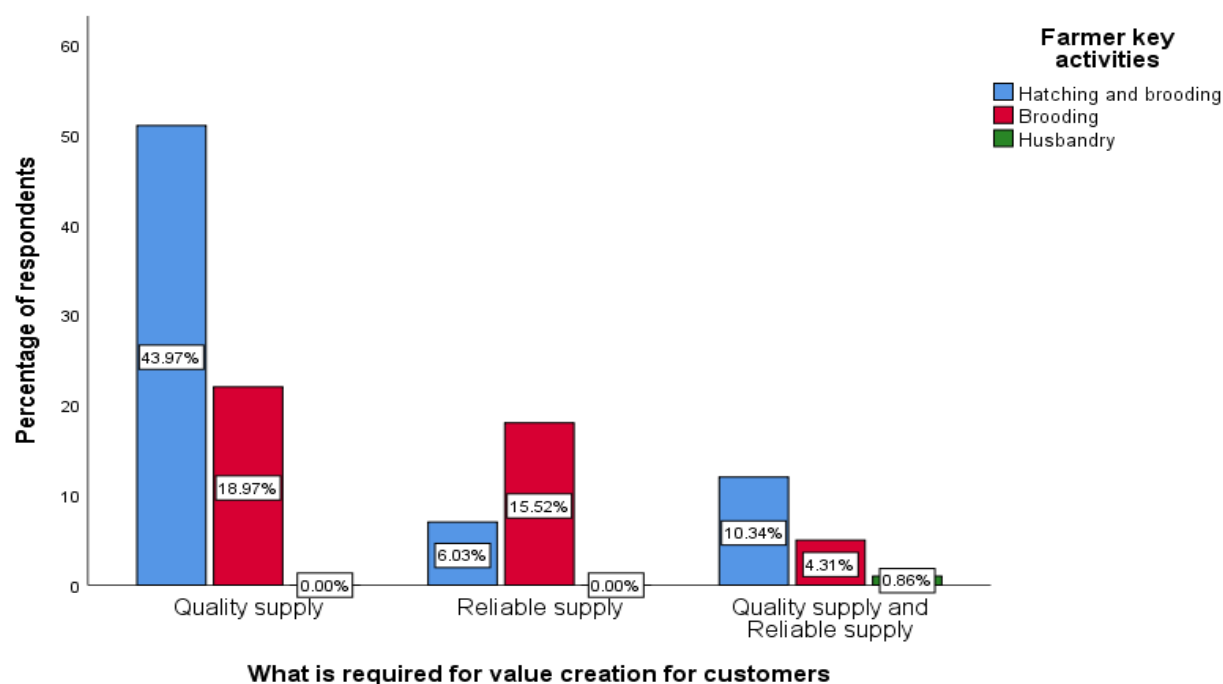


Figure 4. 19: The key activities in value creation in guinea fowl production

Source: Author, Field Data (2019)

The other value adding activities to increase value share for the guinea fowl farmers also include sorting, grading, packing, and labeling. Of these activities, majority of the respondents (78.8%) indicated grading by weight as key in creating value for live guinea fowl and meat products to increase value share for producers. Others indicated packing live guinea fowl into cages and sticking labels on it and sorting into sex or colour as equally key value adding activities for guinea fowl and its products (Figure 4.20).

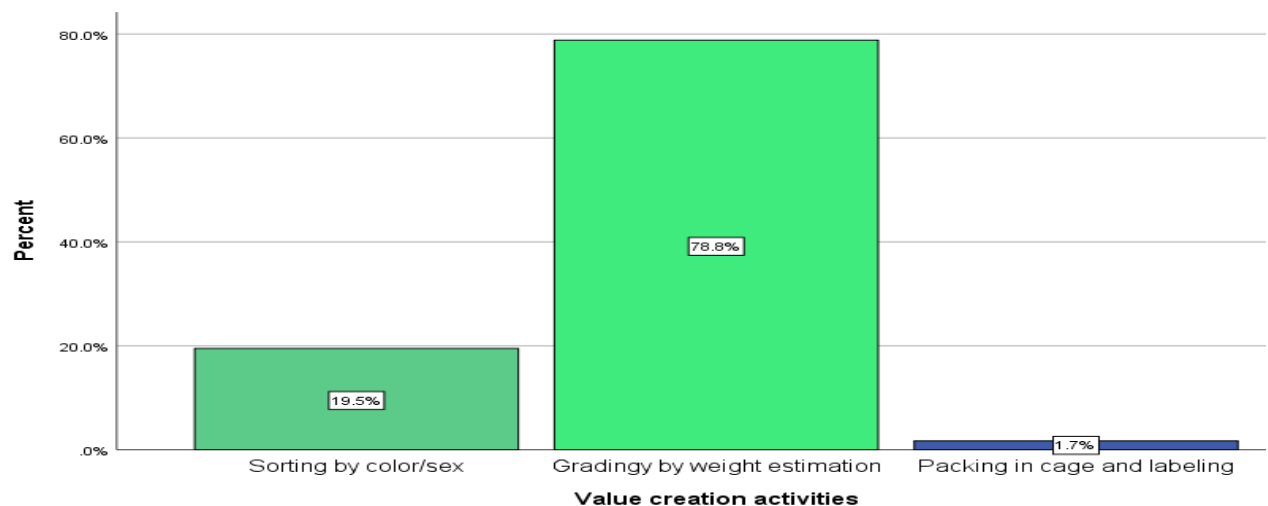


Figure 4. 20: Value adding activities by farmers in the chain

Source: Author, Field Data (2019)

4.2.6.4 The value shares in the chain

The value share is not evenly distributed in the chain due to huge price differences between actors. In the chain, some actors get more of the pie than the others do particularly what accounts for this is the risks involved at the different levels of the chain.

The producers are mostly price takers. The middlemen come from the city and mention that, prices in the city are low and no market for the birds and for that matter the price should be this or that price. Moreover, farmers lack information about the market and demand of the birds at certain points in time, they agree to that price by the middlemen. Usually because farmers are often in a fixed of having no option than to accept because the mostly decide to sell their birds only when they are cash trapped, they become price takers (key informant 2).

Key informant 2 indicated that, most of the farmers are not acting collectively in the form of cooperative, so they are not able to mobilise their birds in large number to sell to a processor or marketer who is ready to negotiate with them for a better price. The prices list for the matured guinea fowl less than one year and those up to year old are indicated in Tables 4.12.

Table 4. 11: The price ranges of live and processed guinea fowl

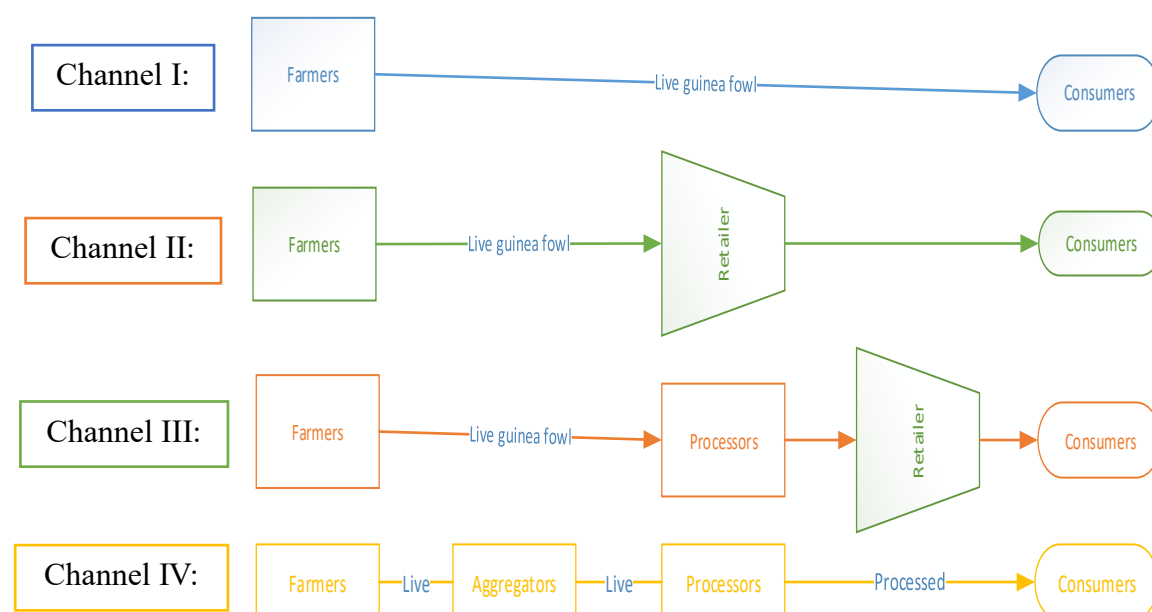
Lightweight guinea fowl (usually that less than 1 year)	Selling price	Heavy weight guinea fowls (those up to 1 year old)	Selling price
Farmer:	15 – 22	Farmer:	22 – 25
Aggregator:	20 – 30*	Aggregator:	25 – 30*
Wholesaler:	20 – 35*	Wholesaler:	25 – 35*
Retailer (live bird):	25 – 27	Retailer (live bird):	25 – 37
Processor:	30 – 40**	Processor:	35 – 40**
Retailer (processed bird):	35 – 40**	Retailer (processed bird):	35 – 45**

*Note: the aggregators are also wholesalers, it very rare in this chain to have it as separate aggregating or wholesaling functions

**Note: the Barbecue stands/grillers are also retailing the processed products. On rare occasion, one will find separate actors for the processing and processed guinea fowl meat except the Medium scale processors like Gees Fresh Point.

Source: Author, Field Data (2019)

According to KIT and IIRR (2008), the value share calculations do not take the costs of each actor into account. With the value share figures, the marketing channels were compared with each other, which are shown in Figure 4.21.

**Figure 4. 21:** Marketing channels of the guinea fowl meat value chain, Northern region of Ghana

Source: Author, Field Data (2019)

Channel I Value share

The channel I is the simplest of the channels. It comprised of the farmers and consumers. In this channel some farmers in a bit to obtain more gross margins on their birds attempt to reach out to the consumers themselves at the open village/community markets on market days or through promotion, consumers come to farm gate to purchase the live birds. This is a live bird sales channel.

Table 4. 12: Channel I value share of actors in the guinea fowl meat value chain

Chain actor	Selling price	Added value (Revenue – Previous actor's revenue)	
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			Value share (Added value/ Retail price x 100)
Producer	22	22	100
Consumer	22	0	0
TOTAL	100.00		

Source: Author, Field Data (2019)

Table 4.13 shows that farmer's value share is 100% since the farmer does not share the value with any other actor. But, it is quite challenging for farmers to do that if the birds are many as it will cost much to transport and pay levies and bearing all the risks. This is common among smallholder farmers that have only few birds to sell, which they transport with motorbike or bicycle. Hence, only a small number of farmers market their birds through this channel with an estimation of only 11% of live guinea fowls being marketed by farmers to the consumers.

Channel II Value Share

The channel II consists of the producers, retailers and consumers. This channel is also one of the live sales channels. The channel skips the aggregators, wholesalers and processors. There is no processing and there is negligible value addition and less risks since the channel is relatively short. With this channel, consumers purchase live birds to process themselves. This channel is the smallest off-taker of the live guinea fowl; is only 2% of the total number of live birds marketed (Table 4.14).

Table 4. 13: Channel II Value Share of actors in the guinea fowl meat value chain

Chain actor	Selling price	Added value (Revenue – Previous actor's revenue)	Value share (Added value/ Retail price x 100)
Producer	22	22	88
Retailer	25	3	12
Consumer	25	0	0
TOTAL	100.00		

Source: Author, Field Data (2019)

Channel III Value Share

The channel III consists of the producers, processors, retailers and consumers. The category of processors here, were the medium scale processors such as Gees Fresh Point Ltd, which has its own arranged aggregators to supply it live guinea fowls. The other small-scale modern processors in this category were UDS Meats Unit and Farm Gate Meats, which process live guinea fowls into high value products such as packaged whole guinea fowls, splits and cuts and frozen products for the market. It takes only 4% of the live guinea fowl marketed in the chain (Table 4.15).

Table 4. 14: Channel III value share of actors in the guinea fowl meat value chain

Chain actor	Selling price	Added value (Revenue – Previous actor's revenue)	Value share (Added value/ Retail price x 100)
Producer	22	22	55
Processor	30	8	20
Retailer	40	10	25
Consumer	40	0	-
TOTAL	100		

Source: Author, Field Data (2019)

Channel IV Value Share

The channel IV comprises of producers, aggregators and processors, and consumers of the processed products. The processors here refer to those who are at the same time retailers of the processed products. This category of processors were mostly the roadside roasters/grillers and kebab/barbecue operators. There is production of final product in the form of grilled/roasted or kebab/barbecue guinea fowl products. This channel takes greatest share of the total number of guinea fowls marketed (83%) and the aggregators are the greatest off-takers who distribute the birds to either processors or wholesalers or retailers (Table 4.16).

Table 4. 15: Channel IV value share of actors in the guinea fowl meat value chain

Chain actor	Selling price	Added value (Revenue – Previous actor's revenue)	Value share (Added value/ Retail price x 100)
Producer	15	15	50
Aggregator	20	5	17
Processor	30	10	33
Consumer	30	0	0
TOTAL	100		

Source: Author Field Data (2019)

Based on the value share calculations presented above, the summary of the value shares of actors in the guinea fowl meat value chain was plotted as shown in the Figure 4.23.

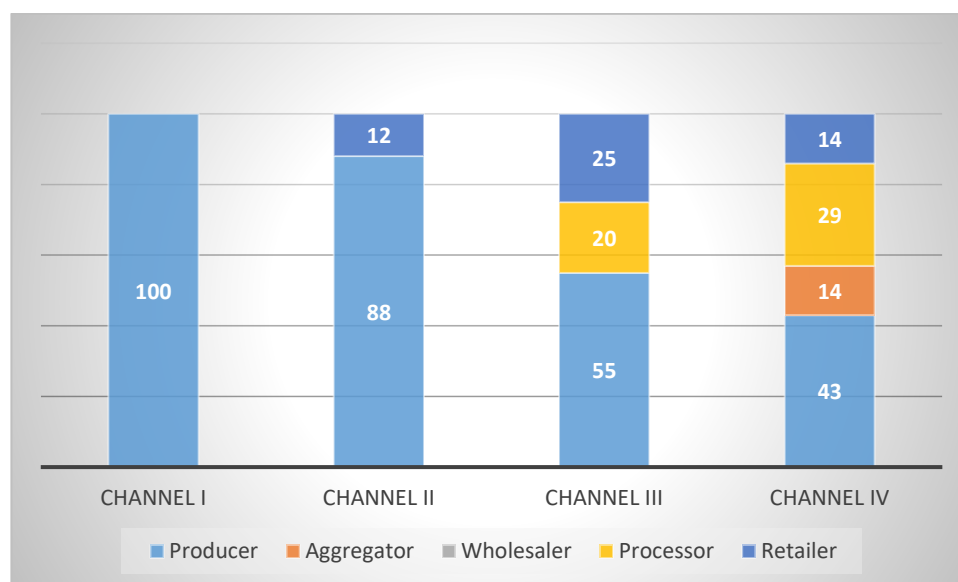


Figure 4. 22: Value share of actors in the guinea fowl meat value chain

Source: Author, Field Data (2019)

Figure 4. 23: Value share of actors in guinea fowl meat value chain, N/R Ghana

4.2.6.5 Market requirements in the chain

Most (88.3%) respondents indicated that, consumers such as individuals, restaurants/chop bars, hotels/guesthouses and households prefer guinea fowl meat to other poultry meat as against 11.7% of the respondents who did not think so (Figure 4.24).

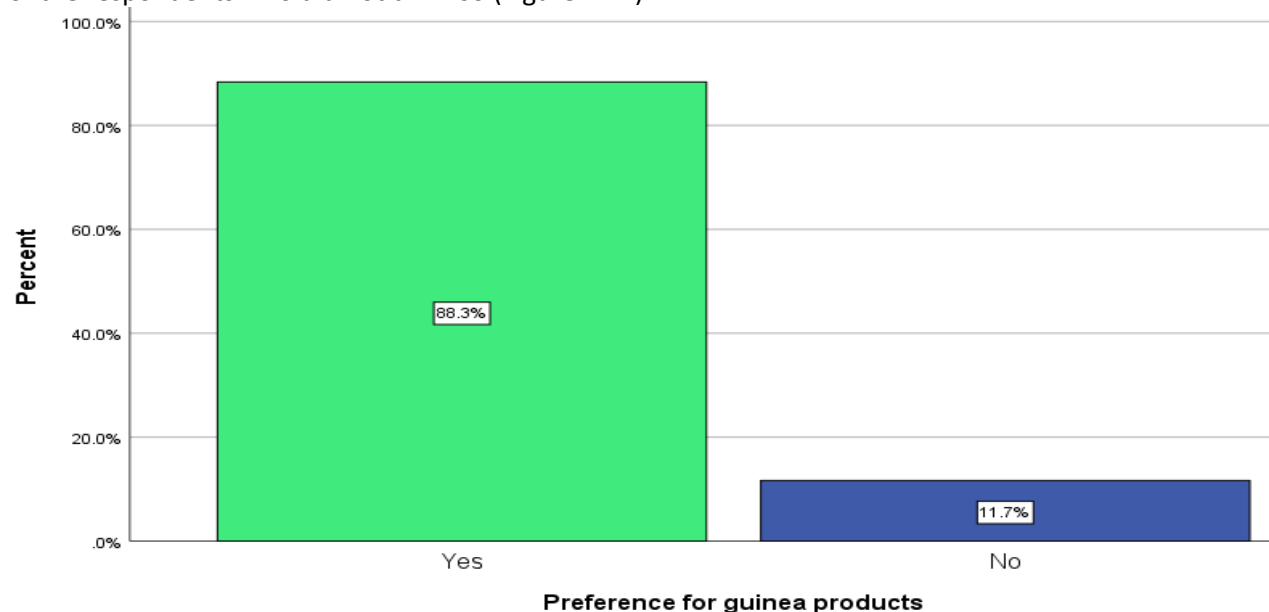


Figure 4. 24: Consumer preference of guinea fowl meat

Source: Author, Field Data (2019)

Out of this, respondents ranked the consumers preference from highest to least in the following order as individuals, restaurants/chop bars/food venders, households and hotels/guesthouses (Figure 4.25 below).

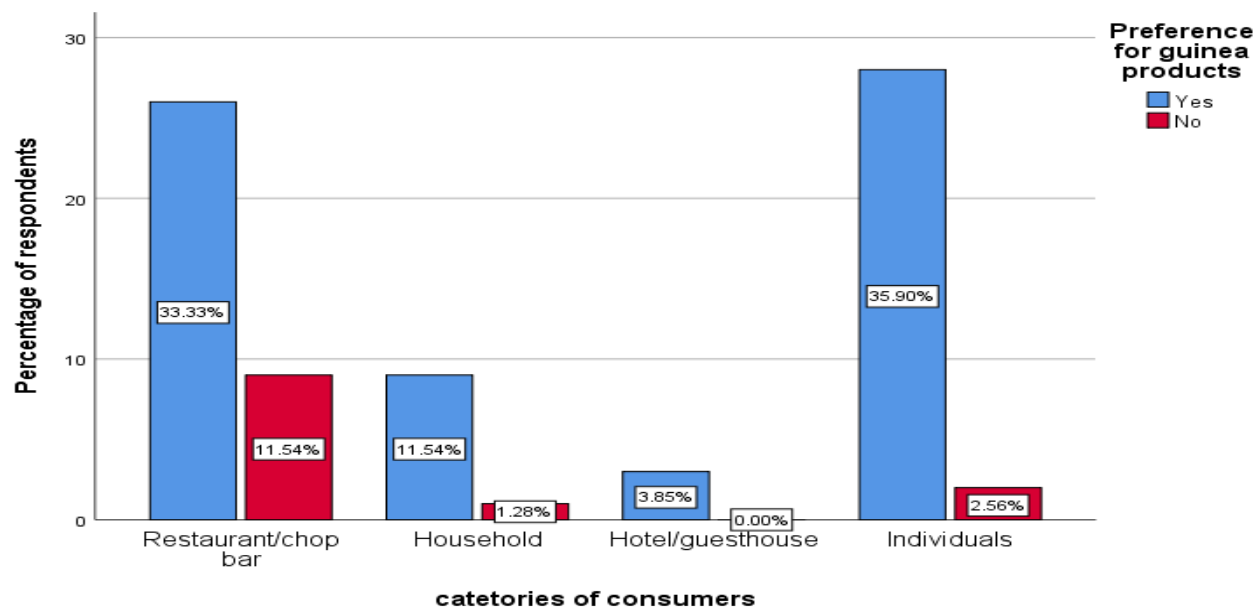


Figure 4. 25: Ranking of consumers preferences

Source: Author, Field Data (2019)

The reasons respondents gave about the consumers' preference for guinea fowl meat included, taste, affordability, healthy meat and its availability. Among the reasons, majority of the respondents (85.85%) indicated taste of the meat, as the key driver for the consumers' preference, followed by its availability, then its affordability and lastly that; it is a healthy meat (Figure 4.26 below).

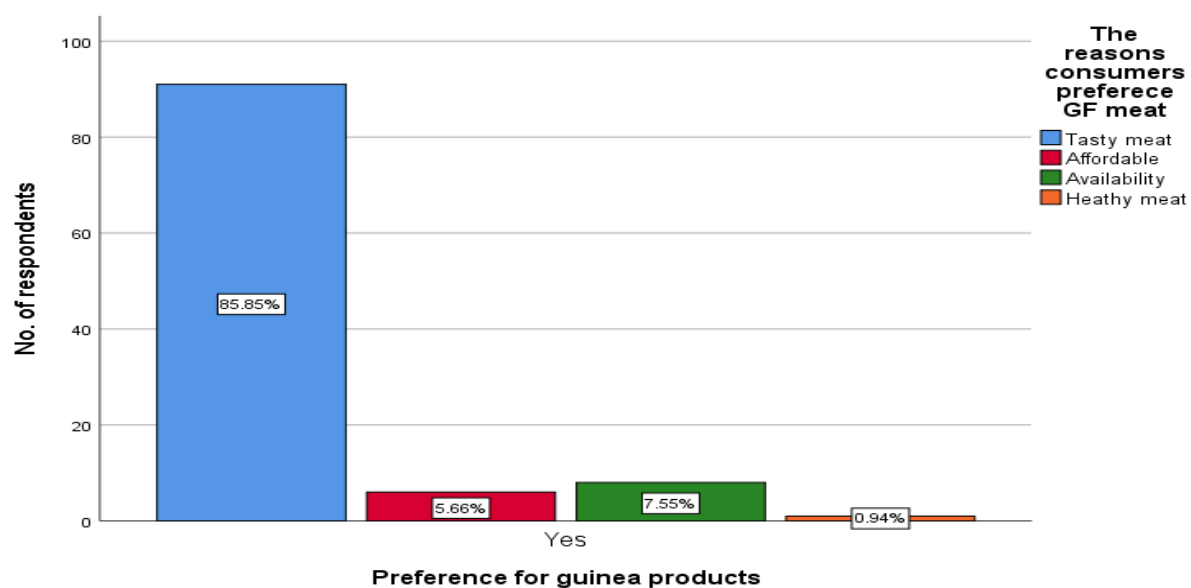
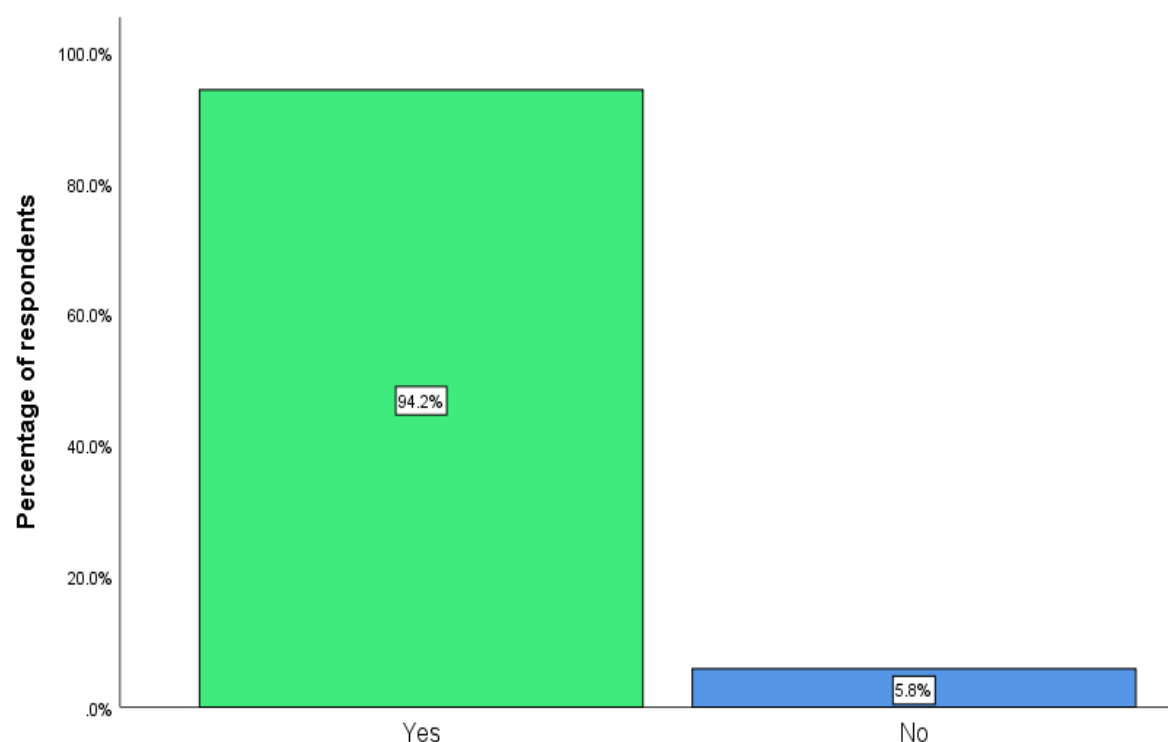


Figure 4. 26: Reasons for consumers' preference for guinea fowl meat

Source: Author, Field Data (2019)

From the farmers surveyed, 94.2% of them were aware of the quality requirements of guinea fowl products by the market whiles 5.8% seemed not to be aware (4.27).



Farmers' awareness of quality requirements

Figure 4. 27: Farmers' awareness of quality requirements

Source: Author, Field Data (2019)

Among those who expressed awareness of the quality requirements of the guinea fowl products by the market, they mentioned the taste, flavor and texture; price of bird/meat, nutritional value and appearance of the meat/bird as the quality parameters consumers look out for in live guinea fowl or the meat. However, taste, flavor and texture as quality parameter was mentioned most by the respondents (78.8%), followed by the nutritional value (14.2%) (see Figure 4.28).

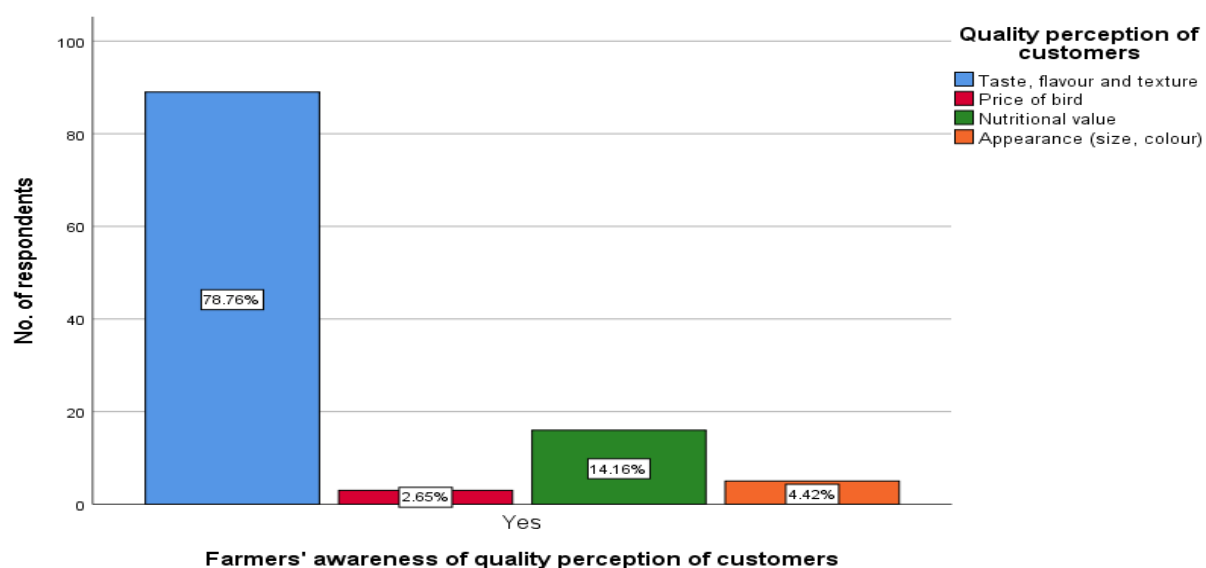


Figure 4. 28: Farmers' awareness of quality perception of customers

Source: Author, Field Data (2019)

Likewise, among those who know what is required by the market of the guinea fowl products, majority of them mentioned live guinea fowl as the most preferred form consumers like to purchase guinea fowl products. However, some respondents, 1.8% and 0.9% of them respectively indicated that the market also requires other forms of the guinea fowl products such as full dressed bird and special cuts (Figure 4.29).

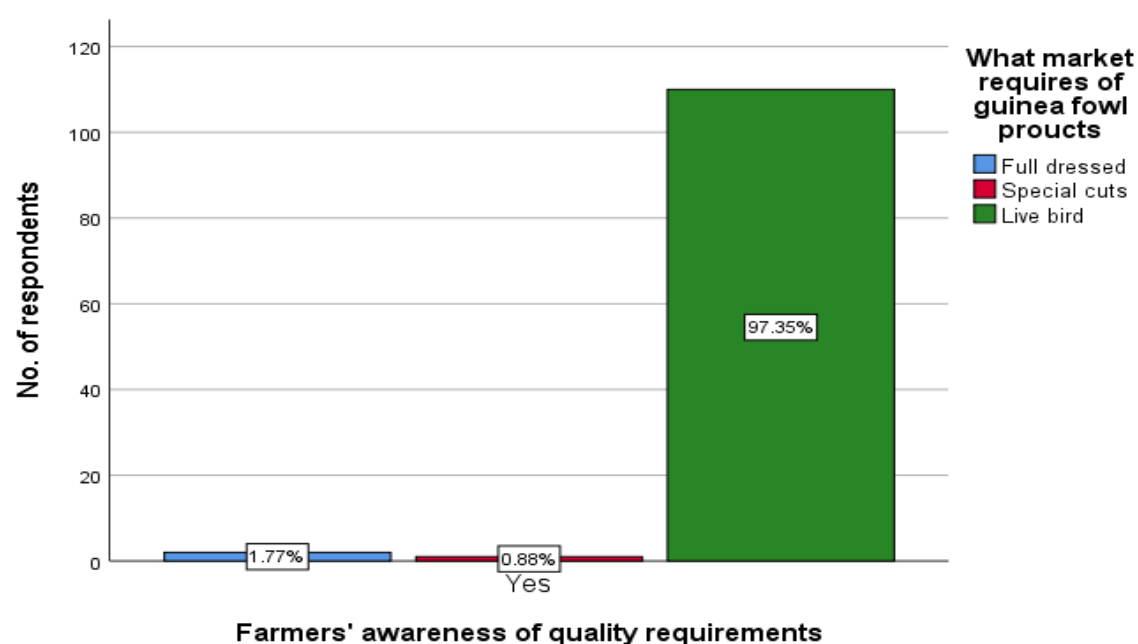


Figure 4. 29: Farmers' awareness of quality requirements

Source: Author, Field Data (2019)

Further, when farmers were asked about how they, got to know about the quality requirements of the market for their products, a majority (59.3%) of them mentioned their colleague farmers as the sources of information. Some of them mentioned extension agents as their contact person and others, 11.5% and 3.5% respectively mentioned farmer group and NGOs as the sources of their knowledge (Figure 4.30).

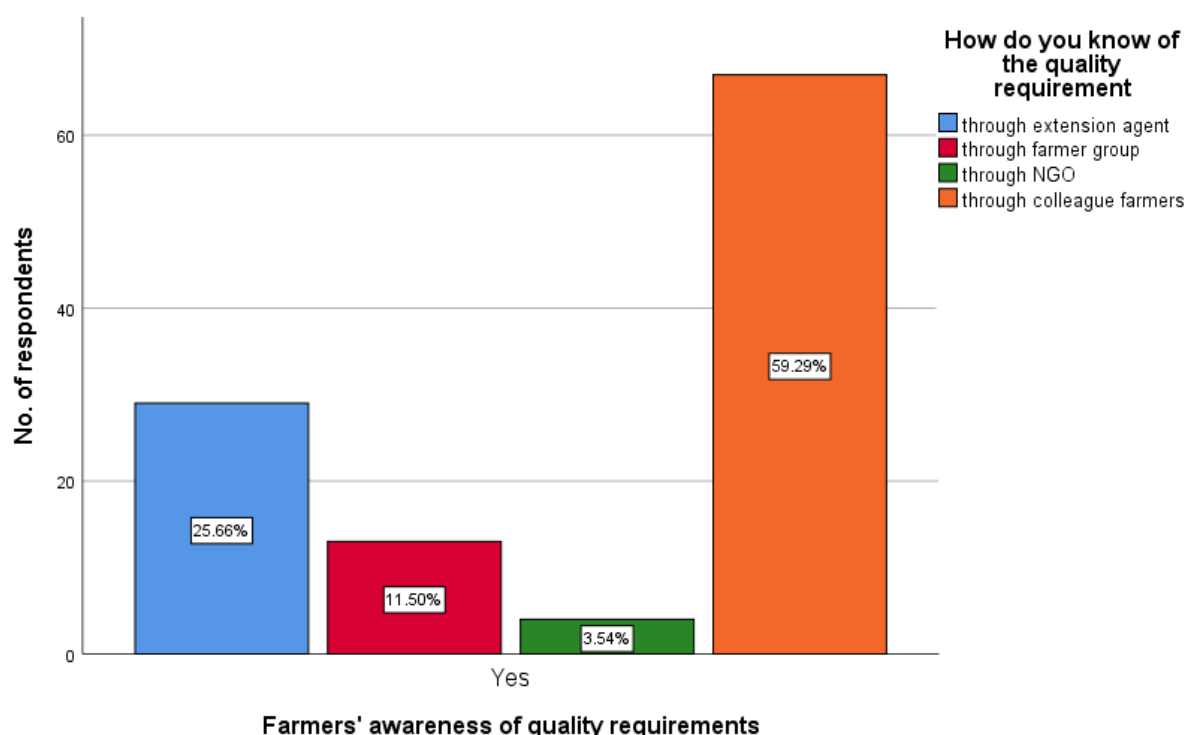


Figure 4. 30: How farmers get know of quality requirements

Source: Author, Field Data (2019)

Key informant 1 indicated that, buyers of live guinea fowl prefer a heavier bird. Consumers expect a quality guinea fowl meat in terms of weight and taste. They also expect to buy it at an affordable price. They are not tolerant of fluctuations in prices, which occur because of the shortages in supply. Consumers usually evaluate the weight of the bird, which is visual appraisal in an attempt to size up the meat content and based on that they are prepared to pay a certain price.

Key informant 2 also indicated that, buyers consider the weight, the health status and the age of the bird when buying. Buyers mostly consider the weight and age of the bird to determine price.

There is no feedback from consumers to producers, else other things might have been considered by the consumer such as the taste and tenderness of the meat. Most of them do not get feedback from consumers of their experiences. Then the birds might have travelled a very long distance to the final consumer, and for that matter, getting feedback becomes impossible.

4.2.6.6 Quality standards in the chain

The processors like Gees Fresh Point Ltd and UDS Meats Unit have their private quality standards. For example, they have a standard weight below which they will decline to buy the bird. Consumers are not concerned about production system under which the bird was produced and what was offered to it in terms of feed and drugs. They are also not very concerned about the animal welfare standards from production through to slaughter. Virtually no standards are specifying the conditions under which the bird should be produced. In an area of drug usage, it has been realized that farmers misuse drugs especially antibiotics without following the withdrawal times after injections, feeding, or watering (Key informant 1).

Products in the chain mostly are not sold based on weight except processors like Gees Fresh Point claims who buys and sells based on weight. More often, live birds are sold and bought based on visual

appraisal of size and weight of the bird without weighing on scale while at the point of sale by processors; the processed products are based on weight on the scale.

Farmers were of the view that, it was difficult to weigh the live bird on the scale. There was no appropriate scale for such a purpose. Key informant 2 indicated that, to encourage setting standards in the chain, there is the need to look at how to get the live birds weighed by the producers. To translate respecting standards in the chain at the community level, people need to be encouraged to sell by weight. Key informant 5 indicated that, the off-taker needs to be educated to understand the need to pay for premium based on quality and not at the prevailing market price.

4.2.6.7 Marketing mix of guinea fowl products

Product

The products on offer to customer are live guinea fowl and its products such as grilled guinea fowl meat and split guinea fowl; some with spices and others without spices (Table 4.17).

Table 4. 16: The products available for sale to customers

Product	Frequency	Percent
Live bird	116	96.7
Dressed guinea fowl meat	4	3.3
Total	120	100.0

Source: Author, Field Data (2019)

Majority of the respondents (42.5%) found it very easy whiles 36.67% found it rather easy to sell live guinea fowls to their customers. However, 14.17% and 3.33% of the respondents found it difficult or very difficult to sell their live guinea fowls to their customers respectively. Figure 4.31, indicates that respondents do not indulge in processing the guinea into dressed or frozen products except a few. However, there is an indication that, those who add value it before selling found it very easy or just easy to sell off those products to their customers.

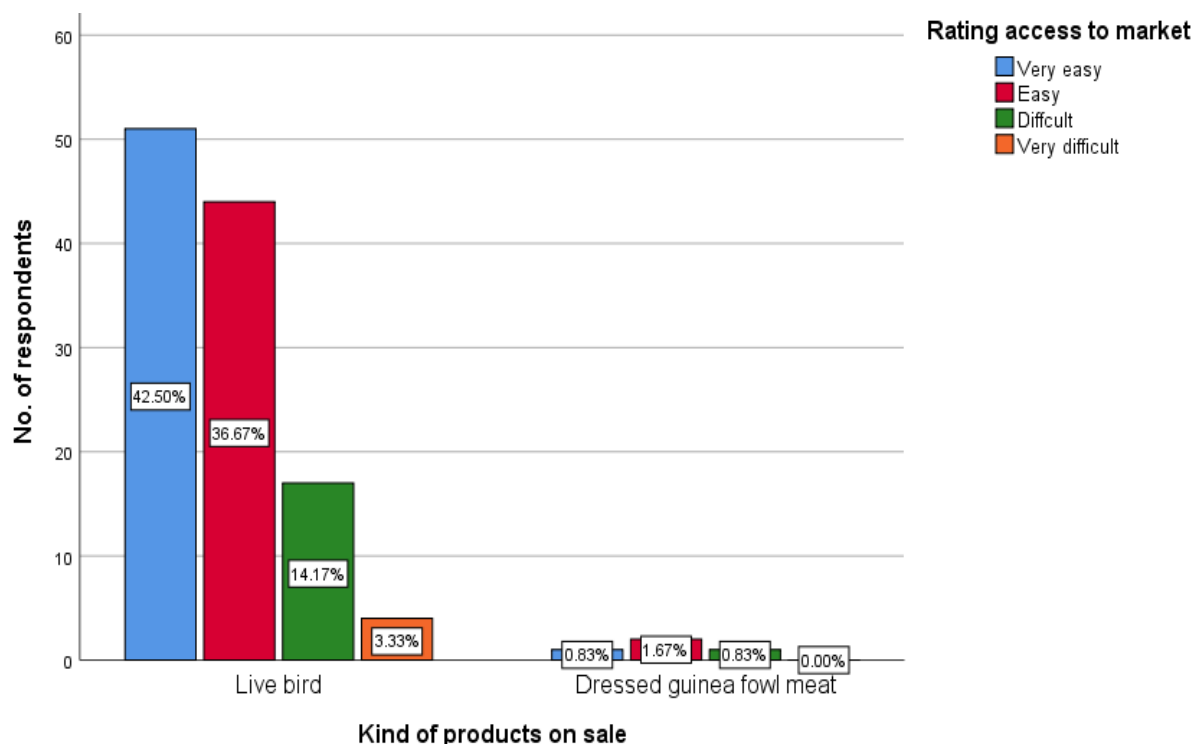


Figure 4. 31: Rating the access to market for the guinea fowl and its products

Source: Author, Field Data (2019)

The above chart (4.31) indicates that almost all the respondents (96.67%) are indulged in selling live guinea fowl. Only 3.33% of the respondents actually engaged in adding value to the guinea fowl before selling to the customers by way of slaughtering and dressing the birds into products.

Most of the respondents (42.4%) sell their live guinea fowls at least once a month followed by those selling once a week (41.5%). Some (1.7%) sell only once a year and others indicated that they sell only when they need cash (Table 4.18).

Table 4. 17: The frequency of selling of guinea fowl by farmers

	Frequency	Percent
Once a week	49	41.5
Once a month	50	42.4
Once a year	17	14.4
Only when need cash	2	1.7
Total	118	100.0

Source: Author, Field Data (2019)

Place

Mostly, producers sell the guinea fowls at the village level or community level. Farmers sometimes bring the birds to the market centers and towns to sell themselves usually when buyers are not coming after the advertisement or aggregators go to them to buy the birds (key informant 2). According to

the surveyed producers, the places they sell live guinea fowls are rural/village markets, farm gates or urban markets. Out of these places, rural/village markets (55%) are the commonest selling places for guinea fowls followed by farm gates (41.7%) and then the urban markets (3.3%) (see Table 4.19).

Table 4. 18: Places of selling guinea fowl by producers

	Frequency	Valid Percent
Rural/village market	66	55.0
At farm gate	50	41.7
Urban market	4	3.3

Source: Author, Field Data (2019)

According to the majority of the respondents (83.3%), they sell their live guinea fowls to collectors/wholesalers. Some of the respondents (10.8%) said they sell directly to the end consumers, 4.2% sell to the processors bypassing the collectors/wholesalers and 1.7% sell directly to the retailers (Table 4.20).

Table 4. 19: Customers who buy live guinea fowl from the farmers

Customers of guinea fowl products	Number of respondents	Percent
Collector/wholesaler	100	83.3
Processors	5	4.2
Retailers	2	1.7
End consumers	13	10.8

Source: Author, Field Data (2019)

Majority of the respondents (44.9%) sell their live guinea fowls to restaurants/chop bars/ food venders. The rest sell their birds to individuals, households and hotels/guesthouses (Table 4.21).

Table 4. 20: Consumer categories of guinea fowl

	Frequency	Valid Percent
Restaurant/chop bar	35	44.9
Household	10	12.8
Hotel/guesthouse	3	3.8
Individuals	30	38.5
Total	78	100.0

Source: Author, Field Data (2019)

Price

Price is determined based on visual appraisal of how heavy the bird is and lack of diseases or ill health in the bird. In the rainy season, the prices of live guinea fowls are somehow low as compared to the dry season (key informant 2). The size and weight of the bird through visual cues is the major consideration for pricing live birds however, weighing with scales is scarcely practiced. Pricing depends

on seasonal variation in guinea fowl production with higher prices during festive occasions as compared to ordinary days. In Figure 4.32, it indicates that price is determined at the point of sale (75.4%) using visual appraisal and weight estimation by hand. Sometimes, the weight of the birds on scale is used and only 10.2% of the respondents mentioned it. This category of respondents could be those selling to the big processors such as Gees Fresh Point who determined prices of the birds using weight of bird on scale. There are 11%, 1.7%, 0.8% and 0.8% of the respondents who mentioned colour of bird, sex of bird, age of bird and market demand respectively as factors to consider in price determination.

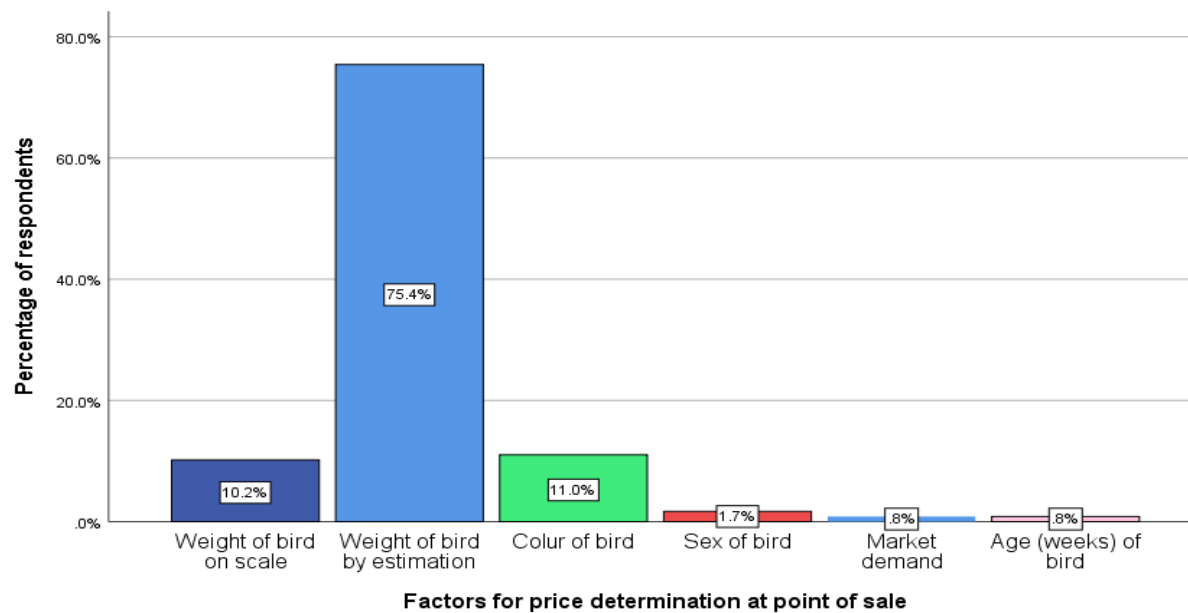


Figure 4. 32: Factors determining price of guinea fowl

Source: Author, Field Data (2019)

When respondents were asked to rate their satisfaction on prices at which their customers agreed to pay for their guinea fowl products at points of sale, 28.7% of them rated it as moderately satisfactory while 27.7% and 9.6% indicated satisfactory and very satisfactory respectively to the prices at points of sale. On the other hand, 11.7% of the respondents were dissatisfied while 22.3% were very dissatisfied with the prices customers offered to their guinea fowl products at the points of sale.

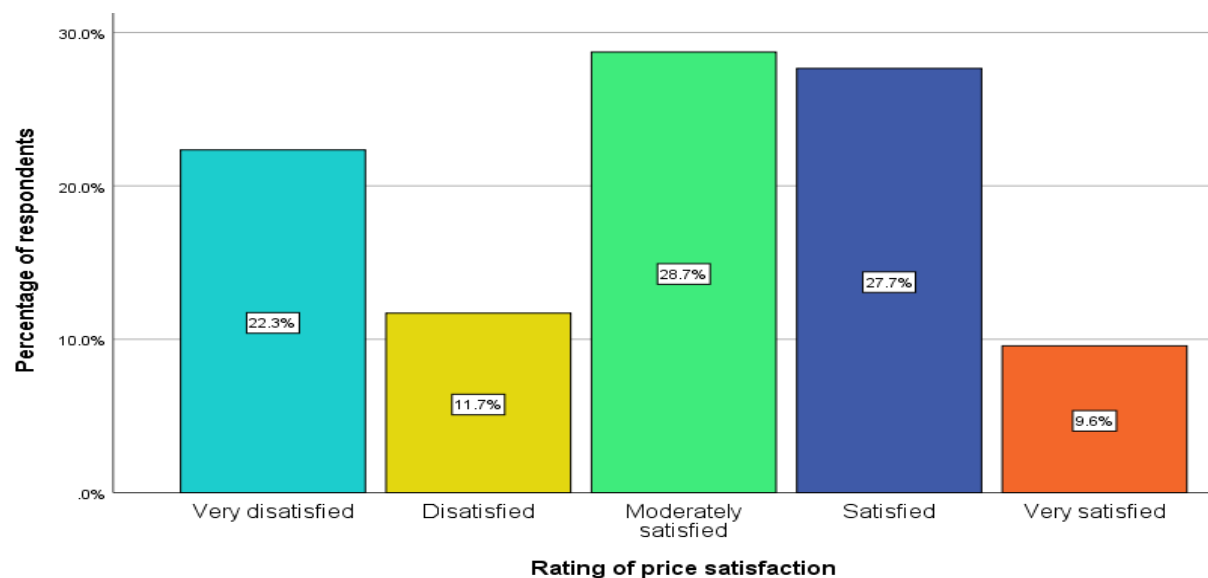


Figure 4. 33: Rating of farmers' satisfaction of guinea fowl market price

Source: Author, Field Data (2019)

Promotion

When farmers want to sell their birds, they advertise by way of word of mouth among the neighbourhood or colleague farmers of their intention to sell their birds (key informant 2). For majority (69.2%) of the farmers interviewed, they carry out promotions on their guinea fowls or products offered for sale. However, 30.8% of them do not do promotions on their products (Figure 4.34).

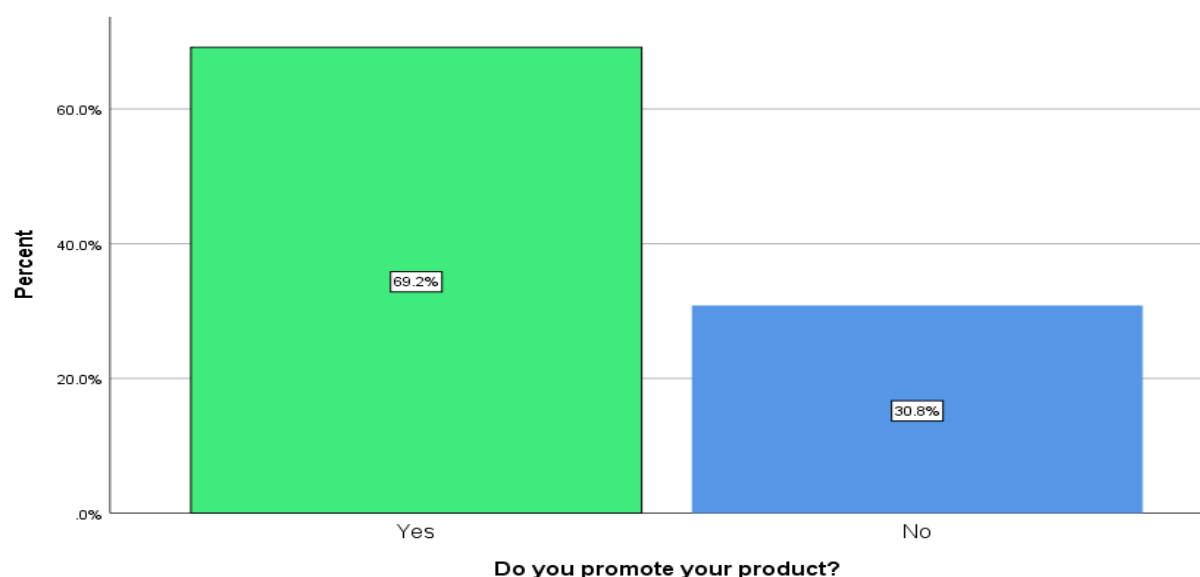


Figure 4. 34: Promotion of products by farmers

Source: Author, Field Data (2019)

Among those making deliberate promotions on their products, majority (61.3%) of them use telephone, 36.3% use word of mouth, 2.5% do that through erection of sign posts and none use internet/online means to promote their businesses (see Figure 4.35)

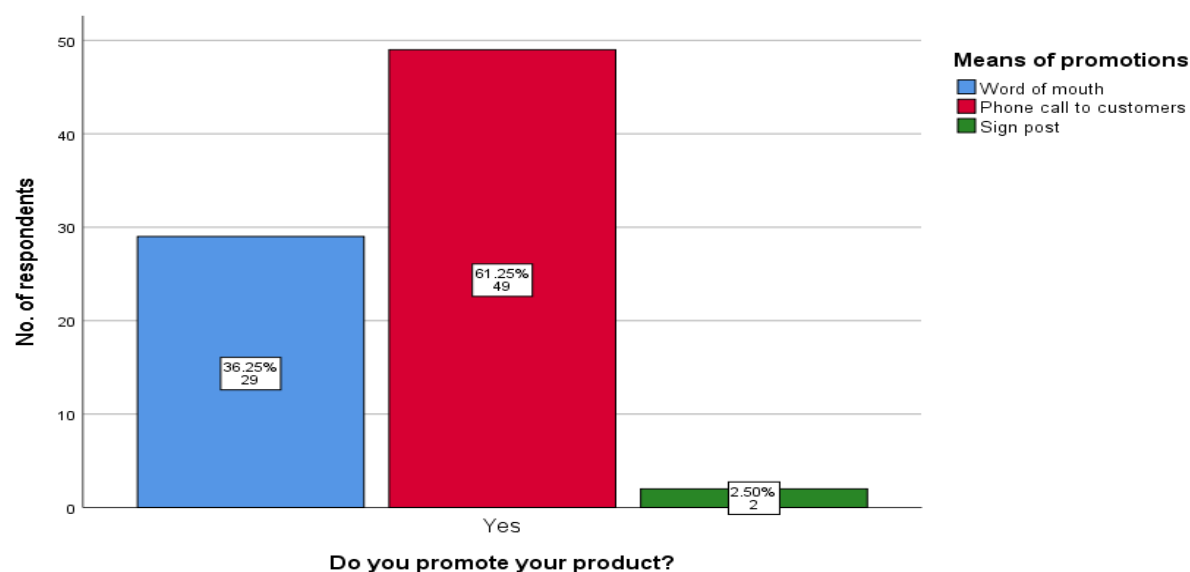


Figure 4. 35: Ways of promotion by producers of their guinea fowls

Source: Author, Field Data (2019)

4.3. Extension services and supporter services in the chain for the producers

4.2.1 Farmer access to technical support in the chain

Most of the respondents (65.8%) have access to extension/veterinary services. However, many others have never had contact with extension/veterinary (34.2%) (Figure 4.36).

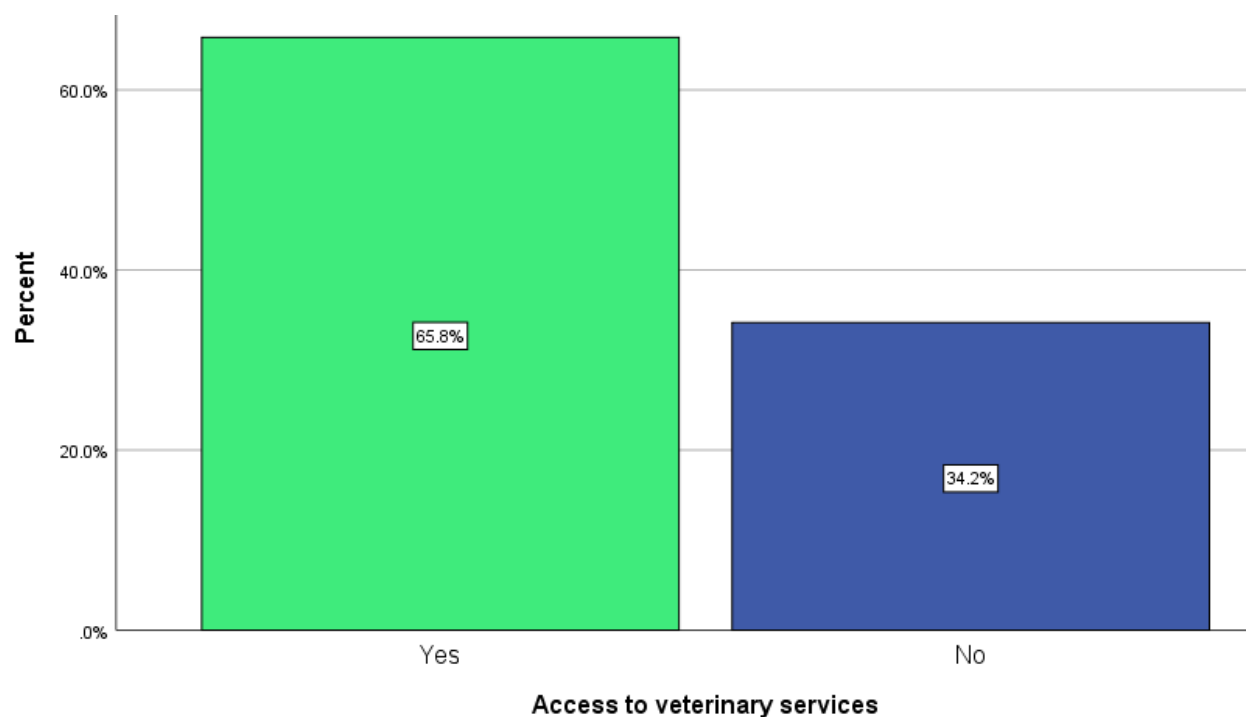


Figure 4. 36: Access to extension / veterinary agents

Source: Author, Field Data (2019)

For those who have contact with extension/veterinary services, 49.4% of them get visited once a month, 37.9% once a year and 12.7% once a week (see Figure 4.37).

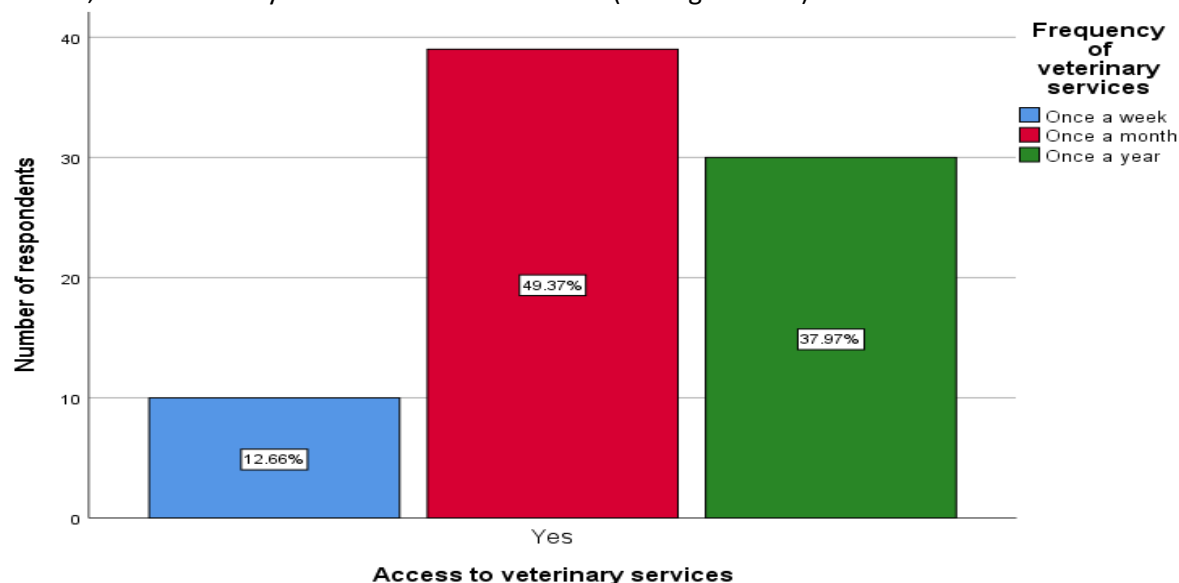


Figure 4. 37: Rate of contact between farmers and extension / veterinary agents

Source: Author, Field Data (2019)

There is a correlation between provider of veterinary services and key challenge facing producers which is high chick mortality ($\rho = -0.228$, $p = 0.012$), Table 4.5. However, this relationship is weak and negatively correlated (see Table 4.23).

Table 4. 21: Correlation between production challenges and provider of treatment to birds

Correlations			Key challenges in production	Who administer treatment
Spearman's rho	Key challenges in production	Correlation Coefficient	1.000	-0.228*
		Sig. (2-tailed)	.	0.012
		N	120	120
	Who administer treatment	Correlation Coefficient	-0.228*	1.000
		Sig. (2-tailed)	0.012	.
		N	120	120

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Author, Field Data (2019)

Since the relationship is negative, that means, if farmers increase their use of unqualified persons or increase use of self-administering of treatments to birds, it will result in more chick mortalities on the farm. The above situation is graphically illustrated in Figure 4.38, whereby those respondents who did

self-administering of drugs or treatment to birds; they recorded more chick mortalities than those who used the qualified veterinary officer for the treatment of their birds.

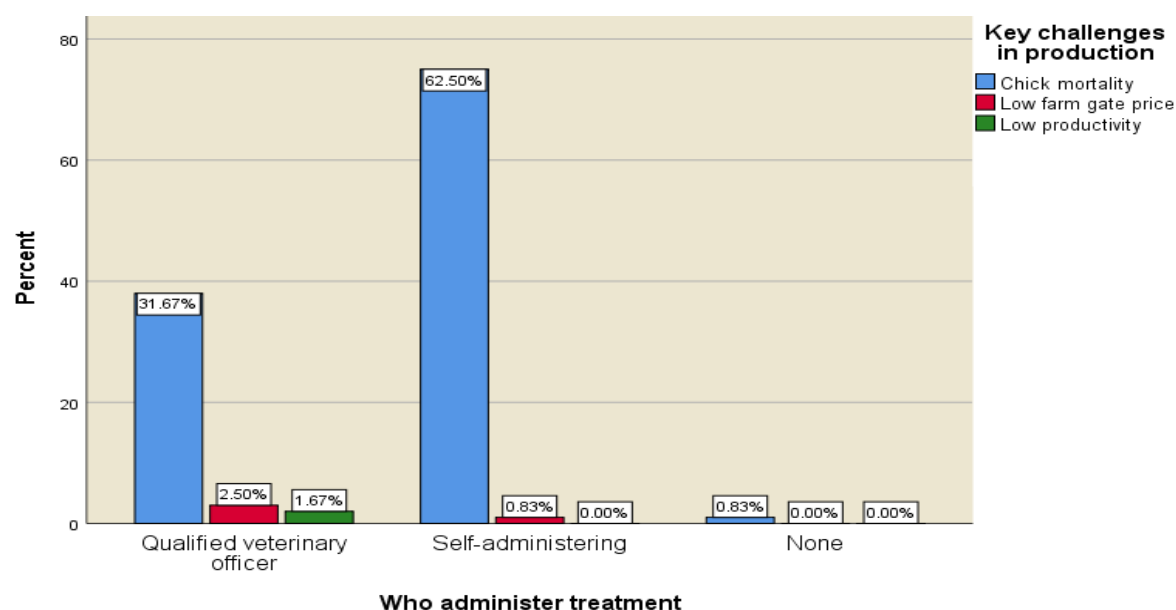


Figure 4. 38: Relationship between who administer treatment and key production challenges

Source: Author, Field Data (2019)

The in-depth interviews revealed that, the department of agriculture is undergoing reforms where there is reorientation of the technical class through the technical education for modernising agriculture in Ghana. In this respect, the agricultural colleges of education are being touted as point of the reorientation where the extension agents coming from those colleges are taught on modules of agribusiness, value chain development, gender and social inclusion and even climate change with the intention of putting that knowledge into practice to depart from productivity to developing value chains. Those AEAs who are already in service, their capacities are being built under Technical Education for Modernising Agriculture in Ghana (TEDMAG). The department is considering of ensuring that the numerous associations or farmer-based organisations that are dormant could become viable and proactive bodies to developing their value chains (key informant 2).

According to key informant 3, the AEAs have their operational areas, which can be as big as 60 communities can. AEAs give technical advice on husbandry and health and the extension of technical knowledge to guinea fowl farmers. For instance, AEAs advice farmers on husbandry issues such as to give supplementary feed in the morning and at nighttime, the time the birds are returning to roost in order to contribute to taming the birds to always return home at night to roost. The AEAs also try to link farmers to the market, as they know producers and their locations (key informant 3).

When there is case concerning guinea fowl production, extension agents step in to link the famers to the source of support to take care of it. The extension agents also get very much involved when there is a project coming to support farmers. The veterinary extension staff handle the health and improvement issues of the flock and general extension staff often advise on general issues on husbandry but often link farmers to veterinary extensionists on health extension issues (key informant 4).

Concerning the animal production directorate in promoting guinea fowl chain, it has played a role in building the capacities of producers and setting up breeding centers equipped with necessary equipment for farmers to bring their eggs to hatch and brood the chicks through a FAO project (Key informant 2).

The directorate through the West Africa Agricultural Productivity Programme (WAAPP), about 20 guinea fowl producers from 20 selected districts within the study area, capacities were built and provided with inputs such as incubators, generators, solar panels and a startup stock of 1000 eggs to each producer. Those given the incubators were to partners with others in the industry; they were to hatch for the community members at a fee to cater for the utility bills. The capacity of those farmers were built as well. The directorate under the flagship program of rearing for food and jobs will procure guinea chicks and supply to productive beneficiaries in the pilot districts in the regions (key informant 2).

4.2.2 Supporter services in the chain for the producers

The respondents (95.65%) mentioned that, they had access to supporter services in different ways towards enhancing their competitiveness in the chain. However, in this chain 4.35% of the respondents indicated that, they did not receive any supporter services. Majority of the respondents (60.87%) mentioned MoFA as the main source of their support. Besides MoFA, some respondents mentioned NGOs (21.74%) as very instrumental in giving out supporter services to them and 13.0% mentioned financial institution as source of some support (Figure 4.39).

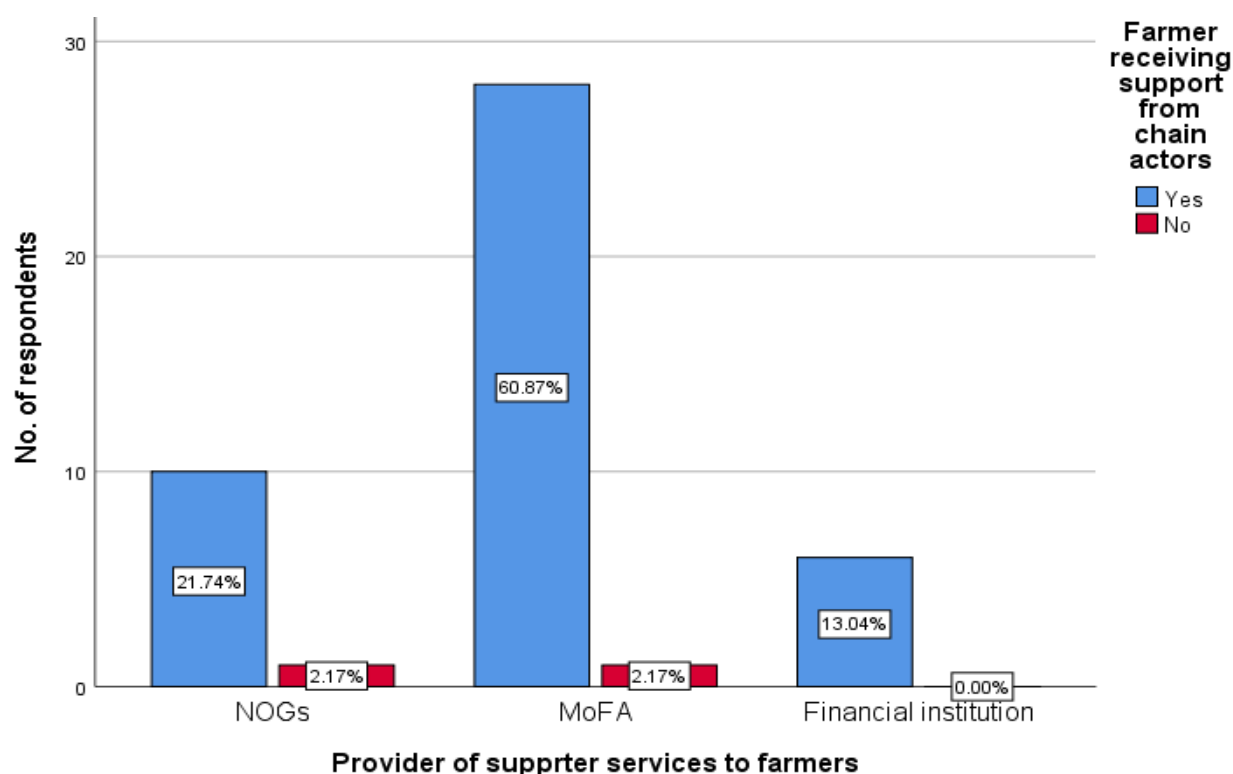


Figure 4. 39: Supporter service providers to farmers

Source: Author, Field Data (2019)

According to Figure 4.40 below, the supporter services that respondents received were mostly credit facility, market information, pre-financing and technical skills on husbandry practices. Among the

providers of those services, MoFA dominated (65.91%) in giving out all the services mentioned above, followed by NGOs (20.45%) and then financial institutions (13.64%) as shown in the figure below.

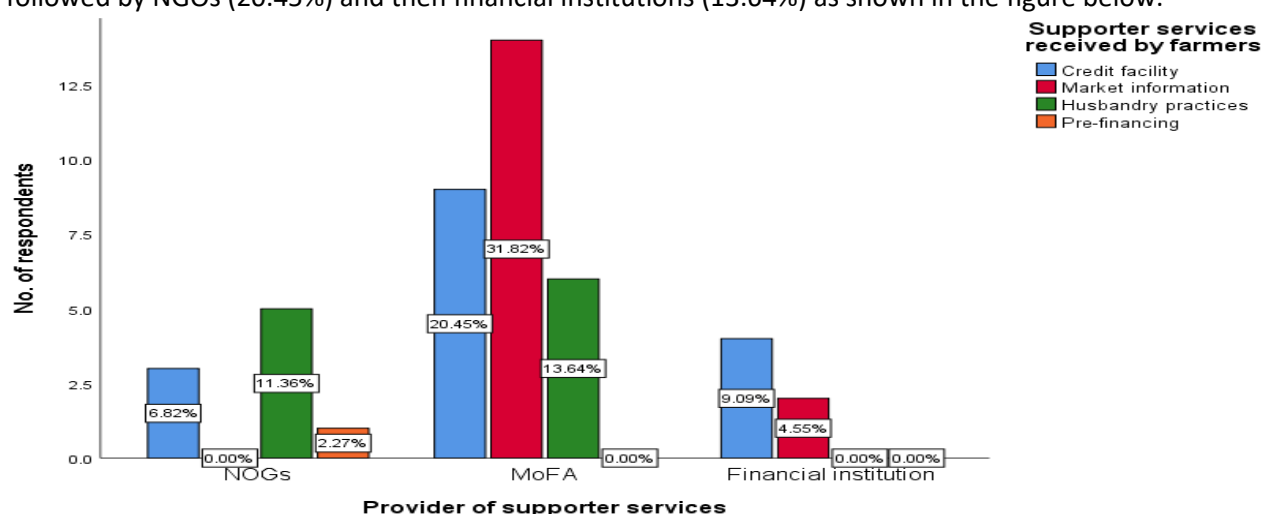


Figure 4. 40: The supporter services received by farmers

Source: Author, Field Data (2019)

4.4 SUGGESTED UPGRADING STRATEGIES OF THE GUINEA FOWL VALUE CHAIN

This section is about the upgrading strategies suggested by the respondents in their opinion about the strategies that are possible for the smallholder farmer situation.

4.4.1 Chain upgrading strategies

Specializations by all the actors are required to make the chain more efficient. Producers will have to specialize in their production such as producing fertile eggs, hatching guinea fowl eggs etc. There has to be a standard broiler diet manufactured on large scale. Farmers will have to use feed made for guinea fowl broilers and not feed that has been made for broiler chicken since their energy requirements are different. There has to be those who specialize in producing fertile eggs, hatching eggs, brooding and those who grow the guinea chicks to maturity or different age categories for sale (key informant 1).

There has to be specialization in providing some of the inputs that go into production. Production activities are to be undertaken by elite and not necessarily only the resource poor farmers who tend to be on the lower end of the education spectrum. When those who are at the higher level of education undertake production, there is likely to be more changes in the value chain (key informant 1).

Another strategy is to build farmers capacity to be able to cater for the guinea fowls properly to maturity (key informant 2 and 4). There is need for holistic reorientation of capacity building of the various chain actors on value chain concepts or models (key informant 2).

Producers should be resourced with incubators or made accessible to hatch their eggs. There should be collaboration with farmers especially when there is project to improve the chain. Supporters should involve farmers from the beginning of the supporter program/project i.e. it should be participatory involvement of farmers - during any chain intervention. Decisions should not be taken on behalf of farmers, rather involve them at all stages of the project/program. They should be made to understand, why they are doing what and they do (key informant 4).

Moreover, there is the need to build strong chain relationships among chain actors and supporters to have a vibrant guinea fowl value chain. The various actors in the chain should understand their respective roles in the chain and ready to collaborate with others for their mutual benefit. The producers should understand the consumer requirements and then produce to meet that and get value for money.

4.3.2 Business strategies of improving value share

Key activities

The key activities central to the guinea fowl production are hatching, brooding of chicks and husbandry. According to majority of the respondents (59.7%), hatching and brooding are the most important activities in production while brooding and husbandry were indicated by 39.5% and 0.8% of the respondents respectively as equally important (Figure 4.41).

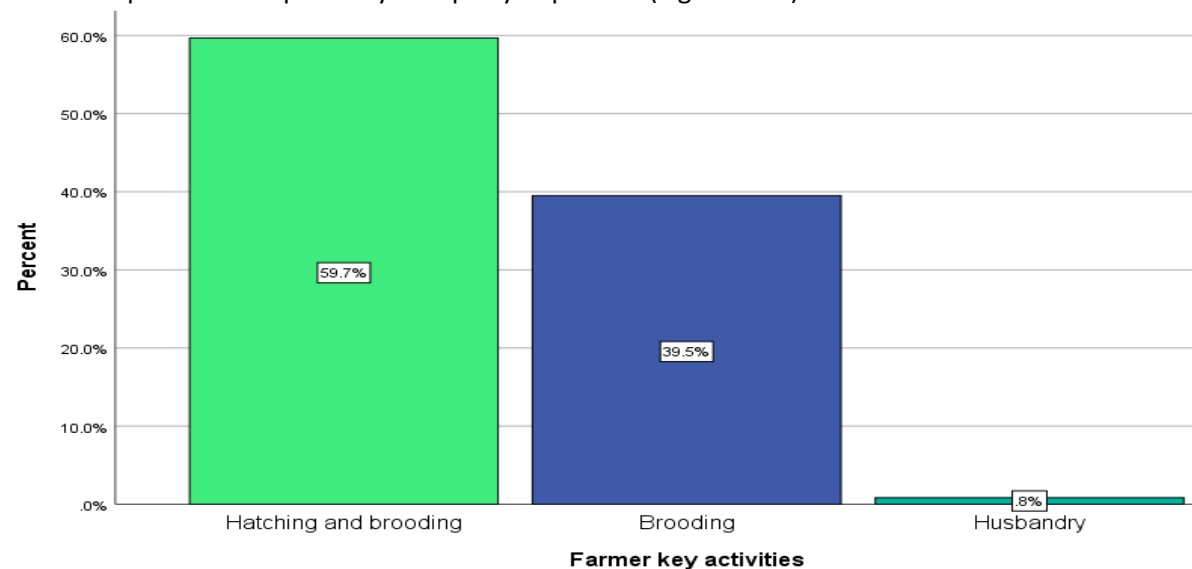


Figure 4. 41: Farmer key activities in the chain

Source: Author, Field Data (2019)

Value creation

However, to create value in the production, majority of the respondent mentioned service provision, stable and consistent demand, training and contracts signing with customers as important activity to drive quality and reliable supply by the producers to meeting market requirements (Table 4.42).

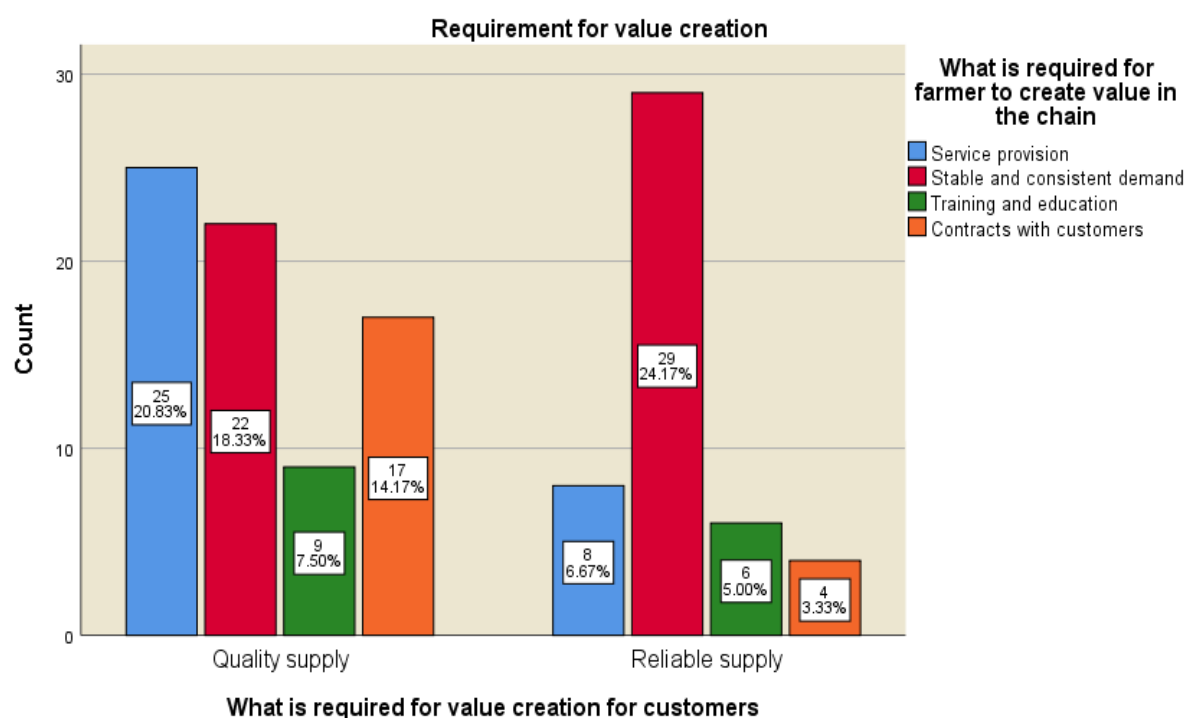


Figure 4. 42: What is required for farmers to create value in the chain

Source: Author, Field Data (2019)

Key resources

The key resources that farmers need to produce to meet production and market requirements are physical resources, human resources and financial resources. The majority of the respondents (60%) indicated that human resources are what is very important for them to produce to meet demand and increase their profitability. Some also indicated that physical resources (20.8%) and financial resources (19.2%) were important (See Figure 4.43).

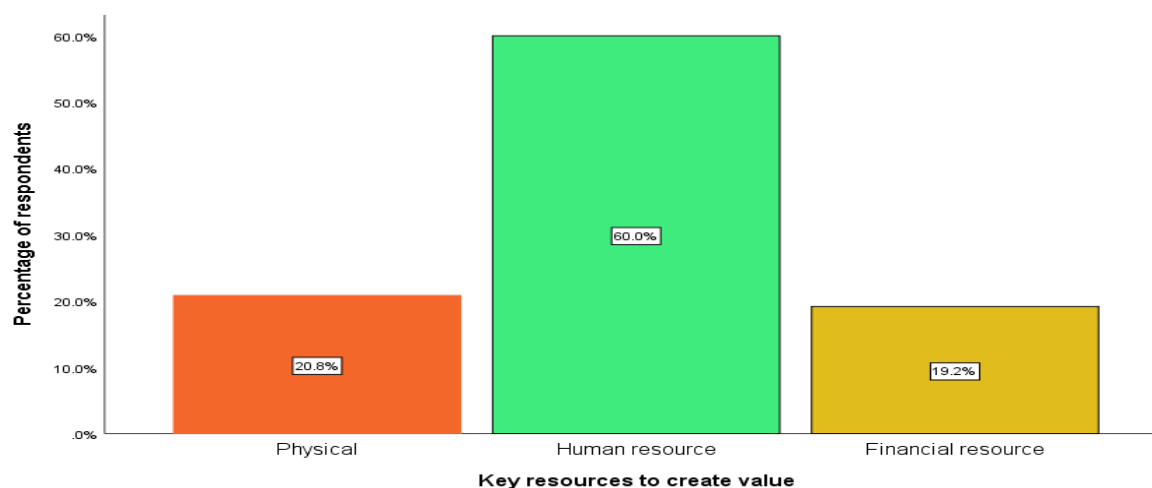


Figure 4. 43: Farmers key resources for their guinea fowl production

Source: Author, Field Data (2019)

Key partners

For majority (39.5%) of the farmers interviewed, their partners in business from whom they obtained some supports toward their production were the buyers. The 23.5%, 19.3%, 15.1% and 1.7% of the

respondents mentioned producer organisations, MoFA/AEAs, input suppliers and transport providers respectively as equally important partners to their activities (Figure 4.44).

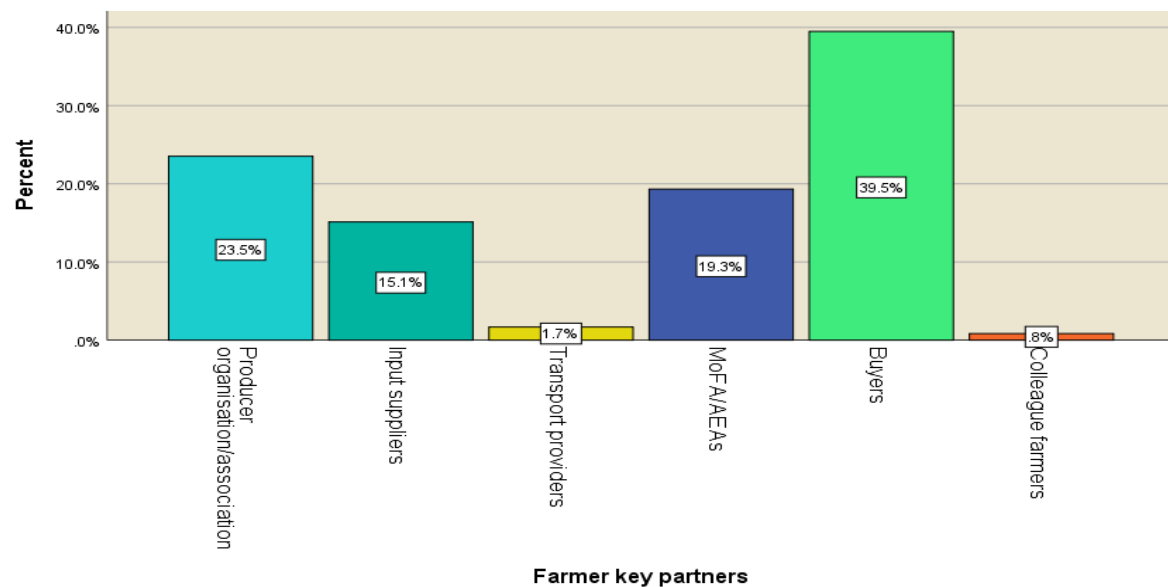


Figure 4. 44: Farmers key partners in their guinea fowl production

Source: Author, Field Data (2019)

CHAPTER FIVE: DISCUSSION AND REFLECTION

DISCUSSION

This chapter discusses the results by comparing the findings from the survey and in-depth interviews to relevant literature and explains the observed phenomenon in the context of guinea fowl meat value chain.

5.1 CURRENT CHAIN STRUCTURE AND FUNCTIONS

5.1.1 Socio-economic characteristic of farmers

Youthful producers apparently constitute the production side of the chain as majority of the producers who responded during the survey aged between 30 and 45 years. This finding agrees with that of Issaka and Yeboah (2016) that indicated, the guinea fowl industry in the northern region has a huge potential for growth given the youthful nature of the farmers aged between 26-35 years. However, what is quite worrying is that significant number of the producers are outside the youthful bracket while the up and coming youth, those aged less than 30 years, are less represented in the production. Since majority of the producers never been to school, it possibly could lead to the low technology adoption and the gross adherence to traditional ways of farming.

Looking into their main sources of income, from the survey results, majority of the guinea fowl farmers were into farming of guinea fowls. This agrees with Abdul-Rahman and Adu, 2017, guinea fowl farming is an integral part of the farming system in the northern region of Ghana. About 23.3% were into businesses, formal employment, or a combination of any of the three livelihood activities. This result indicates that any intervention to improve the guinea fowl value chain that adds to its profitability will contribute to creating a sustainable livelihood for many of the smallholder farmers.

The motive for the respondents farming guinea fowls was because of cash/income, low capital of investment by the resource-poor farmers, high demand for guinea fowl and food. However, rearing for cash or income is the main motive among the guinea fowl farmers in the northern region of Ghana agree with finding of Abdul-Rahman and Adu (2017). This observation signifies that the farmers, majority of whom are smallholders have a business mindset for their farming even though at the subsistent level.

5.1.1 Level of women participation in the chain

The result on respondents' gender indicates the production level of the chain is dominated by males and with insignificant female representation (2.5%) but are quite represented at the other actor levels of the chain, especially in the marketing and retail functions. This observation is confirmed by key informant 2 who stated women are a group of marginalized stakeholders at the production side of the chain. However, despite their low representation in production, they are somehow represented at the marketing level of the chain. There were no quantitative results to confirm this since the survey was not extended beyond the producers to other actors in the chain. However, key informants 2 and 3 also attested to this observation. This finding confirms the finding of Issaka and Yeboah (2016), who indicated, among the guinea fowl keepers in the northern region of Ghana, males constitute the majority.

Giving the reason for this observation, some respondents said there is no clear-cut reason why women participate less in the guinea fowl meat value chain at the production level and rather more at other levels of the chain. Respondents 1 and 4, however, attributed this observation to the perception that guinea fowls are difficult birds to keep, as the birds are very delicate at brooding stage and women

given their roles and pre-occupation by household chores feel they cannot give careful attention to the birds but can only offer to help their husbands or males in raising the birds. Key informant 4 also holds the view that it is due to asymmetric power relations in households between man and his wife, which is common among the people of the northern descent, where the man is dominant over the wife and owns her property. So women are not seen to own guinea fowls even if they are the real owners. This finding is in line with that of the Issaka and Yeboah (2016) that wives do not rear guinea fowls because of disputes over ownership, which is probably the restricting factor to married women keeping the birds, and so can only assist their husbands in taking care of the guinea fowls.

5.1.2 Key stakeholders and their functions

The research identified the guinea fowl meat value chain in the study area as having many internal and external stakeholders. The internal stakeholders were input suppliers, producers, aggregators, processors, retailers and consumers who possessed and owned the live guinea fowl and its processed products at different stages of the chain. The external stakeholders which gave supporter services and or offered regulations to the chain included NGOs, Animal Research Institute, MoFA/Extension Services (Directorate of Veterinary Services and Animal Production Directorate), FDA and GSA. This finding is in line with the definition of stakeholders by Mukandekazi, (2014), stating, that value chain stakeholders consists of internal and external stakeholders who have an interest in the development of the chain.

With this level of stakeholder involvement, the chain should be strong enough to be competitive. However, this is not the case for the guinea fowl meat value chain in the northern region of Ghana. This is because there was a lack of coordination and cooperation among actors and between actors and chain supporters. Such collaborations are necessary to create a platform where stakeholders will discuss and find solutions to problems affecting the chain.

5.1.3 The current guinea fowl meat value chain map

This value chain has all the key actors performing their primary functions as indicated in the chain map below. The chain has four main channels, two of which has the final commodity as live birds retailed to the consumers and the others have processed products retailed to the consumer. Channel I and II deliver live birds to the end consumer whiles channel III and IV deliver processed products to the end consumer.

The most important channel in terms of volume distribution of the live guinea fowl off taken from the farmers is Channel IV with 83% of the live guinea sold by the producers to the aggregator for further re-distribution followed by channel I, III and II. In terms of value share reward for producers in this chain, channel I is the best followed by Channel II, III and IV.

The value share for the aggregators in channel IV is the lowest (17%) but the volume of birds off taken through them compensates it. This is in line with the statement of KIT and IIRR (2008) that indicated that in a chain whereby there is smaller value share; actors may be able to compensate for it by handling higher volumes of the product. Also, the value share of processors who also retail their products benefits so much as they get 33% whiles other processors get 20% as their value share in channel IV and channel III respectively.

Results indicate that producers get the highest profit per unit when farmers directly sell to consumers in channel I (100% profit share), which is a short channel. Farmers share becomes lowest when they sell to the aggregator in channel IV (50% profit share), which is the longest channel. This result agrees with the finding of (Alidu, 2016) who reported that profit share was highest for producers when they

directly sell to traders in a relatively short channel and lowest when they sold to traders in a long channel.

5.1.4 Chain governance structure

5.1.4.1 Vertical and horizontal integration in the chain

The survey results indicate farmers transacted business with downstream actors, aggregators, wholesalers, processors, retailers and even consumers directly. The interaction is based on mutual trust as most of the respondents indicated. The in-depth interview result also supported this observation but added that such relationships exist where the farmers and buyers have been transacting business for a long time. The survey results indicated there were few farmers who engaged in informal verbal contracts between themselves and buyers. This was mostly between farmers and collectors as purported by key informant 2 and 9. Key informant 2 added the strength of these informal business relationships between producers and downstream actors depends so much on how long the parties have stayed doing business together and the level of interactions vary from place to place and how long the actors have known each other.

The in-depth interviews indicates that, there is weak horizontal coordination among the producers. Some of them belonged to guinea fowl farmers' association but majority were not (Key informant 5). There were a number of reasons cited for this, which included; no associations in their communities, some were not motivated to associate into such groups, lack of collaboration among members of those associations and lack of interest in joining the associations. This is because their association, the NORGFFA, is regarded as ineffective. Therefore, this is an evidence to suggest that, majority of the small-scale producers are not organized and there is lack of coordination amongst them to charter a common cause for their mutual benefit.

Key informant 5 who was a chain expert indicated that there was evidence that, the relationship between producers and supporters/service providers is weak. This is because majority of them are not organised to attract organised help from the service providers and added most of them still do not treat guinea fowl production as good business opportunity but engage in it as a backyard/subsistent activity. The expert added that to get the chain to be competitive and profitable to producers, they need to be organized to produce to meet the market requirement and the service provision and supporter systems have to be strengthened to support the production. With this, it is evident to state that, both vertical and horizontal relationships are weak as KIT and IIRR (2008), purported that, markets that have weaker relations occur in situations where farmers and traders are not organised, amidst lack of trust and few permanent relations between the players (KIT and IIRR, 2008)

5.1.4.2 Power relations and chain coordination

5.1.4.2.1 Chain coordination

In this chain, according to the survey result, coordination is by traders of the guinea fowl and its products. Since the farmers were not organised and lack coordination by the producer group. Traders for the sake of their business gains dominated the chain and coordinate business transactions between the producers and themselves. As coordinators, the traders were responsible for relating to farmers, information about price and demand. This situation causes information asymmetries in the chain as buyers may decide to hold onto information without relating it to the producers so that, they exploit the situation of their lack of information. In this situation, perhaps, that is the reason why some

respondents depended on their colleague farmers for information on market demand and prices. The type of coordination in this chain can be said to be that of *market coordination*. This is in conformity with Raikes, et al. (2000) definitions of coordination in value chains, where price is the main market management form.

5.1.4.2.2 Power relations

In terms of power relations in this chain, many of the respondents believe, traders are the lead actors who dictate prices and quality of products in the chain. Even though other respondents think otherwise, that farmers also have a say in price determination. Both opinions are true as there is no standard in price determination for informal chains and pricing is based on negotiations. Since traders have the advantage of being previewed to market information, they stand the greater chance to dictate price despite negotiations. Besides, some of the smallholder farmers usually sell their birds only when they need cash.

In the chain, many respondents (62.5%) hold the view that, buyers are those who dictate the quality of products to produce and to safety compliance. Interestingly, many indicated the end consumer to be less important in determining quality of the guinea fowl to raise for the market. Consumers do not care so much about intrinsic quality of the products but traders do. Since, traders were the determinants of quality and safety of the products and consumers less concerned, it means traders use this as an excuse to dictate price or perhaps they do this to remove the risk of buying sick birds.

5.1.4.3 Types of governance system in the chain

The governance type in this chain is that of *spot market type*, where selling and buying between farmers and buyers are governed by price. The respondent, 63.6% of them transacted business in spot marketing style where there are no long-term relationships between the parties. This type of relationship exist between the producers and the one-time buyers of their products, usually under the open market conditions. In the spot markets, they do not have a fixed business relationship and do not sell to the same customer but change customers. This is typical of a simple market linkage based on the informal trust relationship. In such relationships, there are no formal rules and formal contractual arrangements binding parties to supplying and buying conditions of the transaction. This definition is in line with the definition of Gereffi, et al. (2005). However, there is evidence of long-time relationships between producers and some traders as indicated by key informant 2. Therefore, according to Gereffi et al. (2005) definitions, there is evidence of *captive linkage* in this chain between producers and dominant buyers such as collectors who sometimes advance some money to producers and for the sake of the long term business relationship that they have together. The evidence can be linked to percentage (83%) of live birds that are off taken through the collectors is huge as compared to the other channels.

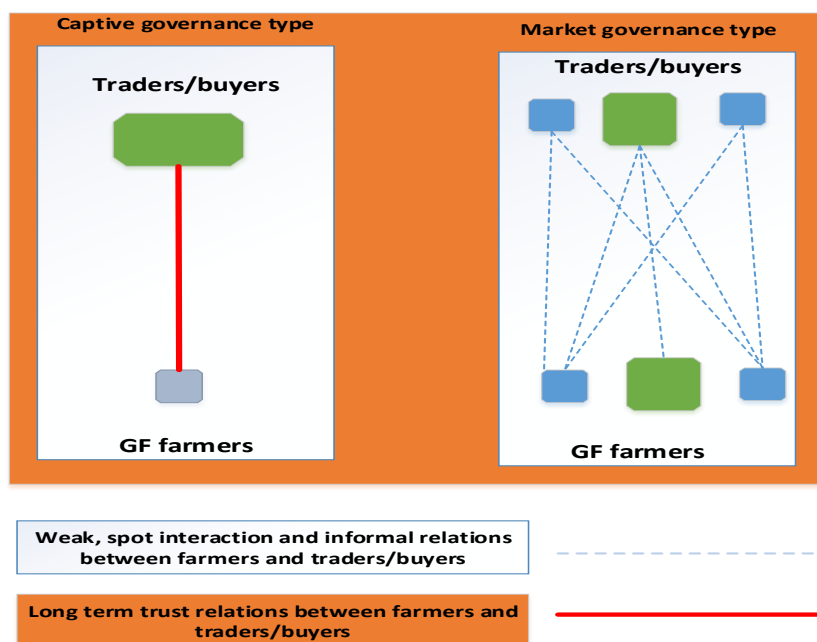


Figure 5. 1: Governance mechanisms between farmers and traders/buyers

Source: Adapted from Gereffi et al. (2005) and modified by Author, (2019)

5.1.5 Production systems and practices of the guinea fowls

The guinea fowls are very important birds to the people of the northern region of Ghana. The people attached economic, cultural and social importance to its farming. They are used for welcoming important visitors to the home, for dowry purpose and sacrifices in some festivals (Guinea fowl festival) and to maintain relationships with the gift of guinea fowl (key informant 2). The farmers usually will sell the birds to raise money for farming or fall on selling the birds for immediate cash needs. This finding agrees with Abdul-Rahman and Adu, 2017 who demonstrated that farmers in the northern region rear guinea fowls mainly for cash beside the need to meet social and cultural obligations.

Despite the economic reasons for raising the birds, majority still venture into it as a way of life, raising the birds at subsistent level. The production system is mostly semi-intensive which agrees with Dougnon, et al. (2012), that guinea fowls are raised as free range scavenging birds. They are mostly smallholder keepers keeping between 5-100 birds. They consider this venture as quite easy and less capital intensive.

It is interesting to note, besides these subsistent keepers, there is a growing interest to maximize return on investment by keeping them intensive. This study revealed that about 4.2% of the keepers have expanded their flock sizes to about 100-1000 and more birds and keeping them more or less intensive.

The majority (92.5%) of the keepers supplemented with feed and treated with veterinary drugs to raise their birds. The feed is simply whole grains, unmixed ground grains, termites, and sometimes, formulated rations. The formulated ration being used could be because of the medium scale producers. Given their resource-poor nature, most probably, the smallholder keepers relied on self-administering of drugs while the medium scale produced relied on qualified veterinary officer. Most of them were not able to provide sufficient inputs. They treated either without supplementing with feed or supplemented with feed without treating with veterinary drugs. However, many of the farmers (30.8%) still use ethno-veterinary drugs to treat their birds. In addition, others had to combine

both the orthodox and ethno-veterinary drugs. There is no clear-cut reason why there still stick to using ethno-veterinary drugs.

The survey result shows that majority (95.8%) of the guinea fowls farmers reared local guinea fowl breeds and hatch their guinea chick by himself or herself using the brooder hen. Others obtain day-old guinea chicks from the open market or colleague farmers' farms or bought from a private hatchery. There are inefficiencies of using brooder hen to hatch and as huge losses occur using the brooder hen.

The major challenge recorded in guinea fowl farming is the high mortality rate of guinea chicks especially before the 8th week after hatching. Others are low farm gate prices and low productivity being recorded by producers. The results indicate that the provision of housing was not enough to stop the major challenge that the producers were facing which is high chick mortality.

Due to these challenges, the productivity of guinea fowl under the smallholder system is low compared to medium-scale production. The highest production came from the medium-scale producers (100–1000+ birds) and least production came from the smallholder keepers of less than 5-100 birds per year. There were significant differences ($p < 5\%$) between smallholder farmers and the medium-scale producers in terms of output per year and number of birds sold per year.

5.1.6 Marketing and Value Share in the guinea fowl meat value chain

5.1.6.1 Marketing and market channels of guinea fowls

There are four observed channels in this chain, through which the farmers choose to sell their birds. Among the four, the shortest one, which is between the farmers and the consumers, yields the maximum profit share of 100%. The estimated number of birds sold through this channel is 11% of the total number of birds sold in the study area by producers. This proportion is surprisingly small because farmers find it difficult to reach to final consumers who pay a good price, as they are mostly located in the cities and towns, and not the villages/communities where the farmers reside.

The channels that add the maximum value to the products are Channels III and IV. Since channel IV offers ready to eat products to consumers in the form of grilled or roasted and spiced guinea fowl meat, channel IV, mostly reach the highest retail price of GHS 45.00 and usually sold to the high-income consumers. The barbecue stands in the capital city of Tamale of the northern region, spring up because of this growing demand for ready to eat guinea fowl meat. The likes of Mba Yahaya guinea fowl processing enterprise and others give a huge market to the small scale guinea fowl farmer as they buy so many of the guinea fowls directly from the farmers or through their network of suppliers.

The modern processors, the likes of Gees Fresh Point and UDS Meats Unit, are equally big players in giving a market to the small-scale guinea fowl farmers. They also have a network of suppliers (aggregators/wholesalers) who supply them live guinea fowls.

According to the key informant 2, there is always a higher demand for the guinea fowls but production is low. However, there are usually fluctuations in prices at certain times of the year with the prices going low or high.

The aggregators can travel everywhere reaching to the rural guinea farmers. This is the reason why they can aggregate so much as 83% of the live birds sold by farmers. They play a crucial role in the chain coordination as they have the information about the demand and prices of the guinea fowl. They decide to relay the information to their clients or hold onto it. Some of them advance credit to their clients and so keep them loyal to supplying them birds and can purchase on credit from their clients. The relationship is based on mutual trust or long-term relationships. When these aggregators

are not giving them better prices, the farmers switch to alternative markets or buyers such as channel I or III.

The value share in the chain is not evenly distributed, due to huge price differences between actors. The aggregators are those who have a higher risk and incur so much transaction costs in communicating and coordinating between the farmer and the market. However, the volume of purchase compensates for them. It should be noted that the value share calculations did not take the costs of each actor into account as that is not necessary for estimating value shares in this type of chains where it is difficult to obtain variable costs from actors. This is in line with the procedure of KIT and IIRR (2008) that indicates that the value share calculations do not take the costs of each actor into account.

5.1.6.2 Value addition and quality standards in the chain

In this chain as at this moment, there is little value added by the producers, as there are poor feeding and medication for their birds. They do not care about the breed type being used for production and they are not sorting and grading by weight on the scale. There is no packaging and labelling in cages before selling. The survey results indicate that the most important value-adding activities at the point of production according to the respondents are the hatching, brooding and husbandry practices. They thought better quality and reliable supply of guinea could be achieved when these activities are carefully undertaken. They also mentioned that the other value-adding activities to increase value share for their live guinea fowls at point of sale include sorting, grading, packing, and labelling. Majority of them indicated that grading by weight is very important to creating value for live guinea fowl and meat products.

The farmers' awareness of the market requirement of guinea fowl products, from the survey, indicates that 94.2% of them were aware of the quality requirements of guinea fowl products required by the market. However, this awareness does not translate into tangible results of producing to meet the market requirement. They mentioned the taste, flavour and texture, price of bird/meat, nutritional value and appearance of the meat/bird as the quality parameters consumers look out for in live guinea fowl or the meat and the taste; flavour and texture according to them are the most important quality parameters.

The farmers indicated that their sources of knowledge about the quality requirements are through their colleague farmers, extension agents, NGOs and farmer group. The production of meeting the quality requirement of the market is key in accessing good market and increasing value share. The farmers' group should have been the biggest player in this as they seek for improving farmers' position in the chain. However, since the farmers' group presence is not felt, that is why the farmers seem not to be implementing that knowledge.

There is virtually no laid down standard practices by the producers in terms of antibiotic use and production conditions/welfare of birds and generally no weighing and measurements standards at points of sale. It is worth mentioning that, Gees Fresh Point Ltd and UDS Meats Unit have their private quality standards in terms of weights of birds for their suppliers.

5.2 CURRENT PERFORMANCE OF PRODUCERS IN THE CHAIN

5.2.1 Hindering factors

Production challenges in guinea fowl production

In the smallholder production system of keeping guinea fowls, where the producers use the chicken hen to hatch guinea chicks and to brood the guinea chicks, the farmers are not able to have more than fifteen guinea chicks at a time. Naturally, the hen is unable to sufficiently provide the conditions necessary for all the eggs to hatch and to provide the care that is required to the chicks.

Now, due to the poor resource availability to those producers, that is why they resort to using these natural means of hatching eggs. Perhaps, there are no incubation facilities and farmers have to use the chicken hens to hatch eggs. The inefficiency of the hen brooding is lack of optimum temperature control for all the guinea chicks and the poor health management regime leads to the mortality problem.

The smallholder farmers are not able to invest in providing the temperature-controlled environment that the birds require and therefore rely on the chicken hen to perform the role of temperature regulation, feeding, mothering, and protection. The result of that is more than 90% of birds are lost to mortality. Besides, the brooding, medication and feeding are all not adequate which leads to this mortality in the first eight weeks of bird's life (key informant 1).

The losses are significant to contribute to low productivity. The quality of feed and feeding regimes provided to birds is not of the best to boost productivity. The smallholder farmers just have some few grains that, they throw to them and sometimes they provide termites or maggots. The termites and maggots that they feed to them as a protein source (key informant 1).

In terms of health management, some farmers rely on ethnoveterinary practices to treat their birds against diseases and parasites. They just have herbs that they put in water but no medication regiment is put in place to treat against the scheduled diseases (key informant 1 and 2). This finding conforms to what is found in literature as mentioned by Abdul-Rahman and Adu (2017) that all the guinea fowls farmers rear semi-intensively, provide housing, supplementary feed, water on a daily basis and use ethnoveterinary practices and the major problem they face is high chick mortality.

Another most important production performance gap is that farmers are adapted to using local guinea fowl breeds for the production due to several reasons but they have the characteristic slow growth rates leading to the high cost of investing in feeding for those keeping them in the intensive or semi-intensive way. The birds grow very slowly up to a year without even attaining 1kg weight and besides the majority of the farmers do not have the know-how to withstand these challenges (key informant 1 and 4).

The behaviour of some farmers is that they selectively adopt and implement the technologies provided them through capacity building, most probably linked to the issue of the illiteracy among the producers. These smallholder guinea fowl farmers are resource-poor who cannot keep or sustain some of the technologies. Besides, the farmers are not getting the technology sufficiently that one wishes they should get it due to poor funding of extending technology (key informant 1).

Even though the majority have access to extension/veterinary services (65.8%), but they have not received many visits. Perhaps this explains why majority resorted to their way of administering treatments and use of ethnoveterinary medications on their flocks. This study has found out that,

there is a correlation between the key challenge of high chick mortality farmers are faced with and the quality of veterinary services received ($\rho = -0.228$, $p = 0.012$ at 0.05 level of significance).

The public extension services on which the farmers depend is challenged with limited availability of staff and resources to extend the technology to farmers to let them know the conditions under which to reduce mortality (key informant 1) and to improve on productivity. Issaka and Yeboah (2016) also made this observation saying that access to extension services is a key driver in technology adoption in agricultural innovations; unfortunately, access to extension services by guinea fowl farmers in the northern region of Ghana is very poor. Amankwah, et al. 2014 also observed this, as the amount of extensive received by keepers through the public delivery of veterinary extension service is reduced. Hence, the findings of Amankwah, et al. 2014, Issaka, and Yeboah, 2016, agree with the current finding of majority (49.4%) of the keepers receiving visits from extension staff once a month and 37.9% once a year.

The supporter services in the chain for the producers is not sufficient to boost their productivity. They largely receive such support from MoFA and NGOs as most respondents purported (60.87%) and 21.74% respectively. Unfortunately, MoFA is not resourced enough to solve the problems of all produces. The NGOs support also have a limited duration. Some mentioned financial institutions but is only 13%, which most probably are those medium-scale producers and possibly not the smallholder farmers since they were not well organized to attract any financial credit. Only a minority of them belonged to guinea fowl farmers' association (36.7%) and the majority (63.3%) were not.

5.2.2 Supporting factors

Strengths and opportunities of the guinea fowl meat value chain

The main strength is the high demand for guinea fowls creating a huge market for guinea meat (key informant 1). Many consumers prefer the guinea fowl meat to chicken meat. Northerners usually prefer to offer guinea fowl as a gift to using other poultry (key informant 2). The meat of guinea fowl is more appealing and attractive than the chicken meat. Comparatively, guinea fowls are more expensive than the chicken (key informant 4). This observation is supported by the survey information that shows most (88.3%) of the respondents indicated consumers prefer guinea fowl meat to other poultry meat and again, giving the reason of taste of the meat as the main driver.

Farmers found it easy to market out their guinea fowls (key informant 2). This observation is supported by the survey finding where the majority of the respondents (42.5%) indicated that they found it very easy to sell their live guinea fowl to customers. Aside from that, the local guinea fowl is treated as an important indigenous animal resource being promoted by some government and non-government interventions geared towards alleviating the poverty of smallholder producers, such as NRGP, SADA and WAAPP (key informant 1). Also, the local guinea fowl, is being widely accepted culturally, socially and religiously in Ghana

Some of the farmers have put themselves into farmer groups (36.7%) an indication of commitments to improve productivity. It also means that they are prepared to receive the improved technology (key informant 1). Since there is already high demand for the guinea fowl meat and some level of willingness of producers to expand their businesses it means more farmers have an opportunity to expand their production (Key informant 2), when the necessary interventions are implemented. To support this drive of the farmers, the department of agriculture is ensuring that the numerous

associations or farmer-based organisations that are dormant become viable and proactive bodies to developing their value chains.

Currently, some training is being undertaken as part of the Modernising Agriculture in Ghana program to build the capacities of important stakeholders in the chain. Also, Animal Research Institute, which is a supporter to the chain, is ready to build the capacity of guinea fowl farmers on the technologies they have developed but only challenged with lack of funding (key informant 1).

5.3 MOST APPROPRIATE UPGRADING STRATEGIES TO IMPROVE VALUE SHARE OF FARMERS

5.3.2 Chain upgrading strategies

There is a weak chain relationship between producers and downstream actors. The interaction is more or less based on trust, which is not efficient enough to promote strong chain relations. There is the need for the signing of a contract between producers and their business partners especially buyers as most of them indicated.

However, the challenge is that they are not organised to have group marketing. Group marketing will facilitate the signing of contracts with big buyers. They can achieve this by reorganizing themselves into a producer organisation to gain bargaining and lobbying power in the chain. There is the need to build strong chain relationships among chain actors and supporters to have a vibrant guinea fowl value chain. The various actors in the chain should understand their respective roles in the chain and ready to collaborate with others for their mutual benefit. Producers should understand the consumer requirements and then produce to meet that and get value for money.

As recommended by Mitchell, et al. (2009), chain actors, in this case, guinea fowl farmers need to specialise in their production. Instead of performing all the functions in producing the guinea fowls, some have to engage in performing special functions such as producing fertile eggs, some hatching into day-old guinea chicks and brood to pass the critical period of mortality and others then purchase the young guinea keets and raise them to maturity. This is what Mitchell et al. (2009) termed functional upgrading in the chain. This specialisation will afford producers the capability to overcome challenges the whole cycle of producing the guinea, from hatching to maturity.

This strategy of upgrading is supported by key informant 1, who mentioned that there has to be standard guinea fowl broiler diet manufactured on large scale by some operators instead of producers feeding their guinea fowls with feeds made for broiler chicken. He explained that, since the energy requirements of guinea fowls are different from chicken (key informant 1), there is a need for special feeding and diet formulation.

In this chain, apart from improving their performance through functional upgrading, there is the need for the orientation towards improving on the quality or value of the products in the chain. In this case, there should be conscious effort to process the bird into high-value products such as frozen guinea fowl meat, grilled guinea fowl, kebab/barbecue or freshly dressed and packaged or cut portions well packaged to make it affordable to many consumers similar to chicken products. This is achieved when producers are oriented to produce to quality requirement of the market. That is to produce and strive to add value to it by way of grading, packaging and labelling according to prices, weight and quality grade.

Standards have been introduced into the chain at the point of production and processing. Standard weights and pricing for the products have to be established and enforced by the regulatory authorities. Feed quality and drug usage according to veterinary regulations of Ghana and constant

monitoring and surveillance on poultry diseases are necessary to reduce mortality in keets. Further research into the possible technologies of brooding the keets with a high percentage of survival is of the essence.

The guinea fowl meat value chain has some inefficiencies culminating in low productivity by the producers. People who undertake the production activities are more or less aged and the majority are illiterates making their ability to adopt modern technologies difficultly. Some will simply cling to their traditional ways of raising the birds even if it is not working such as extensive system and using ethnoveterinary practices in rearing the birds. To achieve efficiency and increase output per unit effort, there has to be an improvement in the hatching of and brooding of keets to a high percentage of survivability and efficient use of inputs such as feed, medication and general upliftment in the husbandry practices of producers.

People at a higher level of education have to undertake production, there is likely to be more changes in the value chain (key informant 1). Another strategy is to build farmers capacity to be able to cater to the guinea fowls properly to maturity (key informant 2 and 4). There is a need for holistic reorientation of capacity building of the various chain actors on value chain concepts or models (key informant 2).

Producers should be resourced with incubators or made be accessibility them to hatch their eggs. There should be a collaboration with farmers especially when there is a project to improving the chain. Supporters should involve farmers from the beginning of the supporter program/project i.e. it should be participatory involvement of farmers - during any chain intervention. Decisions should not be taken on behalf of farmers, rather involve them at all stages of the project/program. They should be made to understand, why they are doing what and they do (key informant 4).

5.3.3 The current business model of the smallholder farmers

The activities central to the guinea fowl production are hatching, brooding of chicks and husbandry activities. The smallholder farmers confirmed these activities were very important to their production. A majority (95.8%) however use unimproved local breeds and hatching from their flock. Those who buy day-old chick buy from private hatcheries and others buy from hawkers at the market while some from institutional hatcheries.

They feed with whole grains of maize, millet and sorghum and only a few are supplementing with formulated rations. Some of them still use ethnoveterinary medicine and resort to treating their birds themselves. These activities characterize smallholder production system involving rampant use of low technology and low efficiency. This explains why there is low productivity associated with high guinea chick mortality.

For value creation, there is little happening among the smallholder farmers. However, to create value in the production, majority of them mentioned regular service provision, capacity building or training them on husbandry in addition to signing contracts with customers as an important activity to drive quality and reliable supply to meet market requirements.

The key resources these farmers require to produce to meet production and market requirement are physical, human and financial resources. Many of them mentioned, that human resource enhancement is key to the improvement of their production. This is an indication; they lack the modern skills to produce to meet the current demand and quality requirement. They also require financial resources in the form of input credit as was mention many of them. The difficulty however is, many of them may not meet the requirement of accessing such facility since they are resource-poor and do not belong to associations.

As many of them indicated, they somehow have their business partners even though production is still at the subsistence level, they intend to produce to sell and meet family livelihood needs. For majority indicated their key partners in business from whom they obtained some supports toward their production were the buyers, MoFA/AEAs, input suppliers and for those who belong to associations mentioned producer associations. Transporters were least mentioned because the scarcely will require the services of the transporter since their scale of production is low and logistics movement of products and inputs are not necessary. They have their means of transport such as motorbikes and bicycles.

The main channel of marketing is through aggregators. However, since the marketing system is that of spot market type, some of them freely choose to sell to retailers or processors or directly to the consumer where they obtain maximum profits. Hence, their customer segments are the consumers, processors; aggregators and retailer (see Annex 3)

REFLECTION

This research aimed to analyse the guinea fowl value chain to improve value share and profitability of smallholder guinea fowl farmers in the northern region of Ghana and to make recommendations for implementation to the Ministry of Food and Agriculture, the commissioner.

Reflecting on the research topic: I chose my research topic at the time of spotlighting my chain in the first block. I chose guinea fowl chain analysis topic to look into for two reasons; first, it offers me the opportunity to impact on the lives of the guinea fowl farmers as their production is a key component of the livestock farming in this area of Ghana, which supports many households as source of livelihood, food and nutrition. Hence, the research findings and recommendations when implemented will contribute to improving the profitability of the source of livelihood for the people.

Before I settled on the guinea fowl value chain research I had an idea to conduct applied research into climate-smart dairy but I did not settle on that as the dairy sector in Ghana is not well organised. Therefore, to research it in Ghana as a student with limited time available to conduct the research will be less interesting. I had other ideas to go to another country like Kenya or Ethiopia for the research, but the language and logistical arrangement came as barriers to me.

Finally, I settled on the guinea fowl value chain analysis because of the motivations given earlier. I knew the research was aimed at solving a problem and adding knowledge to me about the bird since before, now I knew little about its value chain. Then I applied to MoFA by way of a proposal through my work supervisor in Ghana to be my commissioner for the research. I had the green light after one week. I was motivated by the fact that my supervisor saw my topic as interesting and encouraged me to go ahead during the preliminary meetings I had with him. This further boosted my confidence in the research out for it.

Reflecting on Field Data Collection: In the thesis report trajectory, the data collection was one of the most challenging sessions. However, it was an action-learning period for me that enriched my experience for my future research endeavour. It was the moment of bringing to bear my mini-survey and mini-thesis experiences and to apply the research methods and PRA skills in my data collection and organisation.

In Ghana, before I kick-started the data collection, I observed all the formalities of reporting at my institution and the municipal Agric office for the introduction and to solicit for support in the data collection since they were the commissioners. Then, I trained six enumerators for the survey data collection. I used two days to train and to pilot the data collection with them. During the pilot, I realised that I needed to make some adjustment in my research plan. Initially, in the thesis proposal, the research plan was to cover about four districts in the northern region but when I arrived in Ghana, I soon realised that it was farming time in Ghana and rainy season too when farmers were heavily engaged in farming and little time to spare. Given the short time available for me to collect data, I revised my coverage to three districts but increase the sample size to ensure statistical reliability. With this, I came to truly understand my responsibilities as a researcher, deciding on sample size and methodology. This happening reminded me of what our research methods lecturer told us, that research plan could change depending on the situation at the point of data collection, and whatever the change may be, as a researcher, one has to adjust the plan accordingly.

Thereafter, it took me one week to gather all the survey data. The survey data was first collected with the thinking it could allow me to crosscheck patterns of responses by farmers with key informants during in-depth interviews. Therefore, the data organising in SPSS took another one week. At the same time, I was contacting my key informants for interviews.

For the in-depth interviews, I had to travel at least 50 kilometres each day for interview sessions with key informants. I already had my interview checklist list ready, so one by one I visited interviewees to conduct the face-to-face interviews. I already had the experience of transcribing of interviews from audio recordings, from the mini-survey and mini-thesis researches so that task was not a problem to me at all. After each interview, at home I immediately transcribed it. For me, it added insightful experience to perfect my ability and skills in interview transcribing.

One most significant experience is asking probing questions; is the skills I acquired as a researcher. I found it challenging initially, as it was difficult to fully keep respondents to focus on the subject/topic with the probing questions, as sometimes respondents strayed from the expected answers. I took up the responsibility to learn and adjusted fast. I realised, it required me to know exactly what I was looking out for and with that, I was able to keep respondents in line with the questions. With these experiences, I now feel confident to do professional interviewing and transcribing in my future research endeavour. Beside, interviewing skills is essential to be a better teacher.

Reflecting on the Data processing, Analysis and results: Because the research involved quantitative and qualitative data, SPSS was used for the quantitative analysis and grounded theory for the analysis of the qualitative data. The results answer all the questions sufficiently. In the result, most interest thing is that, smallholder farmers keep a maximum of 100 birds instead of earlier researchers finding of 5-25 and that they are not worse off as initially thought, in value share, they just are not producing enough to stay profitable in production.

Reflecting on writing the report: As a researcher, it was my responsibility to write the report according to the thesis report format of VHL. This task was quite challenging to me but I was able to handle it with confidence as I had the experience of writing results and discussing them, which I learnt from the mini-thesis research where I played the role as one of the editors. I learnt quite important lessons from this task and role as an editor.

Relevance and suitability of the research: The research was relevant since the status of the chain was ascertained; new ways of upgrading the chain have been suggested and relevant recommendations made to advise commissioners and important stakeholders in the chain. Besides, the research will contribute to knowledge and could be used as the basis for commissioners and important

stakeholders to make an informed decision concerning implementing the proposed value chain and associated initiatives.

Reflecting on the limitation and reliability of the research: This research encompassed some limitations. The sample size proposed for this research was adjusted due to the vast nature of the study area and rainy condition during that period. This was a limitation to the researcher to cover wider study area. Due to the rainy season and deplorable nature of the roads, travelling long distances was proving difficult slowing down the data collection. Therefore, the researcher reduced the number of districts to three but increased the number of respondents from 80 to 120 to increase the statistical reliability. The reliability of the data was further improved by using three data collection methods such as in-depth case study interviews, questionnaire surveys and secondary data to collection method for validation of the information.

During field data collection, some interviewees especially traders were not cooperative for an interview; for fear of exposing their business secrets. Because of this, few were reluctant to grant the researcher audience. Their reason was that there were similar researchers who engaged them and collected information from them and it never yielded any good result and so they did not benefit, so mine too could be the same.

Some key informants were also so busy that getting them to respond to questions was quite challenging. The researcher had to reschedule such meetings many times. There were some instances of one or two respondents demanding to be paid before they grant the researcher audience. With this, the researcher tries to reduce unbiasedness by validating the information obtained from such respondents with experts and other respondents who gladly gave their opinions and cooperation. There was no conflict of interest and bias since respondents did not know me personally, and so there was no possibility of my researcher's personality influencing their responses. The researcher trained the enumerators very well, conducted piloting with them to test their abilities to administer the questionnaires and to test the relevance of the survey questionnaires.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

The study investigated the guinea fowl value chain of the northern region of Ghana looking to identify the upgrading strategies that will contribute to the value share and profitability of guinea fowl farmers in the Northern region. Hence, this chapter presents the conclusions of the research in the order of the main research questions: analysis of the current chain structure, analysing the current performance of the chain and finally identifying the upgrading strategies that will contribute to improving value share and profitability of the smallholder guinea fowl farmers in the northern region of Ghana. It also made some recommendations towards implementing the findings by the commissioner of the research.

6.1.1 THE CURRENT STRUCTURE OF THE GUINEA FOWL MEAT VALUE CHAIN

6.1.1.1 Roles of stakeholders in the chain

The current guinea fowl meat value chain in the study area has many important stakeholders who interact with the smallholder farmer and either does business or support them. They input suppliers such as Agricare Feeds Ltd, Koudijs Ghana Ltd, Multivet Ltd, small shops and kiosks dealing in poultry feeds, drugs and chemicals; few medium-scale farmers, aggregators, wholesalers, modern processors such as UDS Meats Unit, Farm Gate Meat and Gee Fresh Point Ltd, and barbecue stands like Mba Yahaya Guinea Processing Enterprise; retailers, and consumers. The supporter service providers include MoFA Agriculture Extension services comprising of veterinary service and animal production department; NGOs such as WUSC, GIZ; Animal Research Institute, NORGFFA, and chain enablers such as GSA, FDA, and VSD.

6.1.1.2 Governance Structure in the chain

The governance structure in the guinea fowl meat value chain is market type between producers and buyers. Here producers sell to either aggregators or any other buyer and are free to exploit other available market possibilities such as selling to retailers, processors or the consumers directly without having to establish long-lasting relationships.

There are more trust relationships between producers and buyers and very little informal verbal contractual arrangements between producers and aggregators or some other buyers. Majority of producers do not belong to guinea fowl farmers' association and so lack horizontal coordination and no bargaining power.

Then buyers dictate prices to them. Moreover, traders are the lead actors; they influence quality and price determinations and the coordinators of the chain. There is evidence of captive governance existing between some producers and collectors. Collectors act dominantly as to dictating prices and quality of guinea fowls to the farmers who are less competent, disorganised and very small in the scale of production.

6.1.1.3 The Level of women participation in the chain

In the chain at the point of production, only 2.5% of the producers were women. Women were involved as chain actors in processing and retailing of the guinea fowl meat as food vendors and not

the live bird. Experts in guinea fowl chain, say there are no cultural barriers to women involved in the chain as producers. However, women less representation in guinea fowl production has to do with their perception that, the guinea fowl is a difficult bird to keep and taking care of the as owners are difficult.

Another reason is the asymmetric power relations at the household between men and women, where men/husband wield more power and control than women/wife and the norm is that men have right of control over the woman and her property; which leads to men hijacking the production, marketing and control of the proceeds. Besides, guinea fowl products in the study area are highly commodified at the household level leading to a situation where men take charge of everything and women do no longer have control even if they are real owners.

6.1.2 CURRENT PERFORMANCE OF THE GUINEA FOWL MEAT VALUE CHAIN OPERATORS

6.1.2.1 Performance gaps in the chain influencing value share

Among producers was high illiteracy, which has the potential to contribute to low technology adoption, and coupled with limited access to extension support due to inadequate staff, and resources, use of unimproved local breeds and high chick mortality all contribute to low productivity. There was poor technology transfer to producer due to poor funding to the research and technology institutions.

There were poor quality standards in the chain due to poor regulatory services. There is limited access to market information as they get it only from buyers who are the coordinators of the chain. Poor relationships were existing between producers and other actors and supporters due to poor coordination and/or facilitation. The producers were not organized which contributes to their inability to harness organised external support. Also observed in the chain is less involvement of women in production that takes away their contribution to improving the chain and has the potential to reduce their source of livelihood.

6.1.2.2 Strengths and opportunities in the chain promoting value share

There is currently a government-donor support project to the sector in terms of training of technical staff to extend technologies to farmers. There is a youthful producer population. Animal Research Institute, a supporter to the chain, when supported can invest into developing production technologies for the guinea fowl farmers to improve their production; There is a huge market opportunity for guinea fowls farmers as there was high demand for the guinea fowl in the northern region of Ghana.

A few producers are belonging to the producer group, NORGFFA, an indication of commitments to receiving the improved technologies. The department of agriculture was reported to have been considering reviving the dormant farmer-based organisation to become viable and proactive bodies to developing value chains. GSA with the collaboration of SAPIP will be addressing the lack of standards in commodity chains including poultry and livestock chains of which guinea fowl is part.

6.1.3 MOST APPROPRIATE STRATEGIES TO IMPROVE VALUE SHARE AND PROFITABILITY

6.1.3.1 Production activities in the guinea fowl meat value chain

The guinea fowl is an important bird to the people of the north as it fulfils cultural, social and religious obligations in addition to its intrinsic quality of tasty meat earning it a high market for the producers. The main economic reason for raising the birds even though at a subsistent level is for cash. Majority of the farmer's scale of production is low, 5-100 birds and they are not able to supply to meet market demand.

The study found that, besides the subsistent keepers, there is a growing interest to expand flock size and 4.2% of producers currently investing in intensive production, keeping between 100-1000 and more birds. There is evidence that medium-scale production is better than the smallholder production system.

The study revealed that the guinea fowl production is, however, challenged with high chick mortality, low technical support to producers and they are resource-poor, resorting to the traditional technology of keeping the birds such as the use of brooder hen in hatching and brooding culminating in low production under the smallholder system.

6.1.3.2 Existing market segments and requirements for guinea fowl products

There are four main channels in the marketing of guinea fowls by producers. They sell live birds to aggregators, processors, retailers, or consumers. The highest used channel by the producers is through the aggregators in channel IV, accounting for 83% of total birds off-take. This chain yields 50% of value share in the channel. The channel that yields the highest value share is channel I giving 11% of birds offtake and 100 return for the producer.

Producers get the highest of profit share among the actors in all the channels except that their volume offtake is low due to low productivity. The research found that even though the value share is not evenly distributed in the chain, but producers are not disadvantaged as was previously observed. Almost all the small scale producers were indulged in selling live guinea fowl and only 3.33% engaged in slaughtering and dressing the bird into products.

The research found that the market requires of both live guinea fowls and processed products but more of processed products. The study noted that majority (69.2%) of the farmers do carry out an advertisement of their birds through phone calls and by word of mouth and major consumers of guinea fowl are the restaurants/chop bars/food vendors.

6.1.3.3 Business strategy (model) required to improve value share for farmers

The activities central to the guinea fowl production are hatching, brooding of chicks and husbandry activities. Most smallholder farmers use unimproved local breeds and hatching from their own. Very little, value creation activities is happening among the smallholder farmers. However, the majority of them mentioned regular service provision, capacity building or training them on husbandry as an important requirement to drive quality and reliable supply to meet market requirements.

The key resources these farmers require to produce to meet production and market requirement are physical, human and financial resources but indicated human resource as important to the

improvement of their position in the chain since they lack the modern skills to produce to meet the current demand and quality requirement.

Their business collaborators even though production is still at the subsistence level, are buyers, MoFA/AEAs, input suppliers and producer associations. The producers relate with chain actors in more informal chain relationship through long-term trust relationship do exist.

6.2 RECOMMENDATIONS

According to Perez and Oddone (2016), several methodologies apply to strengthen chains and all aim at resolving bottlenecks in the chain. Based on this, the researcher formulated the recommendations according to the concepts of upgrading chains, targeting the improvement in the weak links in the chain; improving issues of social and economic processes in the chain. The researcher categorized the bottlenecks identified in the chain into social and economic. Based on this, the upgrading strategies recommended were further put into social upgrading and economic upgrading strategies. These concepts are vertical and horizontal coordination, Product upgrading, process upgrading and functional upgrading.

In this way, the researcher made recommendations to advise the MoFA, the commissioner and problem owner, on actions to take to upgrade the smallholder guinea fowl farmers' position in the chain and some advice to convey to the smallholder farmer and other important stakeholders supporting the chain.

Advice to MoFA

Social upgrading strategies:

The social issue pertains to the less involvement of women in production activities in the guinea fowl chain. The chain is male-dominated and women lose control and ownership of proceeds of the guinea fowls. This deprives the chain the business and productive contributions of women and denies them of the benefits the sector has to offer to producers. MoFA needs to take lead facilitator role to encourage women participation in the chain by:

1. Using the rich experiences in farmer mobilization to organise women guinea fowl farmers into women-led cooperatives or producer associations and to empower them through capacity building to develop their entrepreneurial and leadership skills, to become viable and proactive bodies.
2. Advocate for the private sector and third sector, notably NGOs already interested in promoting the chain such as GIZ and WUSC to join the campaign.
3. Organise for structural changes by collaborating with relevant institutions such as traditional, religious, and formal institutions such as Ministry of Women, Children and Social Protection to create sensitization on women role in guinea fowl production, through seminars, workshops and stakeholder meetings.
4. MoFA needs to partners informal and formal institutions in the facilitation of the formation of women-led collective action groups in the districts and the region

A. Process upgrading

Aim: To enhance the smallholder farmers' efficiency and position in the chain through re-organisation of the production system and use of improved technology:

1. First, MoFA has to take action to organise themselves into farmers' organisations at district and community levels and to facilitate strengthening of the apex organisation, NORGFFA, which will, in the end, represent their interest.

2. MoFA needs to extend extension advice to orient smallholder farmers and their organisations to produce commercially on a small scale and to market commercially, and not producing and selling only when they need money. The extension advice should emphasise farmers:
 - a) Switching from using brooder hen, which is less efficient to hatching eggs using commercial incubators or locally made incubators, which are affordable and efficient, to hatch more and healthy guinea chicks. For communities without electricity.
 - b) Switching from using ethnoveterinary practices in health management of their flock to consulting with qualified veterinarians
 - c) Raising improved guinea fowl breeds or crossbreeds (which grow very slowly contributing to delay in maturity, increase the cost of production and yield lightweight birds).
 - d) Using formulated diets or locally mixed feed with locally available feed ingredients instead of depending wholly on whole-grains and termites.
 - e) Providing brooding cages/house to brood guinea chicks instead of allowing the brooder hen to provide all that for the chicks (it is less efficient and as it results in high mortalities of guinea chicks).
3. MoFA extension wings consisting of the veterinary service department and animal production department have to adopt simple practical teaching methods in building the capacities of farmers; to facilitate understanding since many of them are illiterate.
4. MoFA needs to organise intensive training for farmers in production technology to reduce brooding challenges such as chick mortality.
5. MoFA needs to collaborate with NGOs such as (WUSC, GIZ) in capacity building of AEAs and technology transfer to farmers on critical issues such as guinea chick mortality.
6. MoFA needs to collaborate again with NGOs and financial institutions to support farmer groups in the new upgrading strategies such as in logistics such as incubators and solar facilities for communities without electricity.

B. Product Upgrading

Aim at improving the quality and value of the guinea fowl offer for sale to consumers

1. MoFA organises extension advice, through farmer field schools to farmers and their organisation to add value to guinea fowl by sorting and grading according to weight before selling live birds.

C. Functional upgrading

Aim at enabling producers to acquire entry into new higher value-added functions

1. MoFA needs to extend advice to farmers to specialise in their production, such as producing fertile eggs for sale; hatching guinea chicks and brooding to pass the critical period of mortality and others then purchase the young guinea chick and raise them to maturity. This will reduce the risks and costs involved in performing all these functions by each producer.
2. MoFA needs to collaborate with ARI, a technology development institute, to transfer knowledge on formulating standard guinea fowl broiler diet to producers to improve.
3. MoFA needs to facilitate the implementation of the new business model (Annex 5) and chain (Figure 6.1). In the new chain, the aggregators and wholesalers functions are eliminated which should be done gradually taken up by the apex organisation, NORGFFA, in the future when the it is strong enough to manage community-level groups. The apex organisation will collect from the community groups, and then reach to the high income or institutional consumers in the urban/metropolitan areas. Alternatively, organisation can look for high paying end markets such as institutional consumers and broker the transaction between the community

level groups and the buyers. Finally, the producer organisation will in the future take up the processing function to produce high-value products such as dressed guinea fowls meat as the market is growing for processed guinea fowl meat in the Northern region of Ghana.

Vertical and Horizontal coordination

Aim at building strong relations between producers and other chain actors and supporters

1. MoFA needs to facilitate the formation of community-level groups, strengthen the existing ones, and mentor them until the producers and their organisation can stand on their own.
2. MoFA needs facilitate linkages and relationships between producers and other chain actors through stakeholder meetings
3. MoFA needs to facilitate the training of agriculture extension officers to implement new technologies
4. MoFA needs to facilitate the implementation of the proposed chain for the guinea fowl sector in the region to link farmers to higher-end markets (Figure 6.1)
5. MoFA need to partner with NORGFFA to do more collaborations with key stakeholders as well as to solicit support from civil society organisations to encourage and mobilise small-scale guinea fowl farmers into farmer organisation. This is a requirement towards empowering them for collective action; capacity building of members and orientation towards promoting strong chain relations between themselves and other chain actors and the supporter base.
6. MoFA needs to take action to organise and facilitate regular stakeholder meeting between the farmers' association and downstream actors and supporters.

6.1.1 Proposed Guinea Fowl Meat Value Chain

The proposed chain map of the guinea fowl meat in the region consists of the important stakeholders as in the current chain but with renewed adjusted functions and focus. The collectors/wholesales role has been take-up by the farmers' association. Another structural change is the marketing channels for producers. Producers will now have to sell through NORGFFA. That is, NORGFFA buys live birds from farmers and sell either to retailers, processors or directly to consumers.

Alternatively, in the future, it is proposed that NORGFFA takes up processing function. NORGFFA is also coordinating the activities between producers and other chain actors to maintain strong chain relations. The prosed chain is shown in Annex 6. Moreover, there will be farmer groups at district and community levels and apex organisation is NORGFFA, which represents the interest of farmers, spokesperson of farmers, organizes and facilitate training. The GSA and FDA now function at the input, producer and marketing levels to fix quality standard problems in the chain.

There is now a strong horizontal and vertical relationship between farmers and other actors and even with chain supporter among themselves within the presence of NORGFFA. The type of chain governance is relational with formal dealing between producers and traders/buyers. It is now consumer-driven as NORGFFA looks for a market for the guinea on behalf of members. In the proposed chain, there is an improvement in the flow of information unlike in the case of the current chain with collectors as coordinators. In terms of women inclusion, due to the implementation of the social upgrading program, more women are expected to participate in production and jobs will be created for them and other actors and society will benefit.

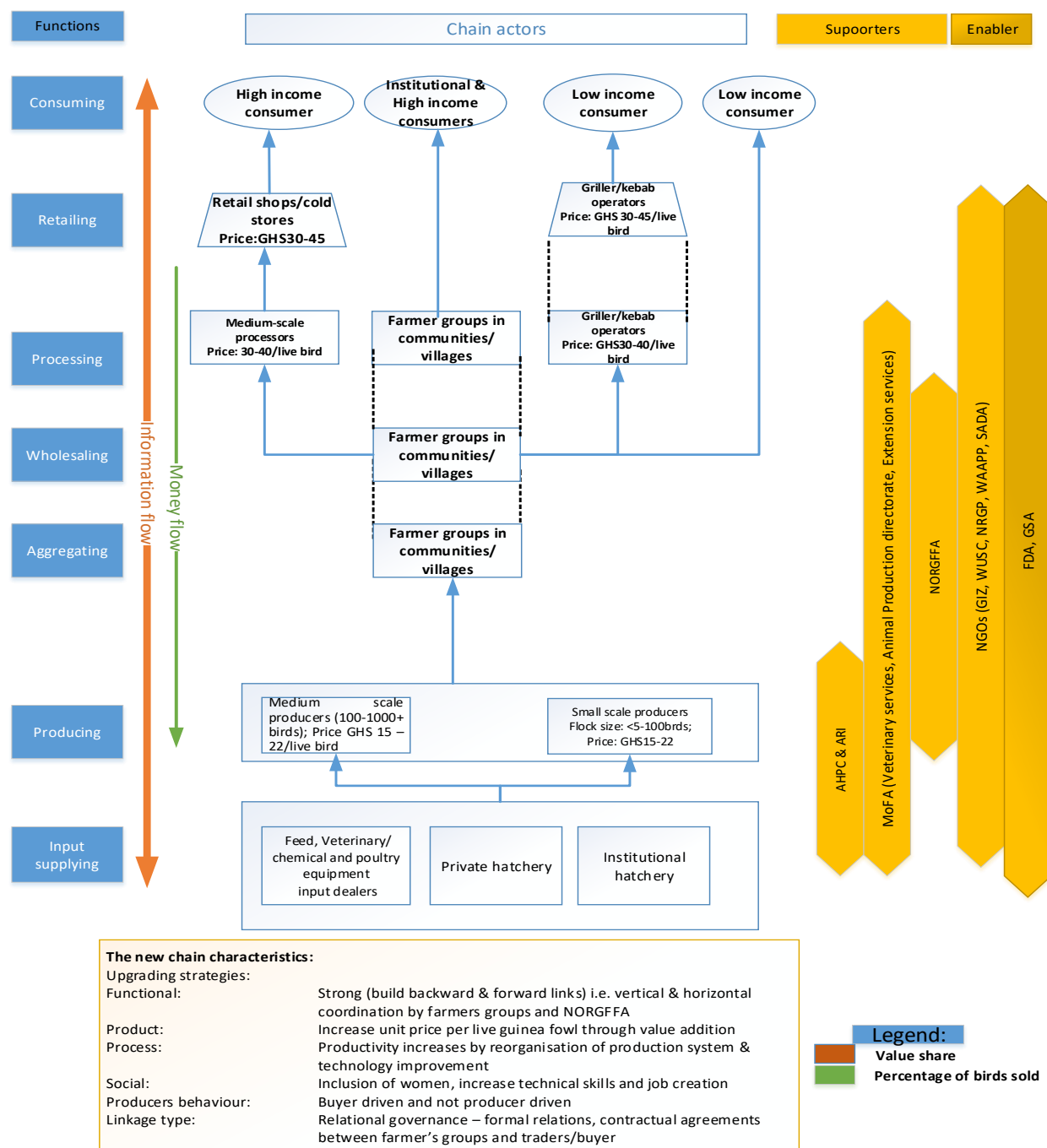


Figure 6.1: Proposed guinea fowl meat value chain, in the northern region of Ghana.

Source: Author (2019)

6.1.2 Sustainability of the new value chain

The implementation of the new chain will contribute to economic, social and environmental sustainability. That is, it will benefit people in families and society; contribute to the planet and economic prosperity of actors especially producers as discussed below:

Prosperity

The new value chain will increase the value share producers since they now have the bargaining power to negotiate for a better price through the apex organisation. The chain contributes to high productivity and reduces cost since efficiencies of producers will be increased through the upgrading

strategies proposed. When producers adopt new technologies of hatching more with modern incubators instead of brooder hen, it will increase output per unit input. The producers using improved breeds will contribute to product value since heavier birds with tender meat will be raised. Further, the good relations in the chain will contribute to better and fair value share for all actors in the chain

People

Skills training and capacity building activities for producers will increase their abilities and leadership qualities. When production increases, there is an increase in livelihood for producers and their families. With the social program, more women will be included in production and that will contribute to their social and economic wellbeing through skills training and jobs that will be created. It will allow women to contribute to the development of the chain and their families. Even consumers get to benefit from the new chain, as quality products will now flow through the chain.

Planet

Producers will now have regular visitation by extension officers, capacity building will contribute to saving more birds, health and their welfare. The proposed chain will contribute to a reduction in the negative consequences of bad farming practices since farmers technical capacities will be built with the support from MoFA and other stakeholders to extend training using the proposed Farmer Field Schools.

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ANNEXES

ANNEX 1: Survey questionnaire for farmers

Respondent Profile

1. Location of respondent : Tamale Metropolis ☐ Savelugu Municipal ☐ Nanton district ☐ Kumbungu district ☐
2. Gender of Respondent : Male ☐ Female ☐
3. Age of farmer: Less than 30 years ☐ 31-45 years ☐ >45 years ☐
4. Educational background: ☐ Never have been to school ☐ Primary ☐ Secondary Certificate/Vocational Diploma ☐ Degree/Master/PhD ☐
5. Marital status of respondent: ☐ Married ☐ Single ☐ Divorced ☐ Others ☐ (specify).....
6. What is your main source of income? ☐ Farming ☐ Formal Employment ☐ Business ☐ Other (specify).....
7. What is your main farming activity? ☐ Guinea fowl ☐ Chicken ☐ Ruminant ☐ Others ☐

Production (practices/systems and capacity)

1. What is your flock size?
Less 5 birds ☐ 5 – 25 birds ☐ 26 -50 birds ☐ >50 birds ☐
2. How long have you been rearing guinea fowls? _____ years
3. What number of birds do you sell to your customers in a year?.....
4. What number of birds do you used for family consumption?.....
5. Do you use inputs in you production? Yes ☐ No ☐
6. If yes, what inputs do you use in you production? Feed ☐ Veterinary drugs ☐ hired labour ☐ Day old guinea chicks ☐

7. Where do you buy the inputs? Private input dealer ☐ through extension agent ☐ own inputs
8. If private input dealer, specify.....
9. Where is your source of feed? ☐ Self-prepared ☐ Buying mixed ration ☐ Both
10. If you buy, do you always buy from the same suppliers? ☐ Yes ☐ No
11. What are the key challenges in production? ☐ Chick mortality ☐ Low farm gate price ☐ Low demand ☐ Low productivity
12. What breed type of guinea fowl do you rear? Local ☐ Exotic ☐
13. Do you provide housing facility? Yes ☐ No ☐
14. If, no how do you manage the flock?
15. What is your reason of rearing guinea fowl? ☐ Easy to manage birds ☐ High demand of guinea fowl ☐ Sociocultural reason (gifts, dowry/married rights, sacrifices) ☐ Others (specify).....
16. Do you have to access extension/veterinary services? Yes ☐ No ☐
17. If yes, how often do you receive extension/veterinary services visits?
Twice a week ☐ once a week ☐ twice a month ☐ once a month ☐ once a year ☐
18. Where do you buy your day old guinea chicks? Own farm ☐ Private hatchery ☐ Institutional hatchery ☐
19. If you buy your day old guinea chicks, specify where you buy them.....

Marketing and Marketing channels

1. Where do you often sell your live guinea fowl?
Rural/village Open market ☐ At farm gate ☐ Urban market ☐
2. Who do you sell your live guinea fowl birds?
Collectors/wholesalers ☐ Processors ☐ End consumers ☐ Others (specify).....
3. If you sell to consumers, which of the categories of consumers buy your live birds?
Restaurants/chop bars ☐ Households ☐ Hotel/guesthouses ☐ Individuals ☐ All the above ☐
4. How often do you sell your live birds?

Once a week ☐ Twice a week ☐ Once a month ☐ Once a year ☐ Only
when I need ☐ Others ☐

5. Do you always sell to the same customers? ☐ Yes ☐ No
6. If yes, is there a contract between you and your customers? ☐ Yes ☐ No
7. What do you think of getting market for your birds? ☐ Very Easy ☐ Easy ☐ Difficult ☐ Very difficult
8. What kind of products do you sell to your customers? Live bird ☐ Dressed bird ☐ frozen ☐ bird ☐
9. Do you promote sales of your products? ☐ Yes ☐ No
10. If yes, how do you do it? ☐ Word of mouth ☐ Phone call to customers ☐ Internet ☐ Sign post ☐ Others (specify).....
11. Do you receive services from supporters of the chain? ☐ Yes ☐ No
12. If yes, what supporter services do you get? ☐ Credit facility ☐ Market information
Husbandry practices ☐ All of the above ☐ None of the above ☐
13. Do you belong to a Farmer's Association ☐ Yes ☐ No
14. If yes, what services do you get from the association? ☐ Marketing ☐ Inputs ☐ Extension advice ☐ Others ☐
15. If _____ no,
why?.....

Quality requirements

1. Do you know about the quality requirements for guinea fowl? Yes ☐ No ☐
2. If yes how?: through extension agent ☐ through farmer group ☐ through NGO ☐
through colleague farmers ☐

3. If no why (specify).....
4. What is the quality perception of your customers? ☐
- ☐ Taste, flavor & texture ☐ Price of bird ☐ Nutritional value ☐ Appearance (size, colour) ☐ Others (specify)..... ☐ All aforementioned
5. Do you think consumers will prefer guinea fowl meat to other meat products? Yes ☐ No ☐
6. If yes, why do you think consumers prefer to buy guinea fowl to other meat products?
- ☐ Tasty meat ☐ affordable ☐ Availability ☐
7. Are you aware of the quality requirement of the market (customers)? ☐ Yes ☐ No
8. If yes, what form do market require of your products? ☐ Full dressed ☐ Special cuts ☐ e

Value share AND value addition and profitability

1. What kind of activities do you do for creating added value? (select all that apply)
- ☐ Sorting by colour/sex ☐ Grading by weight ☐ Packing in cage and labeling ☐
- ☐ All the above apply ☐ None
2. If none of these, then what do you do to add value?
- Specify.....
-
-
3. How is price determined at point of sale? ☐ Weight of bird on scale ☐ Weight of bird by estimation ☐ Colour of bird ☐ Sex of bird ☐ Others (specify).....
4. Are you satisfied with the price offer? ☐ Very dissatisfied ☐ Dissatisfied ☐ Moderately satisfied ☐ Satisfied ☐ Very satisfied
5. **Benefit-cost analysis of farmer's business:** Complete the following table...

Item	Dry season	Wet season
Income		
Output/number of birds		
Number of cycles in a year		
Price received by farmer (Unit price) (GH¢)		
Revenue (GH¢)		
Expenses		

Variable cost (GH₵)		
Feed		
Health		
Utilities		
Miscellaneous		
Total cost variable cost (GH₵)		

Trust, Power relations, chain coordination

- What kind of arrangement exist between you and your customers?
Trust ☐ contractual ☐
- For how long have you been doing business with this buyer/customer?.....
- Do you receive information about demand and prices of your products? ☐ Yes ☐ No
- If yes, who gives you the information? Buyer ☐ Commission agents ☐ Colleague farmers
- Who determines prices of your product? ☐ Buyer ☐ Commission agent ☐ Farmer group
Myself ☐
- Who determines quality and safety compliance of your products? ☐ Buyer ☐ Farmer ☐
☐ group ☐ Myself ☐ Government ☐ Consumer

Annex 2: Checklists for key informant interviews

Aggregator/Wholesaler and Retailer

- Where do you buy your live guinea fowl birds?
- How often do you buy the birds?
- How many do you sell per month?
- What is the selling price per bird?
- Do you have access to supply throughout the year?
- What are the costs you incur per month? *Please complete the table below with your responses.*

Item	No.	Unit cost	Total cost (GH₵)
Cost of birds			
Transport			
Feed			

- What support do you from institutions/organisations to promote your business?
- How do you promote sales of your products?
- Do you sell in any other form apart from live birds to customers?

10. If yes, what form do you sell to customers?
11. Then, what is the final price for such products?
12. Whom do you sell you products?
13. How do you transport your products to customers?
14. Are you aware of any safety/health requirements of your products?
15. What are their preferences?
16. Do you face any problems in marketing your products? (a) Yes (b) No
17. If yes, what problems?.....
18. What Strategies can be used to improve marketing?
19. Is there any institution that inspects your premises for food safety? (a) Yes (b) No
20. If yes which institution?
21. What is your reason of selling live guinea fowl/meat products?
22. What is the challenges of retailing live guinea fowl/meat products?

Interview Checklist for Northern Region Guinea Fowl Farmers Association (NORGFFA)

1. How many members does your association have?
2. What upgrading strategies members are implementing?
3. What services do you offer to farmers?
4. Do you face any problems as an industry? (a) Yes (b) No
5. If yes, what problems?
6. How do you think these problems can be tackled?
7. Are women involved in guinea fowl production?
8. If so, what roles are women assigned in the chain?
9. How many women/percentage of them are engaged in the productive process?
10. How many jobs does the chain generate for women?
11. What sort of jobs do women have in the chain?
12. Do any women occupy management positions in the enterprises of the chain? If so, how many?
13. How do women participate in chain governance?
14. Are there associations made up entirely of women? If so, in what sorts of activities are they engaged as part of the association?

Interview Checklist for Animal Production Directorate

1. What is the role of the Directorate in facilitating chain governance?

2. What is the role of the directorate in promoting guinea fowl production?
3. Are there policies for the guinea fowl industry?
4. If yes, what are there?
5. What strategies are undertaken to improve marketing for farmers?
6. What obstacles /hindering factors does your directorate in developing the guinea fowl value chain face?
7. What are the business opportunities available for guinea fowl farmers?
8. Are women involved in guinea fowl production?
9. If so, what roles are women assigned in the chain?
10. How many women/percentage of them are engaged in the productive process?
11. How many jobs does the chain generate for women?
12. What sort of jobs do women have in the chain?
13. Do any women occupy management positions in the enterprises of the chain? If so, how many?
14. How do women participate in chain governance?
15. Are there associations made up entirely of women? If so, in what sorts of activities are they engaged as part of the association?

Interview Checklist for Expert in Guinea fowl production

1. What do you know about guinea fowl production in the northern region of Ghana?
2. What production systems are being practiced?
3. What are the strengths and opportunities of the guinea fowl value chain?
4. What marketing channels are available for the guinea fowl broiler industry in the northern region?
5. What challenges the producers, collectors/wholesalers, processors, and retailers are facing?
6. What upgrading strategies actors of the guinea fowl broiler chain are implementing?
7. What are the consumer requirements for live guinea fowl and meat products?
8. What are the suggestions for improvement of services and products in the guinea fowl broiler chain in the northern region?
9. Value addition of products in the area
10. Are there any quality standards?
11. Any incentives and existing policies to promote the industry?
12. Are women involved in guinea fowl production?
13. If so, what roles are women assigned in the chain?
14. How many women/percentage of them are engaged in the productive process?

15. How many jobs does the chain generate for women?
16. What sort of jobs do women have in the chain?
17. Do any women occupy management positions in the enterprises of the chain? If so, how many?
18. How do women participate in chain governance?
19. Are there associations made up entirely of women? If so, in what sorts of activities are they engaged as part of the association?

Agricultural Extension Agents (AEA)

1. What do you know about guinea fowl chain in the northern region of Ghana?
2. What is your role in guinea fowl chain? Kind of services and advice
3. What is the status of guinea fowl production in the district/municipality?
4. Do you have staff in-charge of guinea fowl extension in the district/municipality?
5. Do you have Guinea fowl farmers' group in your operational area in the northern region?
6. If yes, what is the group's influence on promoting guinea fowl production in the region?
7. Does MoFA facilitate such self-initiatives of guinea fowl farmers to boost productivity? Yes
No
8. If yes, in what form does MoFA offer the facilitation
9. Are women involved in guinea fowl production?
10. If so, what roles are women assigned in the chain?
11. How many women/percentage of them are engaged in the productive process?
12. How many jobs does the chain generate for women?
13. What sort of jobs do women have in the chain?
14. Do any women occupy management positions in the enterprises of the chain? If so, how many?
15. How do women participate in chain governance?
16. Are there associations made up entirely of women? If so, in what sorts of activities are they engaged as part of the association?

Non-Governmental Organisation

1. What do you know about guinea fowl broiler chain in the Northern region of Ghana?
2. Are you involved in a guinea fowl value chain project in the northern region?
3. If yes, what is your role in the chain?
4. Who are your partners in guinea fowl value chain project you involved in?

5. What are the challenges of guinea fowl broiler chain you involved in?
6. Are women involved in guinea fowl production?
7. If so, what roles are women assigned in the chain?
8. How many women/percentage of them are engaged in the productive process?
9. How many jobs does the chain generate for women?
10. What sort of jobs do women have in the chain?
11. Do any women occupy management positions in the enterprises of the chain? If so, how many?
12. How do women participate in chain governance?
13. Are there associations made up entirely of women? If so, in what sorts of activities are they engaged as part of the association?

Interview questions for processor

1. Name of the processor
2. The location of processor
1. What kind of products do you process?
2. How do you get the live birds for processing?
3. Where do you sell the products?
4. How much is the input price?
5. How much is the selling price?
6. What is customers' preference of your products?
7. What is your requirement for your suppliers of live birds in terms of volume, quality, price, quality etc.?
8. What are the quality standards in place for processed products?
9. Are there government regulations for guinea fowl meat products?
10. Are there government initiatives towards guinea fowl processors?
11. What are the challenges of processing guinea fowl meat product?
12. What are your suggestion for the improving for developing of the guinea fowl broiler industry?

Annex 3: Current business model of the new chain for smallholder guinea fowl producers

Key partners Chain actors: Traders – aggregators, processors, retailers, consumers Processors - Gees Fresh Points, UDS Meats Units, Farm Gate Meats Barbecue Stands – Mba Yahaya Institutions: MoFA Colleague farmers Transporters Chain supporters: NORGFFA; ARI; AHPC; NGOs (WUSC, GIZ); Input suppliers;	Key activities Hatching and brooding with brooder hen; Supplementary feeding with whole grains, termites; use of ethno-veterinary medicine ; Key resources Family labour Own financial capital Poorly constructed housing facility	Value Proposition Rear and sell live birds to clients	Customer Relations Trust relationships between producers and buyers; Market governance; relationships between farmers and buyers; Captive governance; relationships between dominant traders (collectors) and farmers; Marketing Channels Rural/village market Urban markets	Customer Segments <ul style="list-style-type: none"> • Consumers = 11% • Processors = 4% • Retailers = 2% • Aggregators = 83%
Cost Structure Feed supplement cost Health management cost Family labour cost Housing facility maintenance cost	Revenue Streams Sale of live guinea fowls Family food security (consumption of guinea fowl meat by family)			

<p>Social and environmental Cost</p> <ul style="list-style-type: none"> • No respect for quality standards in production in terms of antibiotic use and animal welfare • Low women representation in production • Women invisible in the production even though provide caring activities • The women become invisible in ownership even if they are the real owners of the birds 	<p>Social and Environmental Benefit</p> <ul style="list-style-type: none"> • More men are benefiting as producers and marketer of live birds and processed meat, some women earn income from being involved as marketers and retailers of the processed products of the guinea fowl • Conservation of the local guinea fowl species • Production of delicacy for northerners • Preservation and fulfilment of cultural, social and religious purposes
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Annex 4: List of Key informants

Interviewee No.	Interviewee organisation	City/Town	Business/profession	Activities
01.	Centre for Scientific and Industrial Research/Animal Research Institute	Nyankpala	Research Institute	Conduct research in production and livestock chains, develop and transfer technologies in livestock production
02.	Regional Department of Agriculture	Tamale	MoFA	Livestock and value chain specialist
03.	Sagnarigu Agriculture Development Unit	Sagnarigu	AEA	Veterinary extension
04.	MoFA, Tamale Metro Agriculture Development Unit	Tamale	AEA	Agriculture Extension
05.	SAPIP	Tamale	NGO	Value chain Specialist
06.	UDS Meats Unit	Nyankpala	Processor	Processing of guinea fowl meat and other livestock meat
07.	Barbecue Stand, Mba Yahaya Guinea fowl processing Enterprise	Ligin, Picorna Road, Tamale	Processor	Processing of Guinea fowl into grilled/kebab/barbecue
08.	Retailer of guinea fowls	Tamale	Retailer	Retail live guinea fowls in Tamale metropolis
09.	Gees Fresh Point Ltd	Tamale Industrial Area, Tamale	Processor	Processing of guinea fowl into dressed fresh, frozen product, and grilled guinea fowl meat
10.	Collector/Wholesaler of guinea fowl	Tamale	Collector/Wholesaler	Collecting and wholesaling of live guinea fowls in Tamale
11.	Barbecue Stand, Guinea fowl processor	Central Business District, Tamale near GCB, Tamale	Processor	Grilling and roasting guinea fowl meat for sale in Tamale Business District
12.	Barbecue Stand, Pressure Special Meat	Agric Traffic Lights, Tamale	Processor	Grilling and roasting of guinea fowl meat and selling to consumers
13.	Barbecue Stand, Guinea fowl processor	Annex Alhassan Hotel	Processor	Grilling and roasting guinea fowl meat and selling to consumers
14	NORGFFA	Near Sagnarigu Agric office	Farmers' Association	Lobbying and organising guinea fowl farmers
15	Consumer 1	Savelugu	-	Consumer of guinea fowl
16	Consumer 2	Tamale	-	Consumer of grilled guinea fowl

Annex 5: New business model of the new chain for smallholder guinea fowl producers

Key partners: Chain actors: Processors, Consumers groups; Processors: -Gees Fresh Points, UDS Meats Units, Farm Gate Meats Barbecue Stands e.g. Mba Yahaya; Supporters: MoFA; NORGFFA; Transporters; ARI, AHPC, NGOs (WUSC, GIZ) Input suppliers groups;	Key activities Some producers are producing fertile eggs for sale; Some producers hatching using modern incubators guinea chicks for sale; Some producers are growing to maturity; Supplementing with formulated guinea fowl broiler diets; Consulting qualified veterinary advice. Key resources Family labour Own and credit facility/financial capital Well constructed housing facility	Value Proposition Rear and sell live and processed guinea fowls to high income and low come consumers birds to clients;	Customer Relations <ul style="list-style-type: none">• Relational governance relationships between producers and trader/buyers• Formal contract based agreements	Customer Segments The customer categories are: <ul style="list-style-type: none">• Consumers = institutional and high income consumers = 50%• Processors = 25%• Low income consumers = 25%
Cost Structure Feed supplement cost Health management cost Family labour cost Housing facility maintenance cost		Revenue Streams Sale of live guinea fowls Family food security (consumption of guinea fowl meat by family) Sale of manure		

<p>Social and environmental Cost</p> <ul style="list-style-type: none"> • Low women representation in production • Women invisible in the production even though provide caring activities • 	<p>Social and Environmental Benefit</p> <ul style="list-style-type: none"> • Women and men benefit from the chain; women earn income from being involved as producer as well as marketers and retailers of the processed products of the guinea fowl • Conservation of the local guinea fowl species • Production of delicacy for northerners • Preservation and fulfilment of cultural, social and religious purposes • Improved animal welfare • Reduce wastage of manure
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Annex 6: Research activity plan

Activity	April	May	June	July	August	September
Research development processes						
Planning, discussion with commissioner						
Design of the research: formulating research problem, objective, research questions, and conceptual framework						
Desk research on definition of concepts, research strategies, data collection and analysis tools and pitching proposal						
Selecting and contacting respondents, training of enumerators						
Pilot tools and revision						
Key informant interviews						
Survey data collection						
Observations and Transect walks						
Writing/Analysis						
Transcribing						
Data analysis						
Writing						
Editing						
Presentations (thesis defense)						
Finalising and printing						
Submission to the VHL						

