

Analysis of the Broiler Value Chain and the possibility of introduction of Market Oriented Chain Development Strategies to improve income for farmers: A Case Study of the Greater Accra Region of Ghana.



Research Project submitted to Van Hall Larenstein University of Applied Science in partial fulfillment of the requirements for the award of a Master's Degree in Agricultural Production Chain Management Specializing in Livestock Chains

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Dedication

This work is dedicated to the Almighty God for successfully seeing me through this course; also to my husband J.P. Laryea, our two children Patrick and Princess Laryea for their support, patience, sacrifices and resilience they demonstrated during my absence.

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List of abbreviations

GSS	Ghana Statistical Service
GDP	Gross Domestic Product
GNFPA	Ghana National Poultry Farmers Association
LDP	Livestock Development Project
MT	Metric Tons
MoFA	Ministry of Food and Agriculture
NGO	Non-Governmental Organization
LDP	Livestock Development Project
TV	Television

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Exchange rate: 2 Gh¢ = € 1

Abstract

The poultry subsector is an important component of the Livestock sector in Ghana. It provides animal protein, employment and income generation, thereby contributing to food security and poverty reduction. The sector has however not seen much growth over the past decade. The slow pace of development of the sector can be attributed to frequent Gumboro outbreaks, few hatchery operators, absence of specialised slaughtering/processing points for poultry, competition from cheaper imported poultry products, and shortage or high cost of feed ingredients such as maize leading to high cost of production.

This study sought to analyse the broiler value chain and investigate possible market oriented chain development strategies which will improve income for farmers. The overall objective is to analyse the Broiler Value Chain and formulate a possible market oriented Chain Development Strategy which will contribute to an improvement in income for farmers. The research was carried out in the Greater Accra Region using desk research, a survey with three clusters of farmers, and a case study with other stakeholders in the chain. The desk research was done to obtain literature and secondary data on the broiler value chain. This was sought from libraries, latest books on the internet, journals and annual reports of the Ministry of Food and Agriculture.

The survey was conducted with the aid of a well-structured questionnaire with closed questions and a few open questions on (problems and the opinion of farmers). A semi structured questionnaire and checklists with open ended questions was used for the case study. Information gathered from the survey include farmers' membership of associations, source of inputs, places where birds are sold, number of times they produce in a year, whether they sell in live or dressed form, cost price, selling price, problems faced in marketing and their opinion on possible strategies to overcome these problems.

Results of the study showed that most of the small and medium scale farmers produce twice in a year, whilst the large scale farmers produce thrice in a year. Importers are also a major source of day old chicks for all three clusters of farmers. Whilst the small scale farmers did not belong to farmer associations, majority of large and medium scale farmers were members of farmer associations obtaining mainly extension advice and buying inputs in bulk. The farmers were the main coordinators in the chain with good linkages between them and their input suppliers however, linkages between the farmers and the traders were weak. Birds were mostly sold as live or full dressed due to absence of specialized slaughtering and processing points for poultry. The large scale farmers had the lowest cost price whereas the small scale farmers had the highest cost price. Major problems that constrained the activities of the farmers were difficulty in marketing as well as competition from imported poultry products. Farmers suggested that government should regulate the importation of frozen chicken and support the sector in production, processing and marketing.

Market oriented chain development strategies that can lead to an improvement in income for farmers include the formation of a broiler farmers association at district and regional levels. Services to be offered by the association are: assisting farmers to access inputs in bulk, marketing as a group, providing them with advisory services to plan their production cycle as well as agribusiness skills. The Association in conjunction with the Directorate can also encourage the private sector to invest into processing facilities so that farmers can create a variety of products in the form of special cuts. The actors can initiate an integrated quality management in conjunction with the livestock specialists and veterinary officers. Lastly the directorate can facilitate linkages between actors aimed at working towards a common vision through periodic fora, seminars and workshops.

CHAPTER ONE: INTRODUCTION

1.1 Country in brief

Ghana is located on the western coast of Africa, bordering the Gulf of Guinea between Cote d'Ivoire and Togo. It has a land area of 230,940 square kilometers and a population of 23,008,443 million. The population is distributed across the ten administrative regions with 56.2% and 43.8% in the rural and urban areas respectively (G.S.S., 2007). The climate is tropical but temperatures vary with season and elevation. There are two rainy seasons, which is from April to July and from September to November. In the Northern part of the country the rainy season begins from April and lasts until September. Annual rainfall ranges from about 1,100mm in the north to about 2100mm in the South East. The Climate gives rise to five major agro ecological zones: These are: forest which comprises rainforest and deciduous forest, derived savannah, coastal savannah, guinea savannah and Sudan savannah. The bimodal rainfall pattern in the forest, derived and Coastal savannah gives rise to the major and minor growing season. In the Sudan and Guinea savannah the unimodal rainfall distribution results in a single growing season. Thus the climate determines largely the type of Agricultural enterprise practiced in each zone.

1.2 The Livestock Sub sector

Agriculture is considered the backbone of Ghana's economy, it accounts for about 34% of the country's Gross Domestic Product. The livestock subsector is an important component of the Agricultural sector in Ghana. According to the LDP (2004) it contributes about 7% to Agricultural GDP. It is also a significant source for supply of protein in the diets of many Ghanaians. In addition, it supports rural livelihoods through employment creation, income generation thereby contributing to food security and poverty reduction. Livestock species commonly found in the country include: sheep, goat, cattle, pigs and poultry.

1.3 The Poultry Sector

The poultry sector was quite vibrant between the 1960's and 1970's supplying about 95% of the nation's requirement. This was due to Governments policy initiative with an integrated poultry project aimed at contributing to employment creation and filling the deficit in the country's animal protein supply. In the early 1980's, the industry saw a decline due to a recession in the Ghanaian economy coupled with drought which affected the availability of feed ingredients. Towards the end of the decade, a change in government policy due to trade liberalization saw the influx of imported poultry products into the country.

1.4 Domestic Poultry Meat Production against Imported Poultry Products

Table 1.1 below shows domestic supply of meat from 1999 to 2009, figures for poultry suggest that the supply from domestic sources increased from 14,534 MT in 1999 to 34,656mt in 2009 representing a rise of 58%.

Table 1.1 Domestic Meat Production (MT)

category	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Cattle	18,029	18,570	19,053	18,288	18,486	18,686	18,874	19,140	19,346	19,553	19,768
Sheep	11,940	12,298	12,780	13,149	13,568	14,004	14,450	14,913	15,390	15,881	16,389
Goats	11,216	11,552	12,037	12,597	13,884	15,308	15,300	15,588	16,364	17,180	18,038
Pigs	11,173	10,056	9,653	10,416	10,181	9,979	9,744	16,027	16,498	17,002	17,512
Poultry	14,534	13,807	14,580	19,401	21,116	22,982	22,709	27,224	29,630	31,853	34,656
Total	66,892	66,283	68,103	73,851	77,235	80,959	76,582	92,893	97,229	101,469	106,299

Source: MoFA Facts and Figures 2009.

Table 1.2 below also illustrates imports of poultry products from 2000 to 2009. These figures suggest that the imports surged from 9,548.0mt in 2000 to 69,079.6mt in 2009, representing a rise of 86%. This increase is about twice the growth of the local poultry meat supply clearly

indicating that it is growing at a slow pace. This can be attributed to the fact that consumption patterns and preferences of consumers have shifted towards special cuts of imported poultry products due to affordability and convenience. This view has been supported in the work of Levin and Elmasoeur (2008) that revealed that in 2007, out of the total consumption of 77,000MT, about 90% was supplied from imports whereas the commercial and noncommercial poultry production sector accounted for only 11%. This clearly indicates that the country is currently unable to meet its requirements.

Table 1.2 Imports of Poultry Products in MT

CATEGORY	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
POULTRY:										
CHICKEN	9,160.0	6,731.5	19,986.0	32,939.0	39,088.6	40,591.0	44,757.7	63,276.3	89,889.0	67,068.6
TURKEY	385.9	74.1	766.3	1,164.5	1,268.7	1,697.2	3,030.3	3,514.7	3,352.8	1,980.2
DUCK	2.1	2.0	0.0	4.1	0.0	0.0	6.1	0.0	16.0	30.8
SUB-TOTAL	9,548.0	6,807.6	20,752.3	34,107.6	40,357.3	42,288.2	47,794.1	66,791.0	93,257.8	69,079.6

Source: MoFA Facts and Figures 2009.

Studies by Otsyina, et al. (2005) cited in Anning (2006.) suggest that the reason for the slow development of the sector is that it is currently facing a decline due to a number of challenges which include: frequent Gumboro outbreaks, competition from cheaper imported poultry products, few hatchery operators, and shortage or high cost of feed ingredients such as maize leading to high cost of production. With the exception of a few large scale farms, there are also virtually non-existent specialised slaughtering/processing points for poultry. Due to this, most large scale and medium scale farmers sell their birds live or full dressed by slaughtering manually. The per capita consumption of poultry products in Ghana is 4 kg meat and 20 eggs which are far below the world average of 154 eggs and 9.7 kg meat (Killebrew and Plotnick 2010).

Despite the challenges enumerated above, commercial poultry production has the potential to contribute to protein intake, income generation, poverty reduction and food security in line with the first two objectives of the Food and Agricultural Sector Development policy which are:

- *Food security and emergency preparedness*
- *Increased growth in incomes.*

This is because poultry is the main source of protein in the diets of many Ghanaians, thus having high demand, it can be inferred that potential market also exists for it.

The Animal Production Directorate's mandate is to promote, and sustain the development of the livestock subsector including poultry. In order to address these challenges and accelerate Livestock Development, the directorate formulated the Livestock development policy which also has a strategy on poultry. The goals of the Policy are:

- *To increase the supply of meat, animal and dairy products from domestic production from the current aggregate level of 30% to 80% of national requirement by the year 2015*
- *To contribute to the reduction of the incidence of poverty among food farmers (who are also livestock keepers) from 59% to 30% by the year 2015.*

In the implementation of these policies, emphasis is placed more on production and not the value chain approach which is market driven and takes the whole chain of stakeholders into consideration. This explains why a market oriented chain development strategy is imperative for accelerated growth and development of the sector.

1.5 Problem Statement

Broiler producers are currently faced with reduced sales due to high cost of production, absence of specialized slaughtering facilities and competition from imports. This has caused most farmers to close down their farms, reduce production or shift to layer production consequently resulting in reduced income.

1.6 Research Objective

The purpose of this study is to analyse the Broiler Value Chain and formulate a possible market oriented Chain Development Strategy which will contribute to an improvement in income for farmers.

1.7 Research Questions

Main Research Question 1

1. What are the characteristics of the Broiler Value chain?

Sub questions

- 1.1 What are the roles of stakeholders in the chain?
- 1.2 What are the Governance mechanisms and linkages in the chain?
- 1.3 What are the cost prices for actors along the chain?
- 1.4 What are the product prices for different segments in the chain?

Main Research Question 2

Sub questions

2. What are the different strategies used for marketing in the chain?
 - 2.1 What market segments exist for various products the chain?
 - 2.2 What is the quality attributes of different products in the chain?
 - 2.3 What promotions do actors in the chain use for their final customers?
 - 2.4 What are the constraints faced by actors which affect marketing?

CHAPTER TWO: CONCEPTUAL FRAMEWORK

The value chain concept was used to analyze the current situation of the broiler value chain. This was done by analyzing the various stakeholders in the chain and representing it with chain maps. In addition, analyses of constraints, the marketing mix (4P'S), porter's five forces, cost price and profitability were used to illustrate the differences. The value chain development concept including vertical and horizontal integration was also used to formulate chain development strategies that can be used to improve marketing and income for farmers.

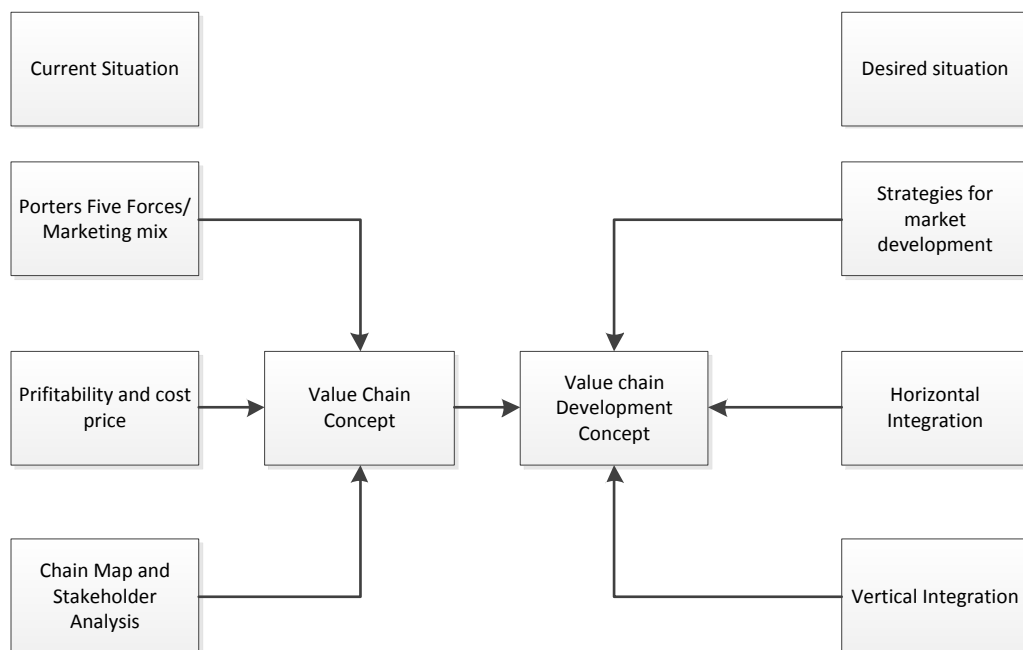


Figure 2.1: Concept framework for analysis

2.1 Value Chain Concept

Value Chain: A value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production, (involving a combination of physical transformation and the input of various producer services) delivery to final consumers, and final disposal after use. Caplinsey and Morris (2002).

The broiler industry found in Ghana qualifies as a value chain. This is because; it is made up of input suppliers, broiler farmers, wholesalers and retailers; although weak linkages exist between these actors. The value chain approach has been used to analyse the performance of backyard poultry in the Techiman district of Ghana by (Asem-Bansah, et al., 2009). Similarly, (Okello, et al., 2010) also developed sustainable interventions for the poultry industry using the Value Chain Approach.

Subsystems within a value chain:

The systemic view of a value chain integrates three important levels within a value chain network and allows discovering potentials and bottlenecks within these levels. Roduner (2007). These are: chain actors, supporters and chain influencers; they invest time, effort and money, build relationships with other actors to reach a common goal. KIT et al (2006).

Chain actors: These are individuals or groups who directly deal with the products, i.e. produce, process, trade and own the product as it travels along the chain. They include: input suppliers, producers, traders, wholesalers and consumers.

Chain supporters: These are public or private companies that provide services to various chain actors but never directly deal with the product and whose services add value to the product. These include transporters, processors, livestock departments, veterinary departments, banks and nonbanking financial institutions. Their services include capacity building, access to information on production and markets as well as finance.

Chain influencers: These are organisations which provide regulatory framework, policies, infrastructure, etc. (at the local, national and international level) that shape the way value chains operate. Roduner (2007). These include Ministries, Departments and other Public agencies.

Value chain Map: is a flow chart that can be used as a tool for identifying and categorizing key market players and supporting organizations (government, BDS, NGOs, associations, etc.) and which value chain levels they concentrate their services on. It looks at the different functions in a value chain and illustrates them as processes leading from conception of raw material to final consumption.

Value Chain Analysis: This maps the activities of actors involved in production, processing, wholesaling, and retailing of a particular product and assists in identifying the distribution of benefits of actors in the chain through the analysis of margins and profits. Kaplinsky and Morris (2001) states that the mapping assesses the characteristics of actors, profits, and cost structures, flows of goods, employment characteristics and the domestic and foreign sales. 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. Market institutions and governance regimes play a key role in determining the type of upgrading process to embark on. 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.

CHAIN MAP SHOWING DIFFERENT ACTORS

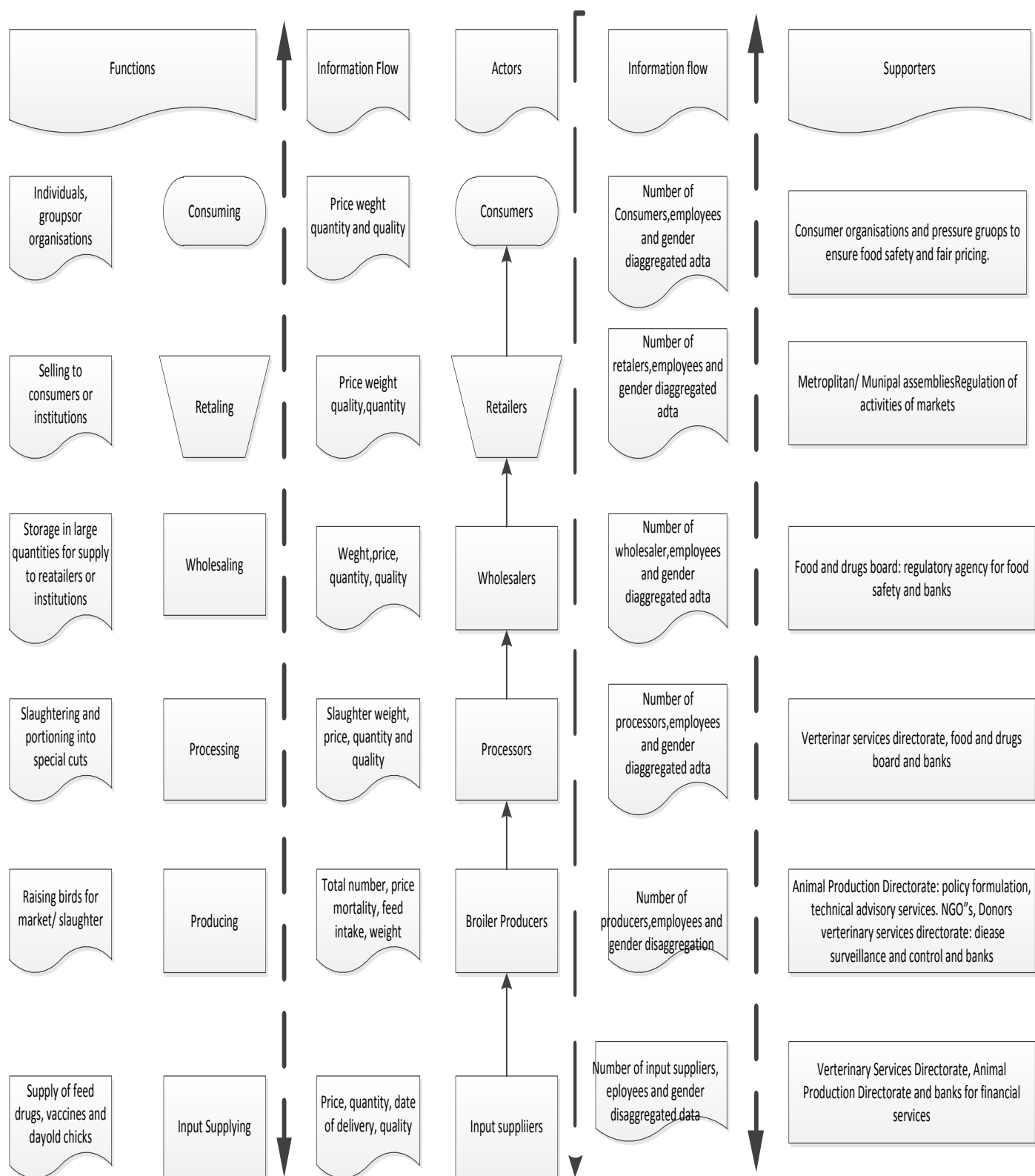


Figure 2.2 Model of a Broiler Value Chain Map

2.2 Value Chain Development

Value Chain Development starts with chain research, analysis and formulation of chain upgrading strategies, followed by monitoring and evaluation to assess the impact of the intervention. Intervention strategies that can be used include vertical and horizontal integration.

Vertical integration entails: involving farmers in new activities either upstream or downstream e.g. production, processing or trading. Adding activities implies adding costs and risks and may require technology, finance, human resource development and organisation. Vertical integration may occur for several reasons including stable supplies, better quality control, improved information flow, scheduling and reduction in price risk. The broiler industry is a good example of how a meat production system can become vertically integrated.

Horizontal integration: is the involvement of farmers in chain management with regards to decisions on sales, price, quantity and customers KIT et al (2006). It involves information management, quality management, innovation management and chain cooperation. Chain actors may improve their position through product upgrading and process upgrading. Horizontal integration also provides uniform quality performance by supporting members through quality programs and by providing members with quality demand information from the market. Ameleke, et al (2003) stated that one of the most important changes that could be achieved by small scale producers is to organise themselves into producer associations to effectively market their produce thus achieving a greater share of the final product price. Value Chain Development Strategies which include provision of hatchery facilities, organisation of farmers, and establishment of abattoir and provision of market information have been used by (Oyeke 2006) to develop a competitive strategy for the Broiler Sector of Tanzania under the National Agricultural Support Services Program.

2.3 Framework for Trading Up

According to KIT and IIRR (2008) strategies that can be used for trading up include: Stronger chain relations and stronger market institutions. It was further reported that these strategies have been used by livestock farmers in Zimbabwe and has led to mutual respect, better chain cooperation, transparency and better business support services.

Stronger Chain Relations: This involves creating well organised, stable, effective and exclusive relationships between different actors (farmers, traders and transporters) in the chain. Such relationships are important in reducing costs and risks in their businesses for all actors involved. Possibilities through which stronger chain relations can be achieved are indicated below as describes by KIT and IIRR (2008)

- Organisation of farmers to strengthen skills and technology, upgrade products and services, study customer demands, access finance and negotiate with customers.
- Creating mutual understanding through respect for roles and needs of other chain actors. This can be done through open dialogues and exchange visits.
- Specialising in their roles to deliver better products and services in order to strengthen the value chain.
- Coordination of chain relationships through continual communication between chain actors. This is important in producing products to suite customer demands. Chain coordination can be steered by farmer/ trader organisations, service providers or chain facilitators.
- Development of chain partnerships through a shared vision to improve the performance of their businesses.

Stronger Market institutions: These are formal rules, laws, policies and various form of organisation across the state civil society and business sector that shape the way farmers interact by enhancing stability and order in the way they transact their business KIT and IIRR, (2008). Informal regular pattern of behaviour and social customs are also institutions. The effective functioning of value chains depends on trust which makes trade more efficient. This may vary depending on the actors involved and ranges from informal mechanisms of trust between a trader and farmer in a traditional village to formal contracts between lead firms and small holder farmers. Stronger market Institutions can be achieved through.

- Setting up and maintaining quality standards which will help trade become more efficient. It reduces personal inspection and handling costs to improve business returns as well as customer satisfaction due to reward of high quality with good price.
- Market information systems on where, when, to whom and at what prices to buy and sell need to be provided since it helps in making decisions. This can be provided by public service or private agencies, including radio, TV, internet, cell phones and SMSs.
- Influence of sector Policies by business organisations that will address pertinent issues, trade tariffs, permits and taxes.
- Business support services like financial services provision, transport, research and development must be available and effective.

2.4 Chain Coordination Mechanisms

Inclusion of commercial small holder farmers: This can be done with a lead company and small holder farmers. The farmers produce with their own inputs and the lead company may offer e.g. processing facilities. In this case, a business relationship exists between the farmers and the processor. The disadvantage is that if market demand changes and the company close down, farmers may be left without an outlet. NGO's or donor agencies may establish the firm in which case it holds the shares of the target group (farmers) until such day that they can take over that responsibility.

Subcontracting small holder farmers: Contracts represent a common governance mechanism, according to Key and Runsten (1999) it is used to supply standardised products to downstream customers especially when it concerns production processes with limited risks for quality degradation. Typical elements of a contract include product quality, (standards, consistency) delivery conditions (timing), price and information exchange. It is important in reducing transaction cost and guaranteeing quality compliance. The farmers may be supplied inputs, finance and secure market access. The contractor is mainly the chain coordinator and the relationship between the contractor and the farmers are more of employer employee model.

Organising farmers: to purchase inputs or market as a group will improve their bargaining position and deliver economics of scale. Most smallholder farmers depend on input suppliers, traders, transporters for finance and market access. Banks are mostly reluctant to finance small scale producers in general and more specifically perishable products because of high risks involved (KIIT and IIRR 2010) however the embeddedness of small scale producers in a network of social relationships can provide them with social capital to support their vertical business relationships. (Lazarinni, et al., 2001); (Coleman 1990) and (Uzzi 1997). The feasibility of such a strategy however depends on both the characteristics of the value chain as well as the capacity of the farmers with regards to expertise, entrepreneurial spirit, business mindedness and financial resources. Porter (1990) also explains that collaboration and co innovation between chain and network partners are considered key elements for developing synergies amongst agents beyond their traditional resource base.

2.5 Marketing Mix Used by retailers:

This is a tool used to test an existing or new market strategy and involves the different kinds of choices an organisation has to make in the whole process of bringing a product or a service to the market. It is also known as the 4P's namely: product, price, place and promotion.

Product: This is the good or service offered customers. Typical product attributes include; it's physical appearance, packaging, quality features, different ranges, brand name, warranty and customer service. It should meet the needs of a particular target market therefore adequate knowledge of what the target market wants and what competitors are supplying is important in offering a product that is appealing to customers.

Price: This refers to the value of the product and should cover production costs including profit margin in order to generate revenue for the business. The pricing approach selected should reflect the position of the product in the market and is based on the product, customer demand and the competitor environment. Some pricing mechanisms include: cost plus, value based competitors, discount, going rate, credit and payment terms.

Place: is the distribution channel used to get products to customers and may be intensive selective or exclusive. Depending on the type of product it could be direct sales, retail or through a distributor or an intermediary. It also includes logistics like transport, warehousing and order fulfilment undertaken to ensure the availability of the product.

Promotion: This involves communication and selling activities that persuade people to buy the product you have for sale. Advertising is the most common method and enables customers to understand the type of product on offer for sale. The advert should contain a clear message targeted towards a specific audience through an appropriate channel. Some advertising methods include: electronic, (TV and Radio and company websites on the internet), print media newspapers and magazines, flyers and brochures). Promotion may also involve public relations, open house days with customers, exhibitions personal selling and sales promotional programs.

2.6 Characterization of different clusters of farmers

These include small scale, medium scale and large scale intensive systems of production.

Small Scale Intensive System of Production

Farmers practicing the small scale intensive system stock 1000 to 2000 birds and constitute about 70% of the industry. They rely on both local hatcheries and importers for their day old chicks. The birds are fed well formulated balanced feed mostly prepared manually whilst a few farmers buy prepared feed from major feed mills. Most of these farms practice a reasonable level of management and biosecurity measures. The birds are housed solely indoors in poultry houses or in wooden /iron battery cages. Waterers and feeders as well as other equipment used in production are non-automated.

Medium Scale Intensive System of Production:

These are farms that stock between 2000 – 5000 birds and constitute about 20% of the industry. Most farmers prepare their own feed manually whilst a few of them have automated feed mills for feed formulation. High levels of husbandry and biosecurity measures are maintained on such farms. With regards to equipment, a few of them have automated drinkers and waterers whilst the majority use non automated ones.

Large Scale Intensive System: These are farms which stock above 5000 birds and make up about 10% of the industry. Most of these farms are highly automated and make use of

automatic waterers and feeders. Feed mixing is also done mainly with mechanical feed mixers. Similarly, a high level of management and biosecurity measures are maintained.

2.7 Porters Five Forces Analysis: This is a framework used to determine the competitive position of a firm and its market attractiveness using a set of five forces. These forces also referred to as the microenvironment include: threat of substitute products, threat of established rivals, and threat of new entrants which are forces from horizontal competition. Forces from horizontal competition also include bargaining power of suppliers and bargaining power of customers. Each of the forces has a number of determinants which is indicated in the figure below.



Figure 2.3 Porters five force analysis

CHAPTER THREE: METHODOLOGY

3.1 Study area

The research was conducted in selected areas across the ten districts of the Greater Accra Region. The region is bordered on the South east by the eastern region, the south west by the western region and the south by the central region. It has a land area of 3,245 square kilometres and a coastline of 225 kilometres stretching from Kokrobite in the west to Ada in the east. It is also divided into 9 administrative districts. Soils are predominantly low in organic matter resulting in low crop production. Vegetation found in the region is mainly coastal savannah shrubs and tickets with a few trees in the Dangme west and Ga districts. The region has 10 Metropolitan Municipal and District Assemblies with Accra as its capital. It had a population of 2,905,726 in 2000 and is the most densely populated region in the country with a population density of 895.5 persons per square kilometre in 2000. The main agricultural activities in the region are poultry and livestock production. It also serves as one of the biggest marketing centres for agricultural goods due to the network of roads that facilitate easy marketing of products between rural and urban areas.

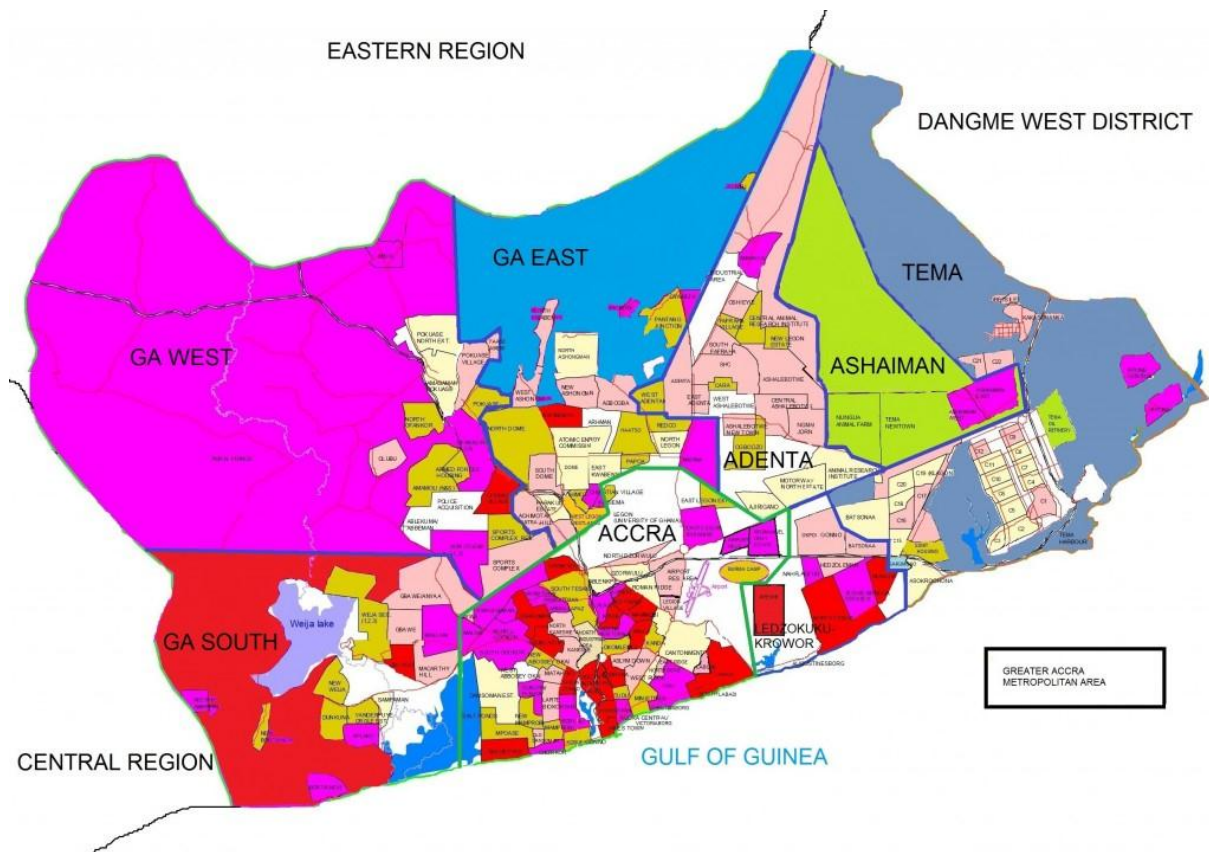


Figure 3.1 Map of Greater Accra

Source Google Maps

3.2 Research strategy

The research had both qualitative and quantitative approach. The strategy used by the researcher is illustrated below. It made use of desk research, a case study and survey to obtain both primary and secondary data and information on the broiler value chain.

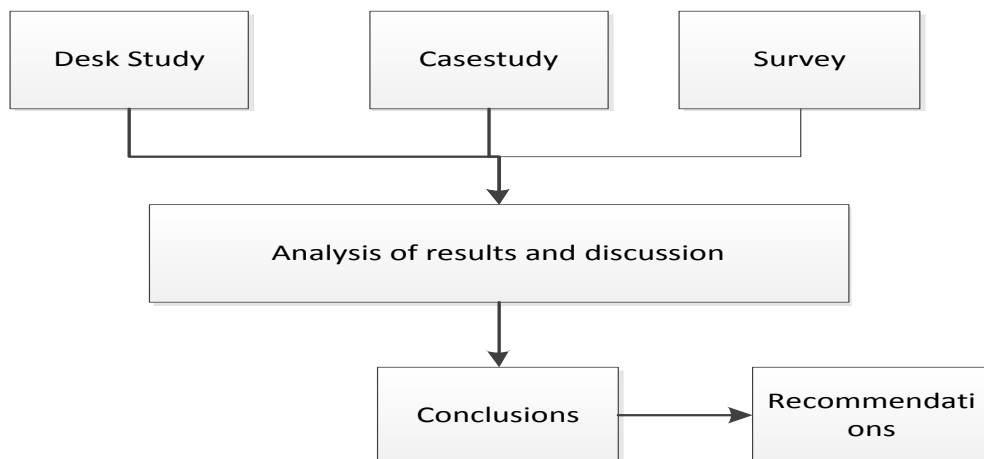


Figure 3.2 research framework

3.2.1 Desk research

Prior to the commencement of the fieldwork, desk research was done to obtain literature and secondary data on the broiler value chain; this was sought from libraries, latest books on the internet, journals and annual reports of the Ministry of Food and Agriculture.

3.2.2 Survey of Broiler Producers

A survey was conducted among small, medium, and large scale broiler farmers with the aid of a structured questionnaire with closed questions and a few open questions on (problems and the opinion of farmers). This was done to obtain a broad range of primary data on the activities of farmers in the chain and the constraints they face. The selection of farmers and the administration of questionnaire were done with the assistance of the District Livestock and veterinary officers. This is because they are constantly in touch with the farmers and know areas in the districts where farmers were located. A total sample size of 30 farmers was used in order to be able to analyse the results using relevant statistical tools. A random sample of 10 farmers was selected per area based on farm size. There were three clusters which are the Small scale farmers for the Tema Area, Medium Scale Farmers for the Ashaiman area and Large Scale Farmers for the Dangme west district. The questionnaire had questions which include: whether farmers belong to an association, where farmers buy their inputs, where they sell their birds, the number of times they produce in a year, whether they sell live in live or dressed form, cost price and selling price, the problems they are facing and how these problems can be minimised.

3.2.3 Case Study

A case study involving face to face interviews with various actors in the chain was also done with the aid of a semi structured questionnaire and checklists with open ended questions. This was also combined with observation grids and content analysis of reports and policies on livestock in order to obtain in-depth information on the whole value chain. Details of the nature of interviews are described below:

Interview with retailers of live birds

Retailers of live birds from the Kaneshie Open market in the Ga District of the Greater Accra Region were interviewed to obtain information on their activities. Questions in the checklist focused on where they obtain their stock, the cost and selling price, amount sold, quality issues, vehicles used to transport birds and problems they face in marketing.

Interview with Secretary of the Poultry Farmers Association

The secretary of the Poultry Farmers Association was interviewed to obtain information on the type of services they offer to farmers, problems they face, effect of these problems as well as his opinion on possible strategies that can be adopted to improve marketing for farmers.

Interview with Director; Animal Production Directorate.

The interview with the Director focused on the role of the directorate in facilitating chain governance as well as policies and programs being undertaken by government to develop the sector. His opinion on possible strategies that can be adopted to improve marketing was also sought.

Interview with wholesalers of imported frozen chicken

One wholesaler, Beyeeman Freezing Company who also doubled as an importer was interviewed to obtain information on their activities. The checklist focused on the capacity of their facilities, quantities imported and where they import from.

Interview with retailers of imported chicken

Two retailers from meat shops selling imported chicken parts at the Kaneshie market were interviewed. A checklist containing open ended questions was used to obtain in depth information on their activities. The questions in the checklist focused on where they obtain their stock of meat / birds, cost and selling price, volumes sold, quality issues, vehicles used to transport birds or meat and problems they face in marketing. Observation was also made on product attributes.

3.2.4 Data Analysis

Quantitative and qualitative data collected from the survey was coded, grouped according to preselected clusters and analysed using SPSS 17. Descriptive statistics was used to analyse age, educational level, location and size of farm. Inferential statistics was used for opinion of farmers, no of cycles per year, places where farmers buy their inputs/ sell their birds etc. to analyse for correlation or variance. Cost price and selling price calculations was done using Microsoft excel. Other qualitative and quantitative information obtained from the survey and interviews was analysed using a chain map, stakeholder matrix, marketing mix and porters' five forces, as well as trading up strategies for improve marketing adapted from KIT and IIRR (2008).

Table 3.1 Summary of questions and data sources

Questions	Details	Source
Main Question 1	What are the characteristics of the Broiler Value chain?	
Sub questions		
1.1	What are the <u>roles</u> of actors in the chain?	Desk study, survey and interviews
1.2	What are the <u>Governance mechanisms</u> and <u>linkages</u> in the chain?	Desk study, survey and interviews with retailers
1.3	What are the <u>cost prices</u> for actors along the chain?	Survey and interviews
1.4	What are the <u>product prices for the different segments in the chain?</u>	Desk study, survey and interviews
Main Question 2	What are the different strategies used for marketing in the chain?	
sub questions		
2.1	What <u>market segments</u> exist for various products in the chain?	Desk study, survey and interviews
2.2	What is the quality <u>attributes</u> of different products in the chain?	Survey and interviews
2.3	What <u>promotions</u> do actors in the chain use for their <u>final customers</u> ?	Survey and interviews
2.4	What are the <u>constraints</u> faced by actors which affect marketing?	Survey and interviews

Source: Own research study

CHAPTER FOUR: THE BROILER VALUE CHAIN IN ACCRA

The first part of the chapter presents findings from desk research coupled with a case study involving interviews with various stakeholders in the chain. The second part presents a survey with different clusters of farmers in the region under consideration.

4.1 The role of stakeholders in the Broiler Chain

Information on the activities of actors in the chain was obtained from observations made in the field during the survey and the interview as well as content analysis of latest books, journals and annual reports of the Ministry of Food and Agriculture.

Input Suppliers:

Those commonly found in the region include: suppliers of day old chicks, drugs, feed additive and equipment suppliers, as well as feed suppliers. All of them operate from offices which are managed by private individuals or companies. Some suppliers of day old chicks operate hatcheries with parent stock whilst others import fertile eggs for hatching. A number of companies also import day old chicks for sale to farmers. Feed and feed ingredients are also supplied by feed mills and retailers that have retail outlets across the region. Drugs, feed additives and equipment on the other hand are sold by veterinary shops.

Producers:

These are broiler farmers who buy day old chicks and other inputs from suppliers and raise them for 6-8 weeks. The birds attain a live weight of between 2-2.5kg and dressed weight of between 1.5 to 1.9 kg at which stage they are ready for market. Anning (2006). Generally farmers do not produce for a particular market but rather look for market after production.

Traders

The traders are middlemen. Those interviewed revealed that they have an association with a leader. The leader normally goes to the farms to buy live birds weekly and distribute to members according to the order they place.

Retailers: These are traders who also double as retailers in the open market. They have sheds and cages in which birds are kept. At the market, the birds are fed mainly with wheat bran in the morning and afternoon whilst water is provided ad libitum. Supermarkets also retail dressed birds. Most farmers sell their birds to individuals at the farm gate. (Killerew and Plotnick 2010), when farmers sell to individuals at the farm gate or open market, they also act as retailers. (Anning 2006)

Consumers

Customers for retailers of live birds are mainly individual consumers who buy for domestic purposes. This is because they can use all parts of the bird to prepare meals at home. Generally most customers buy in the live form and slaughter in their homes themselves. Other customers also make request for birds to be slaughtered and dressed for them by the retailers.

Supporters and Influencers in the chain

These are private and public institutions that facilitate, regulate or offer Business Development services to actors at various stages of the value chain. The table below was prepared using the policy documents of the institutions involved and the second portion was prepared using information gathered from an interview with specific actors.

Table 4.1 the role of supporters and influencers in the chain

Animal Research Institute	<ul style="list-style-type: none"> -Formulation of breeding policies for the poultry sector. -Carry out research into the development of new breeds of poultry. -Quality control of feed mills through monitoring and routine laboratory analysis. -Dissemination of information on results of the research to other stakeholders (poultry farmers, hatchery operators, Animal Production Directorate, Veterinary Services Directorate, etc.) in the poultry value chain.
Extension Services Directorate	<ul style="list-style-type: none"> -Training of poultry farmers in modern poultry production technologies -Monitoring of poultry farms in their operational areas in the districts. -Provision of technical advisory services to poultry farmers. -Carry out poultry demonstrations for farmers.
Veterinary Services Directorate	<ul style="list-style-type: none"> -Carry out disease surveillance on poultry -Carry out ante mortem and post mortem inspection and certification of poultry carcass in poultry slaughtering plants. -Regulate the importation of day old chicks, vaccines, drugs, on poultry and poultry products. -Issuance of movement and import permit prior to transport of poultry and poultry products. -Diagnosis of poultry disease and prescription of relevant drugs. -Produce and carry out vaccination schedules on poultry.
Food and Drugs Board	<ul style="list-style-type: none"> -Inspection of poultry slaughter facilities to ensure the use of Good Hygiene Practices. -Inspection of feed mills to ensure the use of Good Manufacturing Practices. -Inspection of cold storage facilities and meat shops
Agricultural Development Bank	<ul style="list-style-type: none"> -Provision of credit to poultry farmers -Provide technical economic assistance to farmers which help improves efficiency of production. -Visit farmers who benefit from their loans to monitor and give recommendations where necessary on how to improve the efficiency of production.
Transporters	<p>These are individuals who operate 207 Benz buses which also double as passenger cars. Cost incurred during transport ranges between GH¢30 – 50. The farmers explained that due to the inappropriate nature of the buses and overloading, there is normally high mortality during transport.</p>

Source: own research study

4.2 Case study with other stakeholders

Interviews were held with retailers of the main products in the chain to obtain information on the strategies used for marketing. The products are live/dressed birds from local sources and special cuts from imported sources.

4.2.1 Interview with Retailers of live birds

Retailers of live birds interviewed revealed that they purchased birds from small, medium as well as large scale farms located in the Greater Accra and Central Region. They said they normally bought 1000 to 1200 birds per week and are able to sell all during festive occasions and about 80% during off peak seasons. The retailers also indicated that they have access to supply throughout the year however flock size of farms are generally higher on festive occasions like Christmas, Easter and Ramadan due to high demand and low during off peak seasons. Therefore they buy more during those seasons. Since broilers are difficult to handle due to heat stress, they restock their cages every week.



Picture 4.1 Cage of a retailer of live birds

Table 4.2 Strategies used for marketing live birds

Product	These are live birds with the weight ranging between 2-2.5kg. The birds may also be dressed upon request by the retailers but still presented in the form of full chicken.
Price	Cost Price of birds at the farm gate ranges between Gh¢15 whilst the selling price in the market is 23Gh ¢.
Place:	Birds are available in the open market and displayed in wire mesh /wooden cages, strategically placed close to the main road for easy location.
Promotion:	Customers who buy more than 5 birds are given a discount of 20% and the last 10% of the stock is also reduced by 20%. They also try to maintain a good relationship with their customers and give them the best service

Source: own research study

Table 4.3 Cost summaries for retailers of live birds

ITEM	NUMBER/ QUANTITY	UNIT COST	TOTAL COST
Birds	2,600.00	18.00	46,800.00
Housing	1.00	40.00	40.00
Feeding	60.00	9.00	540.00
Labour	1.00	1825.00	1825.00
Transport	52.00	50.00	2600.00
Tax	365.00	0.50	182.50
TOTAL COST			51,987.50
REVENUE	2600.00	23.00	59,800.00
PROFIT			7,812.50

Source: own research study

Slaughtering: was done by the traders upon request by the consumers with the use of a coal pot to heat water which was used for de-feathering birds. The disadvantage is that the wholesomeness of the meat cannot always be guaranteed since there is no post mortem inspection of the meat by a veterinarian. It was also observed that birds were left in the open for flies to settle on it; water used was dirty since it was not changed regularly. At the end of the day feathers and offals are disposed of into waste bins near the market.



Picture 4.2 slaughter slab for retailers

Problems encountered by retailers of live birds:

The retailers enumerated a number of problems they face these include: high cost price per bird, absence of specialised vehicles for transporting birds, low sales due to competition with imported frozen chicken especially during off season periods as well as overcrowding and high mortality due to inappropriate transport.

Chain map of the small scale broiler value chain

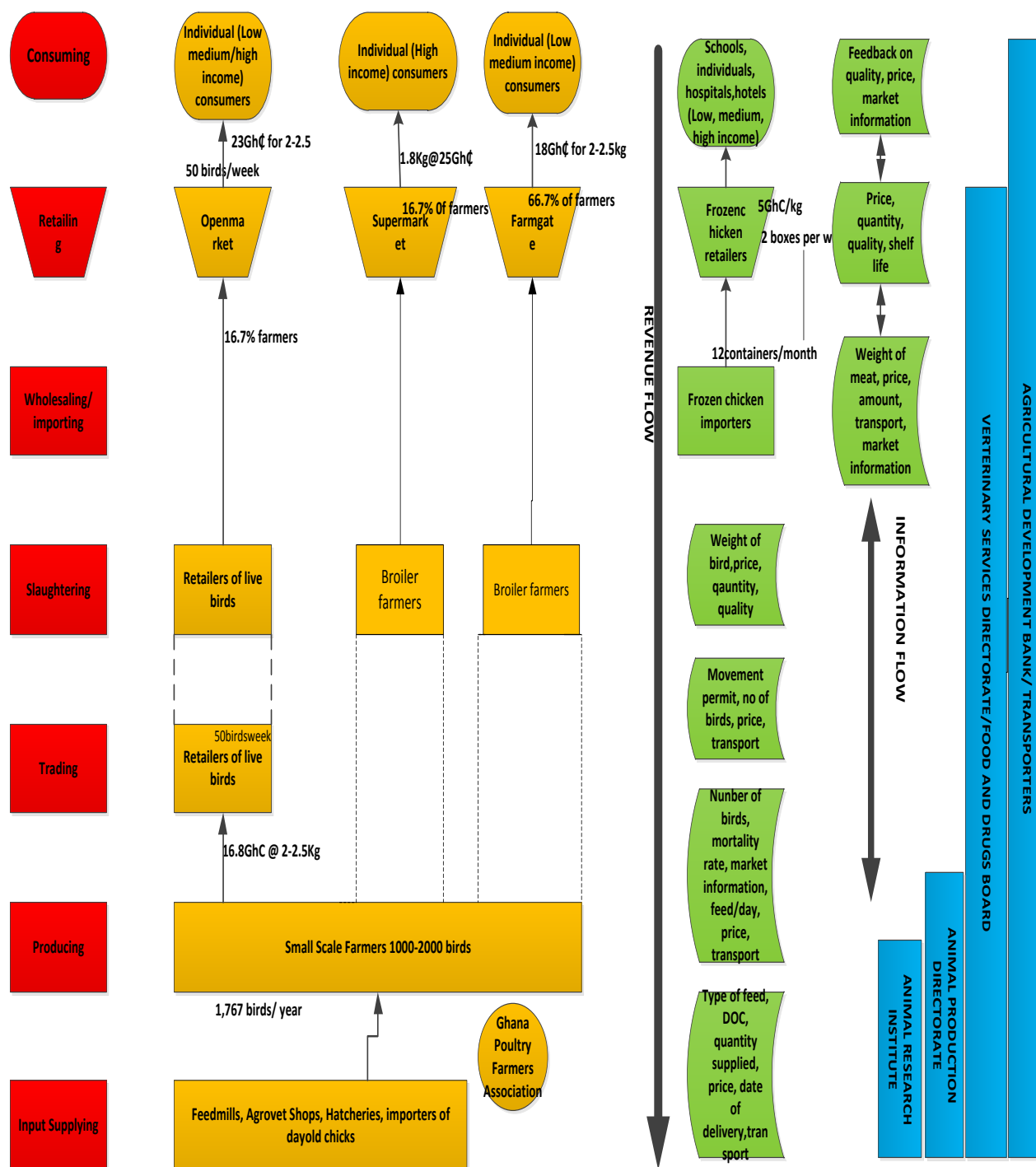


Figure 4.1 Chain map of the small scale broiler value chain

Chain Map of medium and large scale value chain.

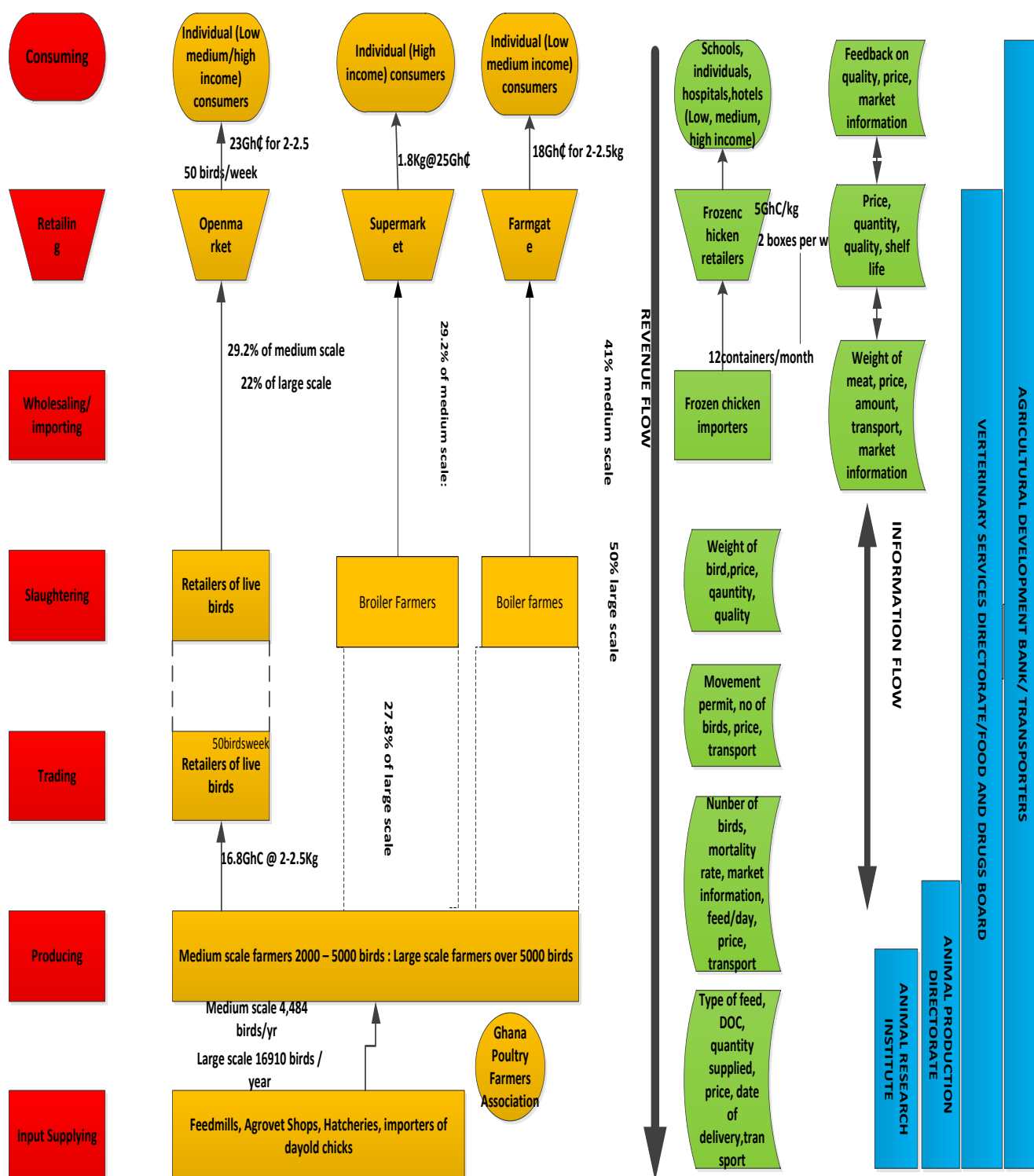


Figure 4.2 Chain Map of medium and large scale value chain.

4.2.2 Interview with importers/ wholesalers of frozen chicken:

These also double as wholesalers and operate large cold storage facilities with capacities of between 3000 – 4000MT. The Managing Director of Beyeeman Freezing Company said that poultry imports is currently big business since it is cheaper, people are buying. He revealed that importers bring in about 12 containers per month. He added, that explains why cold stores are springing up everywhere. He also indicated that in addition to their own stocks, they store products for up to 50 clients who are also importers. He said other customers include retailers of frozen meat, as well as institutional buyers like schools, hotels and other catering operators. He also mentioned that products are imported mostly from the EU, USA and Brazil.

4.2.3 Interview with retailers of imported poultry products

The retailers interviewed indicated that they buy the meat from Franco - Pat or Beyeeman Trading Enterprise and sell in retail shops located in the open market. The bulk of the meat is stored in a deep freezer whilst a few is displayed in glass cases in front of the shop. The lady interviewed indicated that due to frequent power outages they go to the cold store every day to buy at least what they can sell by the end of the day. When asked why they do not buy from local farmers, she revealed that the local meat was expensive and is normally not portioned like the imports. She added that supply was also not regular. With regards to quality she indicated that workers from the Food and Drugs Board occasionally and unannounced, inspect their premises to verify if they are operating under hygienic conditions.



Picture 4.3 retailer of imported frozen chicken

Table 4.4 Strategies used to market imported poultry products.

The strategies used to market imported poultry products are described in the table below

Product:	This is broiler meat processed and presented in the form of special cuts like drumsticks, gizzard and wings.
Price	The selling price per carton at the cold store is Gh¢ 240 and retail price at the market is Gh¢5 per kilo
Place:	The meat is available at the open market in small meat shops and displayed in glass wares in front of the shops. The shops are strategically placed close to the main road.
Promotion:	Shops also have sign boards in front of them with drawings of the meat on it. There is also a discount of 10% for customers who buy more than 100 cartons. In that case an order must be placed in advance in order for the retailer to buy on behalf of the customer. Occasionally, importers sponsor cooking contexts that is covered on national television. This is normally accompanied by free tasting of the dishes.

Source: own research study

4.2.4 Interview with the Secretary of the GNFA

The original plan was to interview the chairman of the Poultry Farmers Association but he was out of the country on an official assignment. The secretary of the Association who was acting in his absence was therefore interviewed. He enumerated the services offered by the Association, problems farmers face in marketing, and strategies that can be used to improve the marketing situation.

Services offered by the Association

- Lobbying Government on policies which will help commercialize and expand the industry.
- Occasionally training farmers (due to inadequate funds) on Good husbandry as well as business management skills.
- Sourcing for feed inputs in bulk to sell to farmers at a reduced rate.
- Linking private individuals/ feed companies to farmers for the supply of feed ingredients at a concessional rate.

Major problems faced in marketing

- High cost prices due to high cost of inputs resulting in reduced sales.
- Farmers have to pre finance the traders by allowing them to buy on credit however; most at times payments are delayed.
- Competition from dumping of imported poultry products which are about 50% cheaper than the local products.
- Absence of specialised slaughtering points to slaughter and process into special cuts.

Strategies that can improve marketing

- Increase in tariffs on imported poultry products to create a fair price for local products.
- Bulk buying of inputs with government support to reduce cost of production.
- Support from government in the form of projects for farmer groups as is being done for the crop sector.
- Government to encourage the Private sector to investment in processing facilities in the major poultry producing regions in the country.

4.2.5 Interview with the Director: Animal Production Directorate.

The Director of Animal Production Directorate was interviewed to obtain his views on the role of the Directorate in facilitating chain governance. According to the Legislative Instrument that established the Directorate, the mandate of the institution is to develop, promote and sustain poultry and livestock production for food security, employment creation and income generation through research, effective technical support, extension services, agro business and industry.

The Director explained that to reduce the cost of production for farmers; Government released the buffer stock maize produced by local crop farmers under the block farming program. This he said helped to stabilize the cost of local maize. There is however pressure on demand for human consumption as against demand by the poultry farmers. In a bid to reduce this pressure, the government is considering the importation of yellow maize to support the local poultry Industry. He further elaborated on some policies and regulatory framework which are explained below.

Policies and regulatory framework on poultry

Tax exemptions for imported poultry inputs: In order to promote the development of the industry, the government has instituted tax exemptions on all imported poultry inputs and are therefore zero rated under the harmonised system code of the customs excise and preventive service.

Import tax on imported poultry products: In accordance with the ECOWAS Common External tariff in 2005, there's currently an import tax of 20% on imported poultry products. This is an attempt to help level the uneven keel between local and imported products; however, with the current tax rate the imported products are still 50% cheaper than the local products.

4.2.6 Level of competitiveness of the Broiler Value Chain

An assessment of the competitiveness of the Broiler Value Chain was done to obtain the competitive position of the local chain using porters' five force analysis. This includes threat of new entrants, supplier power, competitors, Buyer power and threat of substitutes.

Porters' five force analysis of the broiler value chain



Figure 4.3 Porters' five force analysis of the broiler value chain

4.2.7 SWOT Analysis of the Broiler Value Chain

The table below shows the strengths, weaknesses, opportunities and threats of the broiler value chain. The strengths and weaknesses are internal to the chain whilst the opportunities and threats are external. The farmers should capitalise on the strengths and opportunities and develop strategies to eliminate or minimise the weaknesses and threats.

Table 4.5 SWOT Analysis of the broiler value chain

Strengths	Opportunities
<ul style="list-style-type: none"> -Large number of dormant poultry structures which can be used for production -Large number of expertise with knowledge on broiler production - Favourable policies on poultry through tax exemptions and regulation of imports 	<ul style="list-style-type: none"> -Long socio- cultural history of high consumption pattern for poultry products - Potential market due to high demand for poultry products - Preference of local poultry for certain culinary dishes. - A large number of financial institutions with a potential to support the industry.
Weaknesses	Threats
<ul style="list-style-type: none"> -High cost of inputs resulting in high cost of production - Weak input supplier and farmer organisations - Less developed infrastructure, technology and logistics 	<ul style="list-style-type: none"> - Keen competition from imported poultry products - Shift in consumption pattern towards imported poultry products

4.3 Activities of Broiler farmers

A survey was carried out with three different clusters of farmers in the chain. The information gathered covered their demographic characteristics, number of batches produced in a year, where they obtain their inputs, governance regimes that exist between them and their suppliers, forms in which they sell their birds, constraints they face and their opinion on how these constraints can be minimized.

4.3.1 Background Information of farmers interviewed

Table 4.6 Age of respondents by categories

type of farm	Minimum	Maximum	Mean	Std. Deviation
small scale	37,00	65,00	51,00	8,26
medium scale	33,00	65,00	48,70	11,45
large scale	45,00	61,00	53,60	5,64

Source: own research study

The large scale farmers had the highest average age of 53.6 whereas the small and medium scale farmers had slightly lower averages of 51 and 48.7 respectively.

Proportion of male and female farmers

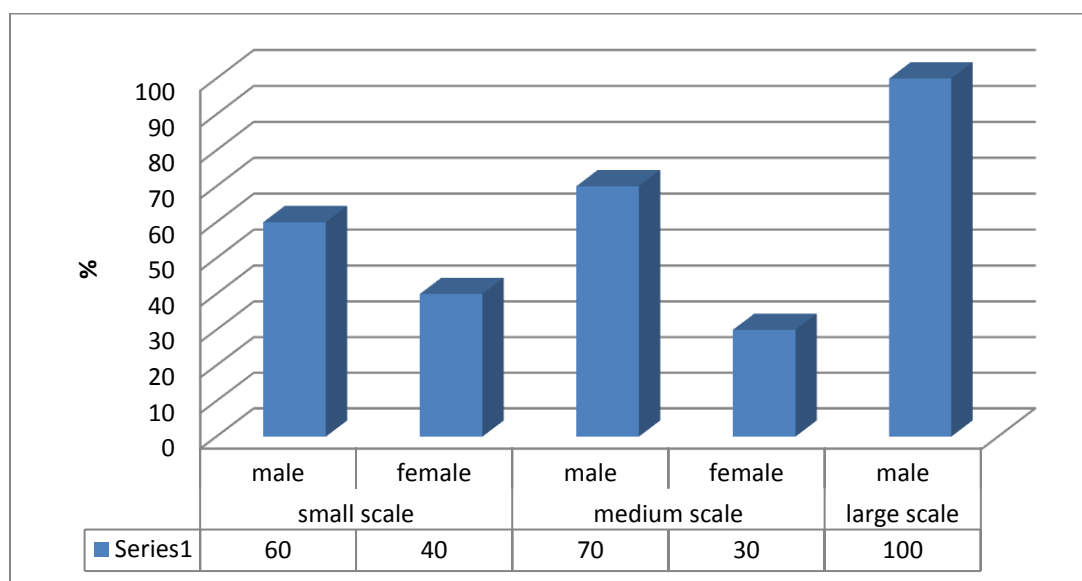


Figure 4.4 Sex of respondents

For the small and medium scale farmers majority of them (60%) and (70%) respectively were males whereas the minority for the same category was 40% and 30% respectively for females. On the other hand, the large scale farmers were all males.

Level of education of respondents

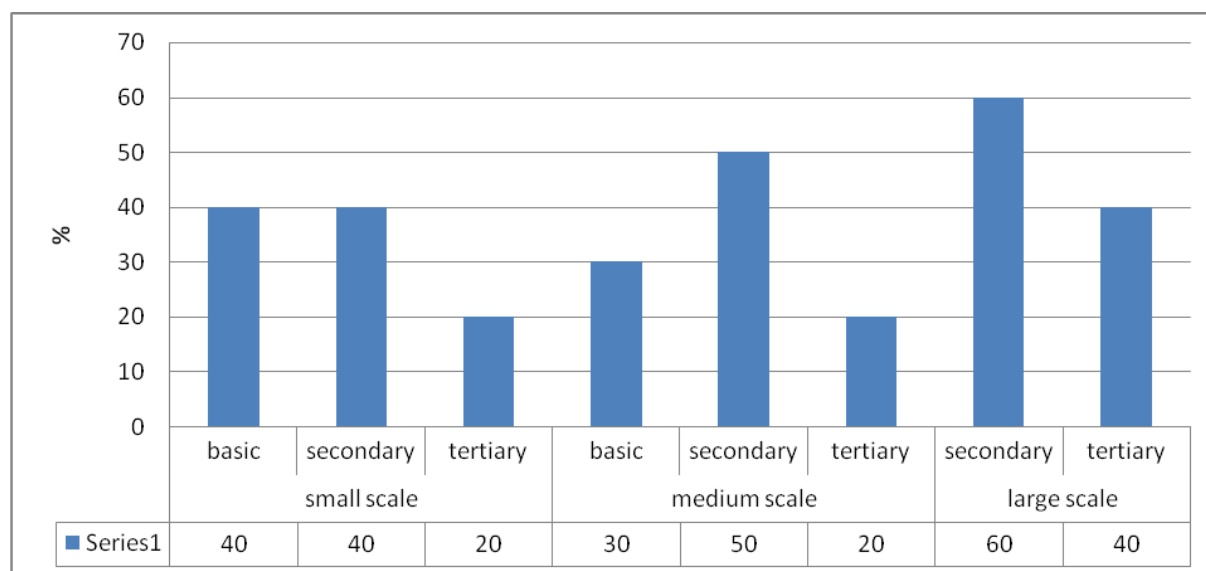


Figure 4.5 Educational background of respondents

For the small and medium scale farmers, each of the clusters had (20%) of the respondents having tertiary level education. The large scale farmers on the other hand had the highest proportion of respondents (60%) having secondary level education. Additionally, for the medium scale farmers half of the farmers (50%) had secondary level education as against 40% for the small scale.

Flock Size of the different clusters of Farmers

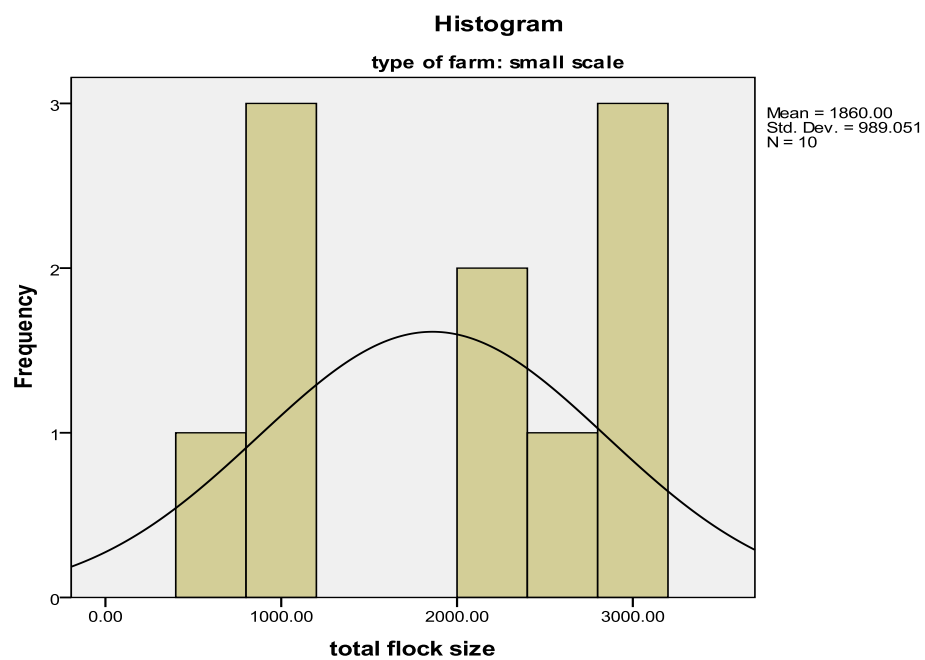


Figure 4.6 Average Flock size for Small Scale Farmers

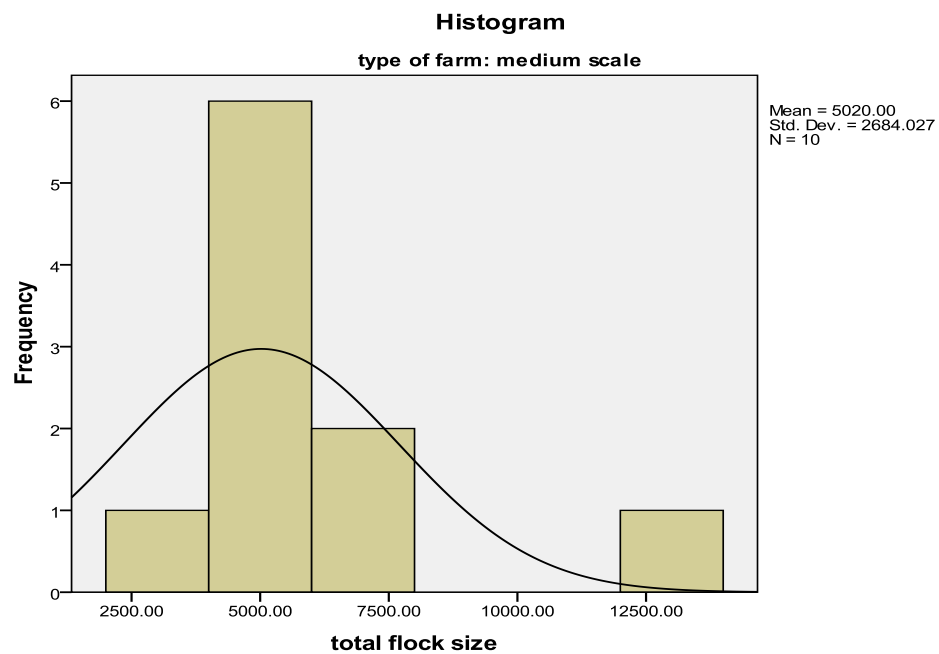


Figure 4.7 Average Flock size for Medium Scale Farmers

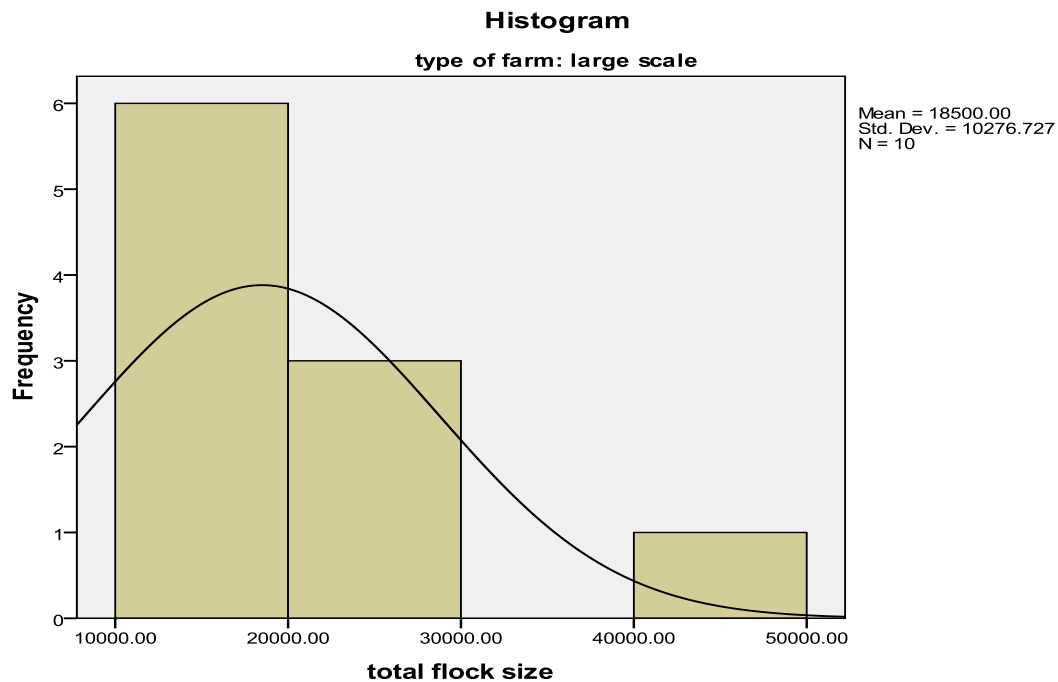


Figure 4.8 Average flock sizes of Large Scale Farmers

The large scale farmers had the highest average herd size (18,500) followed by the medium scale with a value of 5020. On the other hand the small scale farmers had a mean herd size of 1,860.

Number of batches of birds produced in a year

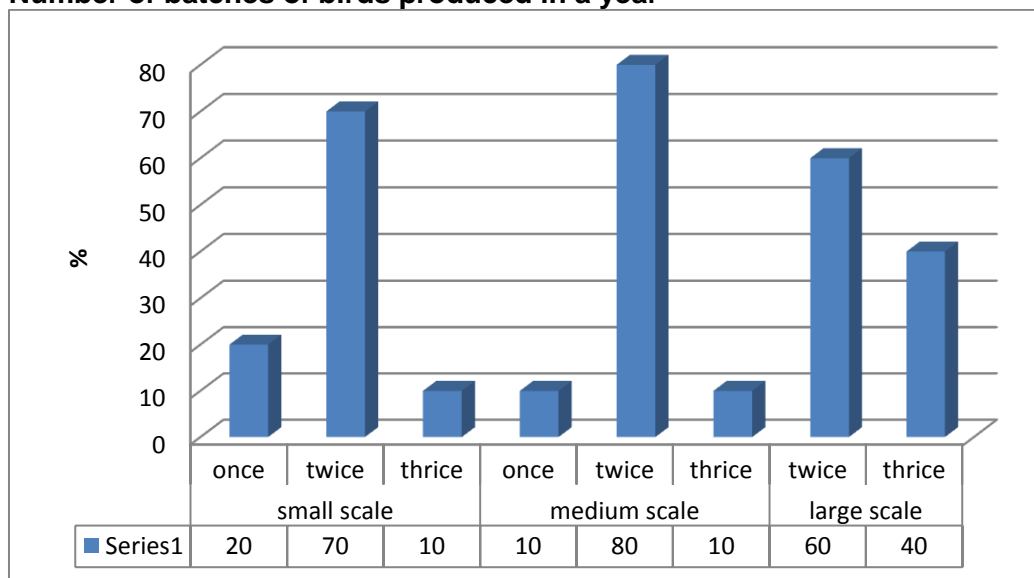


Figure 4.9 Number of batches produced in a year

The results for number of batches indicate that a higher proportion (70%) of the small, (80%) medium and large scale (60%) produce twice in a year. Only 10% each of the small and medium scale produce thrice in a year as against 40% of the large scale. Alternatively, a lower proportion of the small scale (20%) and the medium scale (10%) produce once in a year.

Table 4.7 Cross tabulation of whether the number of batches is the normal procedure

type of farm	is it the normal procedure always	number of batches			Total
		once	twice	thrice	
small scale	yes	2 (25,0%)	5 (62,5%)	1 (12,5%)	8 (100,0%)
	no	0 (0%)	2 (100,0%)	0 (0%)	2 (100,0%)
	Total	2 (20,0%)	7 (70,0%)	1 (10,0%)	10 (100,0%)
medium scale	yes	1 (10,0%)	8 (80,0%)	1 (10,0%)	10 (100,0%)
	Total	1 (10,0%)	8 (80,0%)	1 (10,0%)	10 (100,0%)
large scale	yes	-	6 (60,0%)	4 (40,0%)	10 (100,0%)
	Total	-	6 (60,0%)	4 (40,0%)	10 (100,0%)

Source: own research study

To find out if farmers produce the same number of batches per year, they were asked if that is the normal procedure always. For the response, all of the medium and large scale farmers answered yes whereas for the small scale, the majority (80%) answered yes as against a minority (20%) that answered no.

Table 4.8 Cross tabulation of source of day old chicks and whether they always buy from the same suppliers

type of farm	where do you buy day old chicks from	do you always buy from the same suppliers		Total
		yes	no	
small scale	local	1 (50,0%)	1 (50,0%)	2 (100,0%)
	imported	2 (100,0%)	0 (0%)	2 (100,0%)
	both	5 (83,3%)	1 (16,7%)	6 (100,0%)
	Total	8 (80,0%)	2 (20,0%)	10(100,0%)
medium scale	local	3 (75,0%)	1 (25,0%)	4 (100,0%)
	both	3 (50,0%)	3 (50,0%)	6 (100,0%)
	Total	6 (60,0%)	4 (40,0%)	10(100,0%)
large scale	local	1 (33,3%)	2 (66,7%)	3 (100,0%)
	imported	1 (50,0%)	1 (50,0%)	2 (100,0%)
	both	4(80,0%)	1 (20,0%)	5 (100,0%)
	Total	6 (60,0%)	4 (40,0%)	10 (100,0%)

Source: own research study

Majority (83%) of the small scale and (80%) large scale farmers said yes they always buy from both local and imported sources as against half (50%) of the medium scale. All the (100%) small scale farmers said yes they buy from the same imported sources as against half of the large scale. Additionally, majority (75%) of the medium scale farmers always buys from local sources.

Farmers source of feed for birds

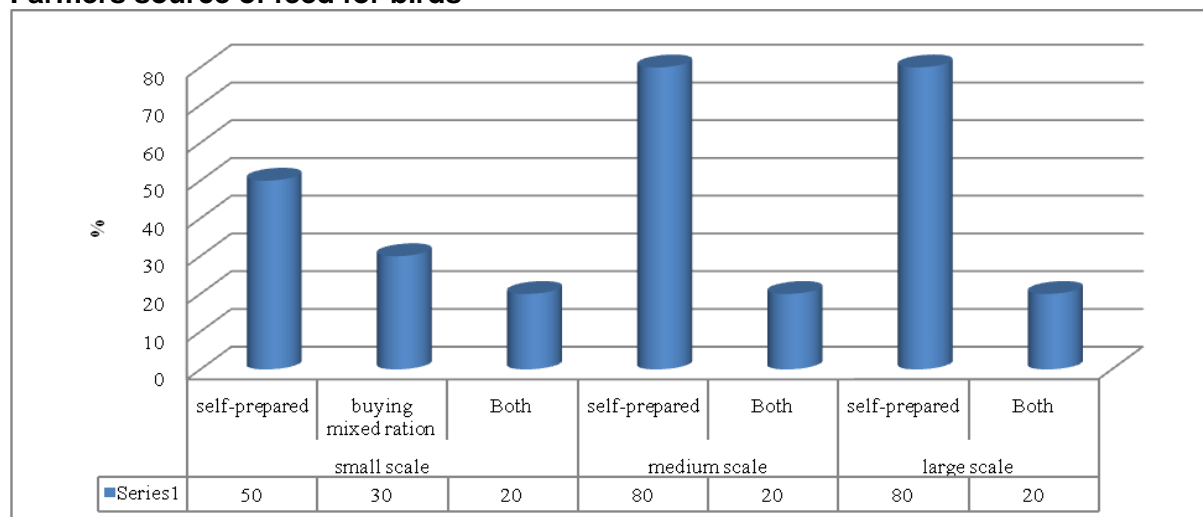


Figure 4.10 Farmers source of feed for birds

With regards to source of feed for small, medium and large scale farmers, a greater number, 50%, 80% and 80% respectively prepare their own feed. On the other hand, a lower proportion of all the different clusters of farms prepare their own feed and buy mixed ration as well. Overall, 70% of the respondents prepare their own feed while 10% buy mixed ration. Additionally, the study shows that 20% prepare their own feed as well as buy mixed ration.

4.3.2 Marketing practices undertaken by farmers

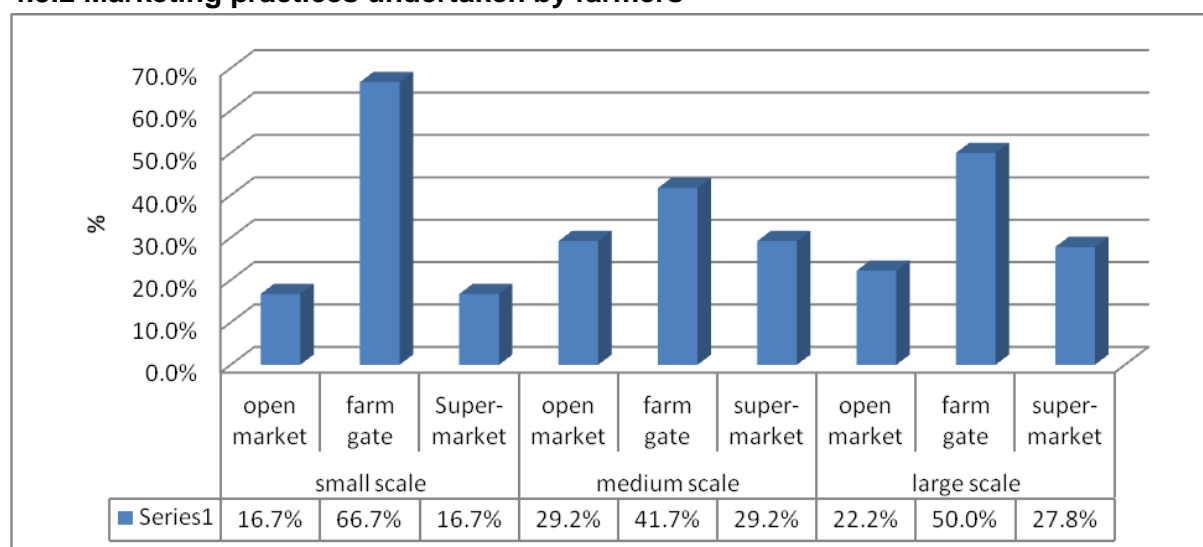


Figure 4.11 where respondents sell their birds

The results indicate that for all three clusters of small scale, medium scale and large scale a higher proportion of 66.7%, 41% and 50% respectively sell their birds at the farm gate. Only

few of them 16.7% for small scale, 29.2% for medium scale and 22.2% for large scale sell at the open market. Almost an equal number of farmers (29.2%) for the medium scale and 27% sell their birds to supermarkets.

Final customers for different categories of poultry farmers

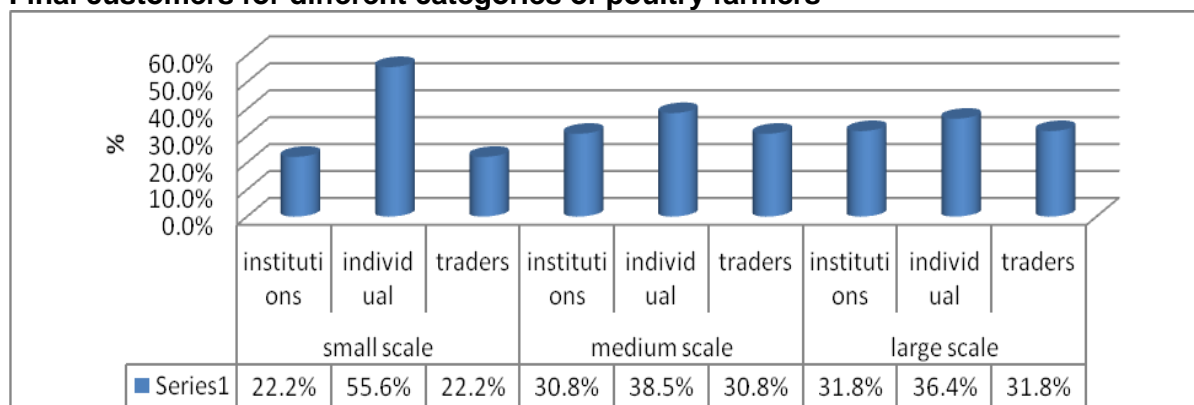


Figure 4.12 Final customers for different categories of poultry farmers

For all clusters of farms, a greater proportion (55.6%) for small scale, (38.5%) for medium scale, and (36.4%) for large scale sell their birds to individual buyers. Similarly, (22.2%) for small scale, (30.8%) for medium scale, and (31.8%) for large scale farmers sell to institutions. Almost an equal number of farmers; (30.8%) for medium scale and (31.8%) for large scale sell to traders.

Farmers' opinion on getting market for their birds

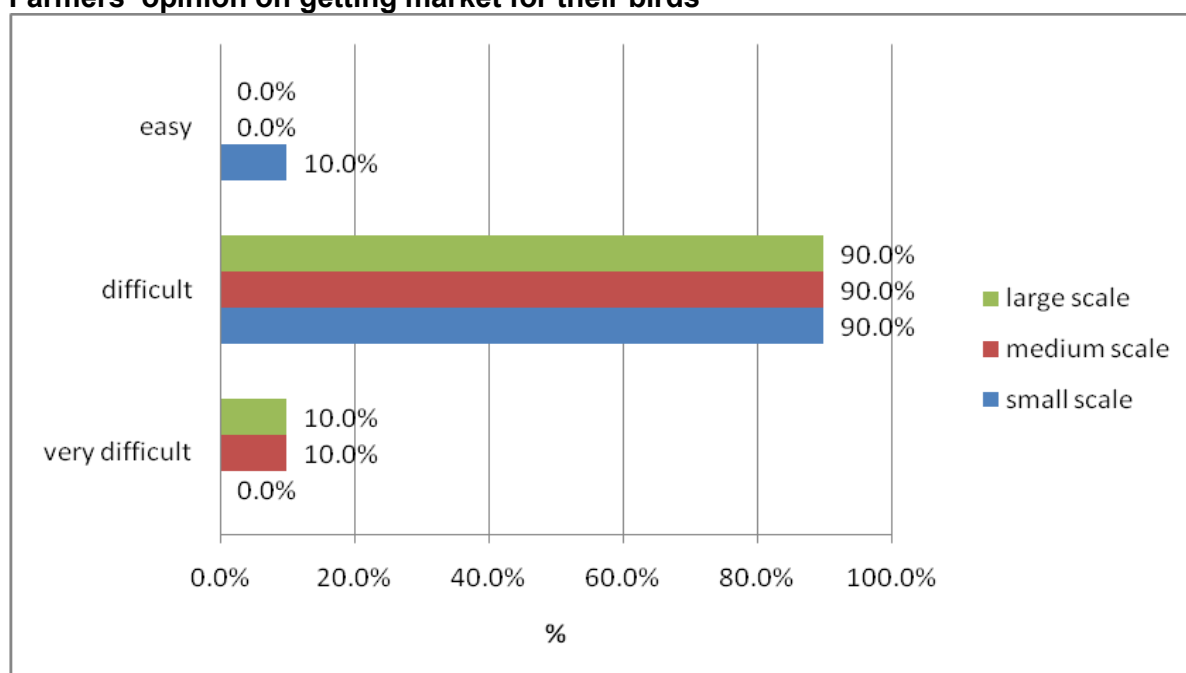


Figure 4.13 Farmers' opinion on marketing

Results from farmer's opinion about getting market for their birds revealed that for all the three clusters of farmers, a greater number (90%) find it difficult to market their birds as against only 10% of the small and medium scale that find it very difficult to get market for their birds. Alternatively, only 10% of the small scale farmers said they find it easy to market their.

The chi square results also shows that there is no significant relationship between the type of farm and farmers opinion about getting market for their birds $P > 0.05$ (0.558).

Table 4.9 Forms in which farmers sell their birds and places where they slaughter

type of farm	what form do you sell your birds	if dressed or special cuts where do you slaughter		Total
		on farm manually	n/a	
small scale	full dressed	1 (100.0%)	0 (0%)	1 (100.0%)
	Live	0 (0%)	9 (100.0%)	9 (100.0%)
	Total	1(10.0%)	9 (90.0%)	10 (100.0%)
medium scale	Live	-	10 (100.0)	10 (100.0%)
	Total		10 (100.0)	10 (100.0%)
large scale	Live	0 (0%)	8 (100.0%)	8 (100.0%)
	full dress and live	2 (100,0%)	0 (0,0%)	2 (100,0%)
	Total	2 (20,0%)	8 (80,0%)	10 (100,0%)

Source: own research study

For information on the forms in which farmers market their birds, farmers were asked if they sell their birds dressed, live or in the form of special cuts. Results revealed that the small and large scale farmers sell their birds either live or full dressed. On the other hand, all the medium scale farmers sell their birds live. For the small scale farmers that sell their birds full dressed all the farmers (100%) slaughter their birds on farm manually whilst for the small, medium, and large scale farmers that sell their birds live, all of them (100%) said the customer does the slaughtering.

Quality attributes of products desired by customers

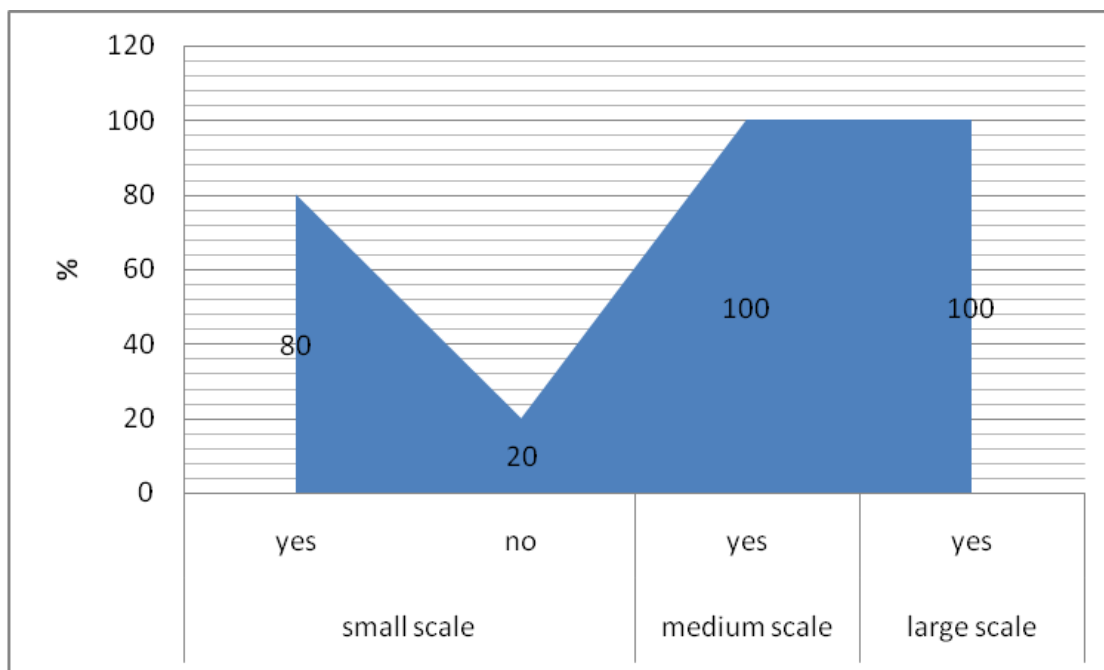


Figure 4.14 Quality attributes of products desired by customers

To find out if farmers knew the quality of birds their customers wanted, the question was posed to them. The results revealed that all (100%) the medium and large scale farmers answered yes. Whereas For the small scale farmers, majority (80, 0%) said yes as against the minority 20% that said no.

Type of sales promotions done by farmers

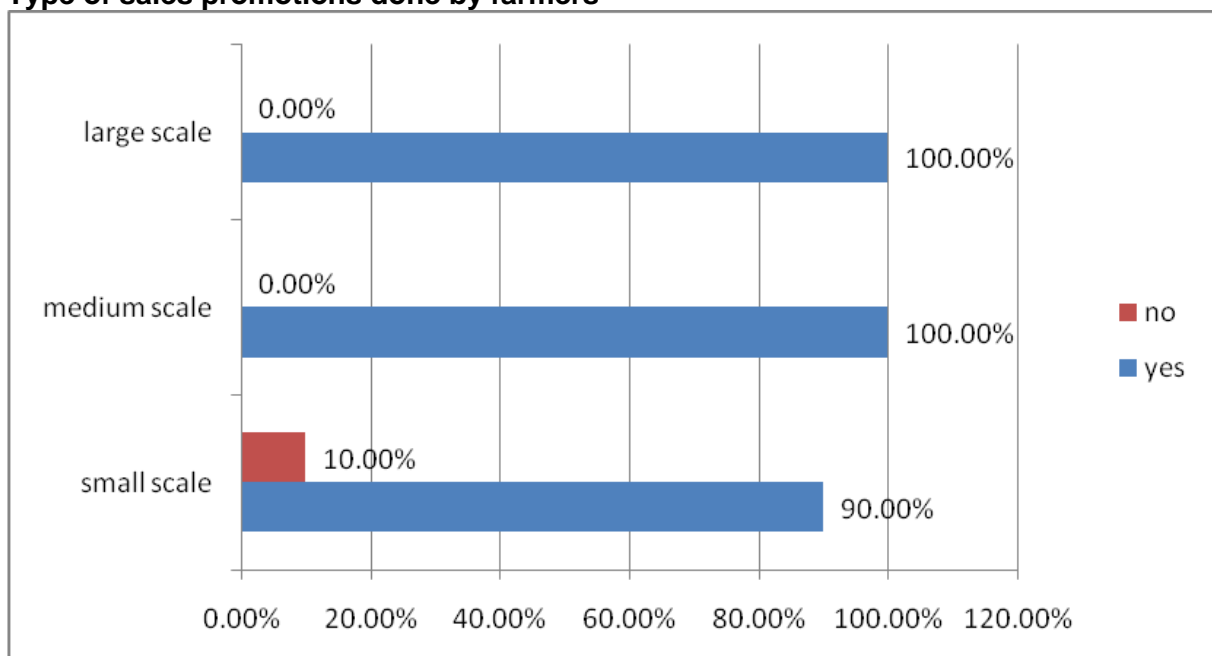


Figure 4.15 Sales promotions done by farmers

For the medium and large scale farmers, all (100%) of them said yes they promote sales of their products whereas for the small scale a majority of them (90%) said yes as against a few (10%.) that said no.

The chi-square result indicates that there is no significant difference between type of farm and whether the respondents promote sales of their products $P > 0.05$ (0.355).

Table 4.10 Type of promotion undertaken by farmers

which promotion types do you use	Responses	
	N*	Percent
Signboards	29	93,5%
radio and TV adverts	2	6,5%
Total	31	100,0%

* denotes number of responses (multiple responses)

Source: own research study

When asked of the type of promotion that farmers carry out, majority (93%) of them said they used sign boards as against a few (6.5%) said they use radio and TV adverts. For the medium scale

4.3.3 Membership and services obtained from farmer Association

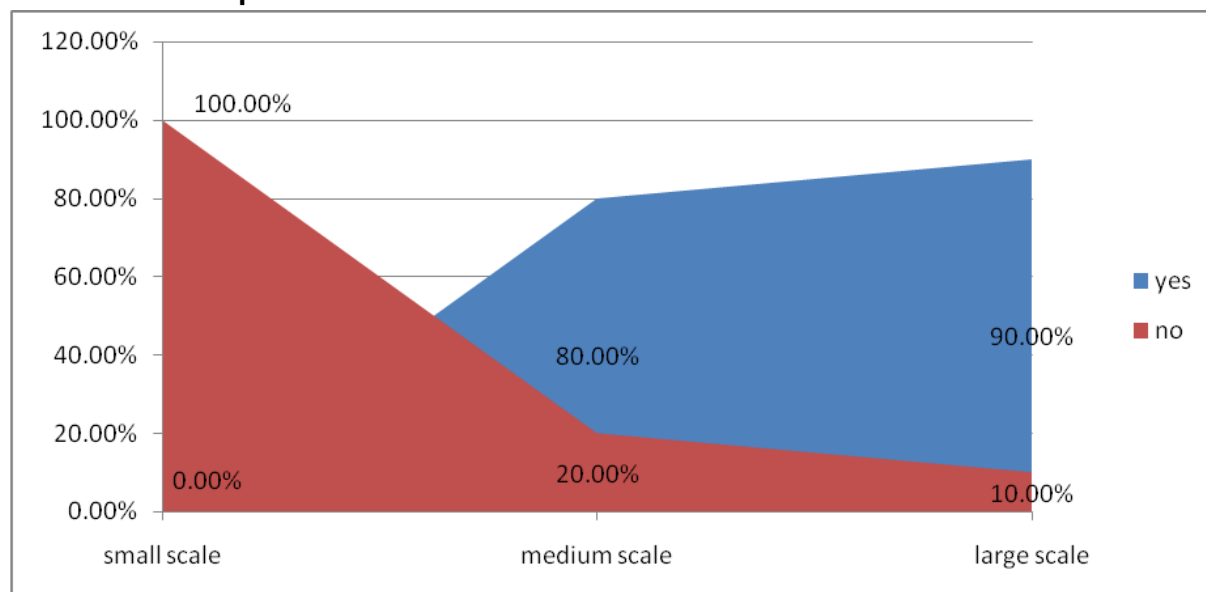


Figure 4.16 Farmers who are members of an Association

None of the small scale farmers interviewed belong to a farmers' Association, on the other hand a greater majority of the large (90%) and medium scale (80%) farmers belong to an Association.

The chi square outcome also attests to the fact that there is a significant difference between the type of farm and their membership of associations.

Services obtained from the Farmers Association

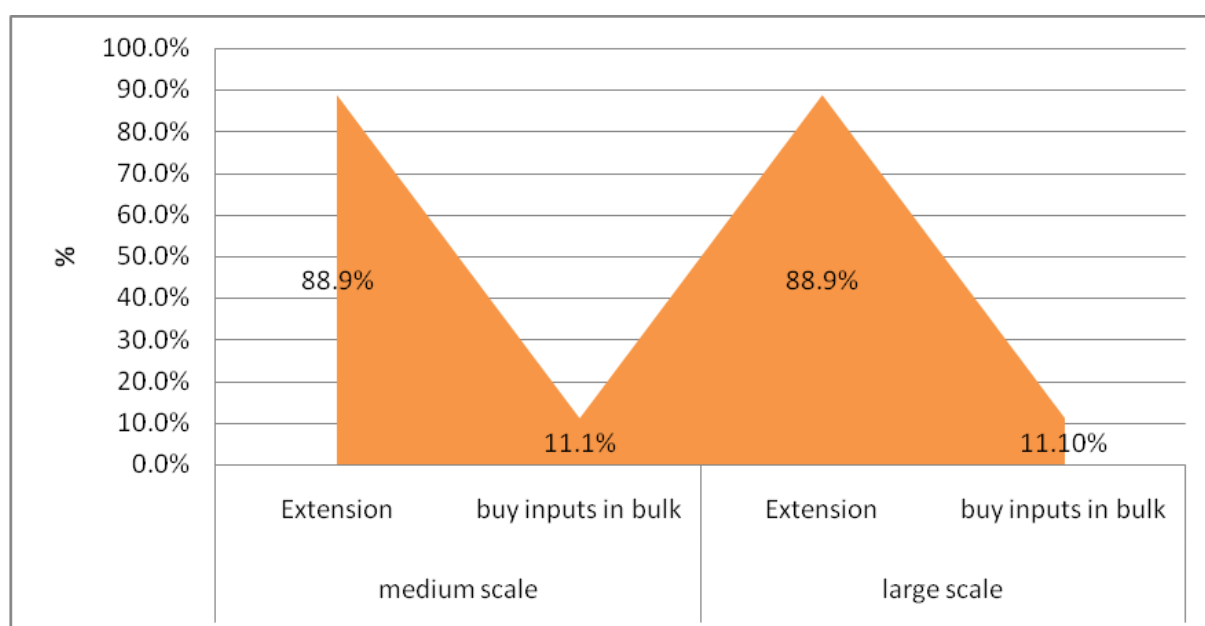


Figure 4.17 Services obtained from the Farmers Association for both the medium and large scale farmers, a greater majority (88.9%) of them said they get extension advice from the farmer association as against a smaller proportion 11.1% that buy inputs in bulk.

4.3.4 Quality Management Practices on farms visited

Results on quality were based on an informal discussion with the farmers and observations. There is no formal quality management standards by which the farmers and retailers are expected to operate however in order to ensure good quality meat from the live birds; the farmers undertake the following measures:

Drugs: There is a week's withdrawal period for drugs prior to sales. This is to reduce drug residue in the meat to the barest minimum. Drugs are also administered according to the right dose. However, most farmers did not keep records on drugs administered.

Feed and water: This is formulated from ingredients that are not contaminated and stored in well ventilated rooms to prevent spoilage. Feed is provided ad libitum together with water and the quantity given depends on the stage of growth of the bird.

Housing: Birds were housed permanently in well ventilated pens; farmers revealed that the bedding in the pens was changed regularly to avoid the buildup of ammonia in the pen. Similarly, waterers were placed above the ground to avoid spillage into the saw dust.

Waste management: Sawdust removed from the pen was bagged in sacks and placed outside under sheds. Farmers stated that the waste was disposed of by waste disposal companies upon their request for a fee.

Biosecurity measures: Pens are cleaned and disinfected after each batch; footbaths containing disinfectants were also observed in front of most pens. Visitors are strictly not allowed into the pens.

Quality Management of retailers: With regards to the retailers who slaughtered in the open market for their customers, the level of quality management was low. The water used to de

feather the birds was very dirty and dressed birds were left in the open for flies to settle on it. Similarly, the feathers were left nearby on a table with flies hovering around it.

Table 4.11 Summary of Costs for different clusters of farmers

Item	Small scale	Medium	Large
Output (No. of birds)	1,767	4,484	16,910
Number of cycles	2	2	2
Unit price (GH¢)	16.80	14,80	14,40
Total Revenue (GH¢)	59.371,20	132.726,40	487.008,00
Expenses			
Variable cost			
Total cost of chicken	2.780,00	7.102,00	27.680,00
• Feed ((GH¢-bags)	9.236,40	23.334,00	86.420,80
• Health (GH¢) (e.g.) Drugs	461,82	1.166,70	4.321,04
• Utilities (GH¢)	461,82	1.092,20	3.390,60
• Miscellaneous (GH¢)	2812,67	6647,77	34971,89
Total variable cost	15752,71	39342,67	156784,33
Fixed cost (depreciated)			
Housing and Equipments (GH¢)	3.553,00	5.579,00	7.760,00
Labour cost (GH¢)	623,33	1294,00	3095,00
Total fixed cost (GH¢)	4.176,33	6.873,00	10.855,00
Total cost (GH¢)	19.929,04	46.215,67	167.639,33
Profit (GH¢)	39.442,16	86.510,74	319.368,67
Gross margin (GH¢)	43.618,49	93.383,74	330.223,67
Benefit-cost analysis	2,98	2,87	2,91
Cost Price	11.3	10.3	9.91
Cost Per kilo (dressed)	9.3	8.2	8.0

Source: own research study

The results for the cost summaries show that the small scale farmers had the highest cost price (Gh¢11.3) and selling price (Gh¢16.8). The large scale farmer on the other hand had the lowest cost price (Gh¢9.91 and selling price (Gh¢14.4). Benefit cost analysis for each of the three clusters of farmers was greater than 1.

4.3.5 Constraints faced by famers according to responses

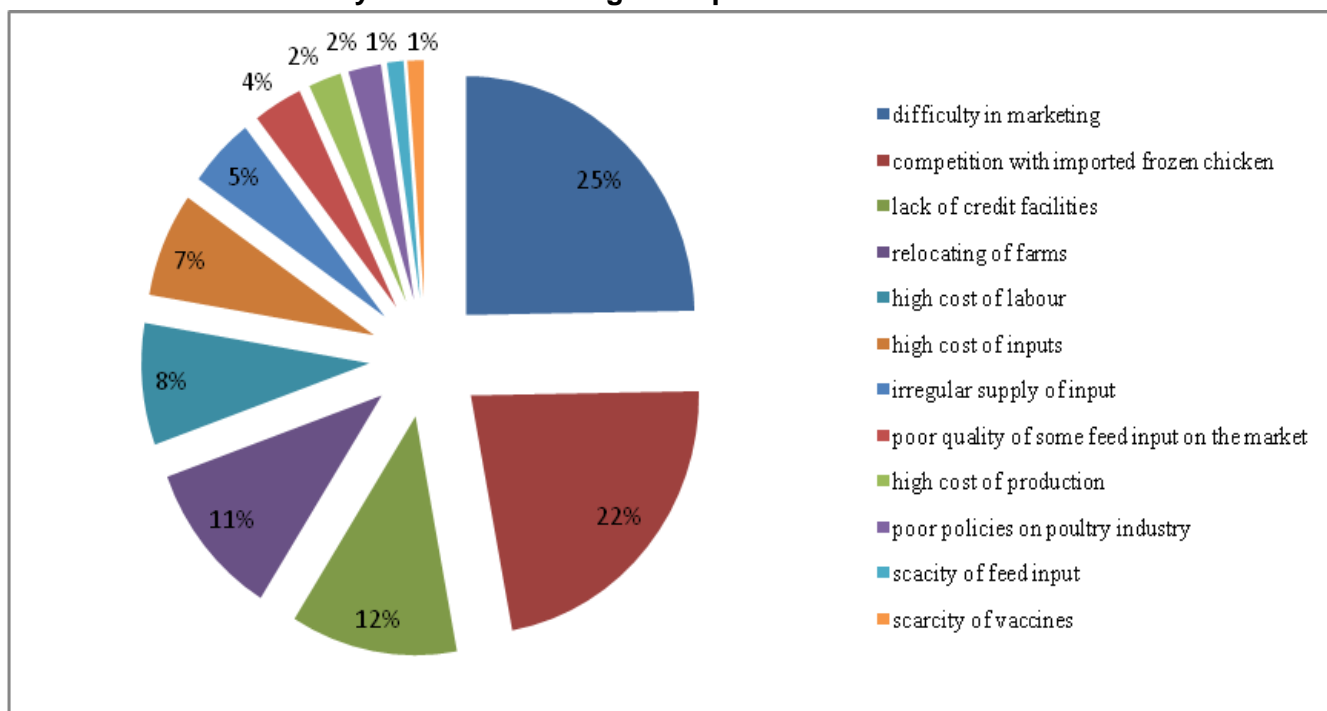


Figure 4.18 Constraints faced by famers according to responses

Farmers were asked to enumerate possible constraints that they face as an industry. Majority of the responses (27.6%) was difficulty in marketing, followed by (25%) competition with imported poultry products. A relatively lesser proportion stated lack of credit facilities (13.2%)

4.3.6 Strategies for improved marketing

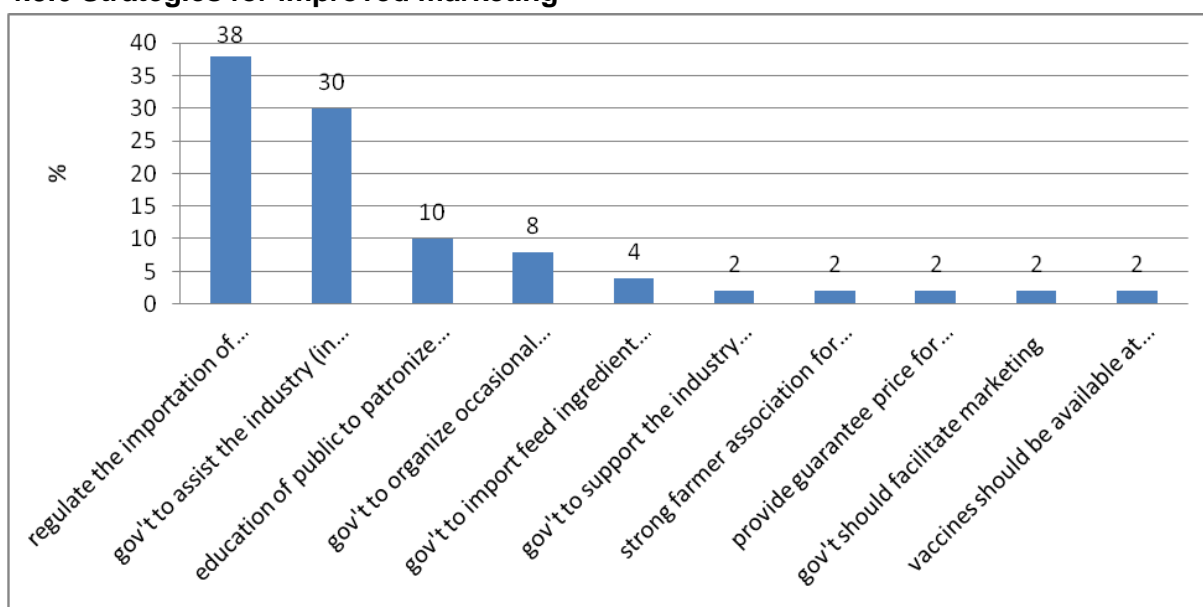


Figure 4.19 Strategies to improve marketing

For possible strategies that can be used to improve marketing, the majority of the responses (38%) and (30%) respectively was that government should regulate the importation of frozen chicken and assist the industry in production, processing, marketing.

CHAPTER FIVE: DYNAMICS OF THE BROILER VALUE CHAIN IN ACCRA

This chapter compares the results obtained from the survey with different categories of farmers as well as the case study with other stakeholders in the broiler value chain with information reviewed in literature and presents interpretation on any similarities or differences.

5.1 Broiler production systems

The type of poultry production systems found in the region according to the survey include: small scale, medium scale and large scale farmers all practicing intensive system of production. The small scale farmers had a farm size of 1000-2000 birds, whilst the medium scale had 2000 - 5000 birds and the large scale farmers had over 5000 birds. The stock numbers for all clusters of farmers was not in line with production systems characterized by (Anning, 2006), a FAO study that categorized small scale as farmers having 50-5000 birds, medium scale farmers as having between 5000 – 10000 birds and large scale farmers as having over 10000 birds. This is because the broiler industry is currently experiencing a decline with only a few farmers in production, most farmers have folded up or shifted to layer production. With respect to systems of production, all the different categories of farmers kept their birds solely indoors and practiced a certain level of biosecurity measures; this is in line with studies by Anning (2006).

5.1.1 Number of batches produced in a year

This study revealed that a higher percentage of all three categories of farmers produce twice in a year probably during festive occasions like Christmas, Easter and Ramadan. Implications for this are that there might not be continuous supply of birds throughout the year. However, a greater proportion of the large scale farmers also produced thrice in a year. This might be due to the fact that apart from selling at the open market, an appreciable number of them also sold at the supermarket and farm gate. Most (all the small and medium scale) and 80% of the large scale) of the different clusters of farmers also said they always produced the same number of batches every year. This result is consistent with earlier studies by Okantah, et al. (2003) which revealed that farmers produce to enable marketing to coincide on festive occasions like Christmas and Ramadan.

5.1.2 Age of farmers

The results on mean ages of the different clusters of farmers indicate that the large scale farmers were the oldest and this might affect continuity of production in the near future. Another contributory factor is that the large scale farmers might have been in the business for long and gained experience in managing larger stocks. The small scale farmers on the other hand were the youngest probably because they had not stayed that much long in the business.

5.1.3 Sex of farmers

The small scale farmers had the highest proportion of females compared to the medium scale farmers probably because of their small farm size; it does not need a lot of initial investment capital since farmers use relatively cheaper material to construct the housing, and manual equipment in production. This confirms findings of Mamudu, et al. (2009) which suggests that about 44% of the credit portfolio of rural banks in Ghana goes to women and the remaining 56% goes to men. Education, application procedures, access to land, income level, and farm size, membership to economic associations, savings, and type of farm, interest rate and distance from banks are all factors that influence women farmers' access to credit. The large scale farmers on the other hand were all males due to the capital intensive

nature of that category of farmers. Since men relatively had better access to credit, more males were able to invest in it.

5.1.4 Educational background of farmers

With regards to educational background, the large scale farmers were the most highly educated and had the highest level of secondary and tertiary education compared to the medium and small scale farmers. The reason for this trend might be that they need to have built a higher capacity to be able to manage such large stock effectively since it requires a high level of managerial and technical skills. This result is consistent with previous studies by Kilpatrick (1998) who found out that education and training enhances farmer's ability and willingness to make successful changes to their management practices.

5.2 Farmers' source of inputs

5.2.1 Supply of day old chicks

The results for source of day old chicks for farmers indicate that all three clusters of farmers buy day old chicks from imported sources, though a lower proportion of both clusters in addition to medium scale buy from local sources. This implies that imports are a major source of supply of day old chicks for farmers. The reason is because most local hatcheries have stopped operation, operating below capacity or producing low quality day old chicks. This is in line with studies by Anning (2006) who indicated that most hatcheries produce below capacity on account of low demand. Only few maintain their own parent stock, the rest rely on imported fertile eggs.

5.2.2 Supply of Feed

Majority of the different clusters of farmers prepare their own feed and buy mixed ration as well in the form of concentrates to enrich the ration. This is because from experience with working with farmers it is cheaper to formulate one's own feed as against buying from feed retail outlets. This result confirms the findings of Okantah, et al. (2008) which revealed that home mixing is more frequently found with farms in Accra.

5.3 Governance Regimes in the Chain

5.3.1 Linkages in the chain

Since the majority of the different clusters of farmers always buy from the same suppliers of feed and day old chicks it suggest that there are good linkages between the farmers and their input suppliers probably due to benefits like good services or credit facilities they get. Farmers on the other hand are not well organized and carry out marketing individually. KIT et al. (2006) describes this type of credit facility as trade credit and explains that it ensures smooth flow of products, keeps the chain running and maintains long term relationships between trusted business partners. On the other hand, farmers did not always sell to the same traders; however there was mutual respect and trust between farmers, traders and individual customers through transparency of information flow on prices and quantity of products.

5.3.2 Coordinator of the chain

Information gathered from the chain suggests that both farmers and traders were instrumental in selling to consumers however, farmers sold more birds to individuals at the farm gate than traders though the traders provided an important link between the farmers and the consumers. Hence the farmers are the coordinators of the chain because they organize their input supply and marketing themselves. The chain is production oriented and not market driven because they don't produce to target a particular market or customer segment based on specific qualities but rather produce and look for market after production.

5.4 Membership and Services obtained from farmers Association

With regards to the different clusters of farmers' and membership of associations, the results show that majority of the medium and large scale farmers are members of associations whereas none of the small scale farmers belonged to a farmer association. The difference may be attributed to the fact that the small scale farmers rely directly on business relationships with other actors in the chain from which they may obtain certain services like credit facilities that explains why they are not members of associations. This result is similar to studies by KIT and IRR (2010) which explained that most smallholder farmers depend on input suppliers, traders, transporters for finance and market access. Banks are mostly reluctant to finance small scale producers in general and more specifically perishable products because of high risks involved. This is also consistent with findings by Lazarinni et al. (2001); Coleman (1990); Uzzi (1997) which states that the embeddedness of small scale producers in a network of social relationships can provide them with social capital to support their vertical (business relationships.) Alternatively, the reason why the large and medium scale farmers joined associations is to team up with their colleagues, obtain economics of scale, support one another to strengthen skills and technologies as well as gain access to finance and inputs. KIT and IRR (2010)

Majority of the different clusters of farmers said they obtain extension advice from the farmer association as against only a few who said they benefit from their associations through buying inputs in bulk. None of the farmers mentioned their associations support them to market as a group or plan their production cycle. The type of services mentioned by farmers is similar to functions the Secretary of the National Poultry Farmers Association enumerated with the exception of advocacy which is done at the national level.

5.5 Product Quality Attributes and Quality Management

5.5.1 Quality Attributes of different products in the chain

For forms in which farmers sell their birds, the main products in the chain that the study identified are: all the medium scale farmers sold their birds live that explained why they sold mainly to individuals and traders at the farm gate. This can be attributed to the fact that some individuals preferred to buy live birds for domestic consumption in order to slaughter on their own since they cannot be sure about the quality of dressed birds on the market. For both the small and large scale farmers that sell their birds dressed or live, slaughtering was done by the customer or the farmer on farm manually. There was however one large scale farmer who had slaughtering facilities to process his birds. This is in line with findings of Killerew and Plotnick (2010) that states that domestically raised birds are sold live or as processed whole birds.

The retailers also sold the birds live or full dressed due to the same reasons given above. Imported poultry products are presented in special cuts because it comes from countries like the EU, US, and Brazil where they have developed infrastructure with slaughtering /processing companies providing business support services to farmers.

5.5.2 Quality Attributes of products desired by consumers

This study also revealed that majority of the different clusters of farmers was aware of the quality of chicken desired by consumers. This may be probably because they knew customers preferred the chicken in processed form since demand for frozen chicken which is sold in cut portions has shot up drastically. However they are not processing to meet consumer requirement because with the exception of a few large scale farmers, there are virtually no specialized slaughtering points for poultry where farmers can take their birds for

slaughter. High electricity costs for processing and storage also constraints the process Killebrew and Plotnick (2010).

5.5.3 Quality Management in the Chain

Most farmers were using Good Husbandry Practices that ensured total quality management on the farms though there was no official farm quality standard by which the farmers had to operate. These practices are in line with the pillars of Good Agricultural Practices for poultry which are animal welfare, feed and water and vaccination and drugs, housing, cleaning and disinfection, good stockman ship and environmental management. Areas that may be lacking are record keeping since farmers found it difficult to provide exact information on production/economic parameters. The reason for the relatively good performance on quality may be due to information obtained from livestock specialists, veterinary officers as well as farmers associations. On the other hand, quality management practices carried out by the retailers was relatively low because it was an unauthorized slaughter slab; neither veterinary officers nor officials from the Food and Drugs Board inspect the carcass for wholesomeness of the meat or the premises for hygienic practices.

5.6 Marketing Practices undertaken by farmers.

5.6.1 Final customers for farmers

Results for all three clusters of farmers indicate that majority of farmers sell their birds at the farm gate whilst a relatively lower number sell to the supermarket. Their final customers were mostly individual consumers and traders. The results confirm findings of Killebrew and Plotnick (2010) who reported that most farmers sell their birds to traders or individuals at the farm gate. The relatively low numbers that sold to supermarket may be because the birds need to be slaughtered and dressed which might mean extra work for farmers to slaughter manually since there are virtually nonexistent slaughtering facilities for poultry. Another factor may be relatively high quality standards required by the supermarkets.

5.6.2 Type of sales promotion carried out by farmers and retailers.

The results for sales promotion carried out by farmers revealed that majority of all the three clusters of farmers use signboards as a way of advertising market for their birds. For the type of sales promotion commonly carried out, majority of the small and medium scale farmers used signboards as compared to a few large scale farmers that used radio and TV. The reason for this may be because TV and radio adverts are more expensive compared to signboards. Additionally, there was no significant difference between the type of farm and the type of promotion carried out by farmers. This implies that most farmers use basically the same type of promotions irrespective of their farm size.

Similarly comparing the type of promotions done by retailers of live local birds and imported frozen chicken, those retailing frozen chicken had varied ways of promoting their business through signboards, discounts and cooking contest on TV. They were able to do these promotions probably due to sponsorship from the importers. On the contrary the retailers of live/local birds did not have any sign boards, they only used discounts perhaps because they have been selling there for the past 20 years, and they presume their customers are aware of their activities.

5.7 Cost Parameters of different products

5.7.1 Cost summaries of different clusters of farmers

The small scale farmers were not members of farmer associations to benefit from buying inputs in bulk that explains why they had the highest cost price. They also sold at the highest price because they had the lowest number of stock and hence found it much easier selling since they sold most of their birds at the farm gate to individual customers and traders. The

large scale farmers on the other hand were members of farmers associations and benefited from buying inputs in bulk hence their relatively lower cost price in addition to the advantage of economies of scale. Their selling price was also the lowest because they sold majority of their stock in bulk. Benefit cost ratio for all three clusters was greater than one meaning broiler production is a profitable business.

5.7.2 Comparison between selling price per kilo of local products and imports

Information gathered from the interview revealed that the selling price per kilo of frozen imported chicken was Gh¢ 5 whereas the selling price for a kilo of dressed bird of 1.8kg was on average Gh ¢8.5. Obviously the cost of the dressed local chicken is almost twice that of the imported frozen chicken confirming the words of the secretary of the poultry farmers' association that the imports are 50% cheaper than local broilers.

5.8 Constraints faced by farmers in production and marketing

5.8.1 Farmer's Perception about getting market for their birds

Information gathered from the survey suggests that generally, farmers find it difficult to get market for their birds. This is similar to findings by Okantah el. (2003), also there was no significant difference between the type of farm and farmer's perception about getting market for their birds.

5.8.2 Common constraints that affect marketing

The study revealed the common constraints faced by farmers. The highest response which farmers gave was difficulty in marketing followed by competition from imported poultry products. This result confirms the problem statement and objectives of my research study and the problem enumerated by the secretary of the poultry farmers association as well as the Director of the Animal Production Directorate during the interviews. The problem of difficulty in marketing can be attributed mainly to the high cost of production and unfair competition from imported poultry products which are almost 50% cheaper than the local products Anning (2006) this has forced most farmers to stop production. Another factor is because generally, farmers produce before they look for market hence sales do not go very fast.

5.9 Farmer's opinion on possible strategies to improve marketing

The results on possible market oriented strategies for chain development showed that the highest response given was the regulation of importation of frozen chicken. This can be attributed to the fact that farmers are aware that their products have to compete for market with frozen meat which is relatively cheaper. The other response that appeared most was support from government in production, processing and marketing which is also remarkable because farmers are thinking of transforming their produce in order to increase their market share. The above views of farmers are targeted towards support from chain facilitators, it is interesting to note that there are strategies that farmers can also adopt to improve their position in the chain. This include joining forces with other farmers to market as a group, producing for a particular market , rather than trying to sell what you have already produced, as well as producing products that have quality attributes which the consumer demands. This may involve processing into special cuts as a farmer organization or as individual farmer. Linkages between the farmers, farmer organization, traders and supporters also need to be strengthened in order for all actors to work towards a common goal. The activities of farmers also need to be coordinated in terms of regular production cycles for continuous availability of the local products throughout the year. This can be done through continuous communication between chain actors.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

The first part of this chapter draws conclusions for the study based on discussion of the findings from desk research, case study and survey with key stakeholders. The second part gives necessary value chain oriented recommendations that will lead to improved income for farmers in the chain.

6.1 Conclusions

All three categories of farmers used intensive system of production and their activities were production driven. Production cycles on the other hand were not well organized with majority (70%, 80% and 60% respectively) of the small, medium and large scale farmers, producing only twice in a year. Only 40% of the large scale farmers, produced thrice in a year. This can have an effect on the availability of birds throughout the year.

The large scale farmers were the oldest and this may affect continuity of the business in the near future. They were also the most highly educated and predominantly males whereas the small scale farmers were the youngest and had the highest number of females.

Majority (90%) of the large and (80%) medium scale farmers were members of farmer associations and benefited from services like extension advice as well as buying inputs in bulk. This reflected in a low cost price. On the other hand, none of the small scale farmers were members of farmer associations relying mainly on business relationships with input suppliers or traders.

For all three clusters, the farmer was the coordinator in the chain organizing both inputs and sales. Linkages between the farmers and their input suppliers were stronger than linkages between the farmers and the traders.

Farmers mostly looked for market after production and the main market channels for the small, medium and large scale farmers are the open market (16.7%, 29.2% and 22.2%), the farm gate (66.7%, 41% and 50%) and the supermarket (16.7%, 29.2% and 27.8%). Their final customers were mostly individual traders and institutions.

Statistics on the number of actors in the various segments in the region were not readily available hence they were not quantified in the study. Record keeping on farm business management for the different clusters of farmers was unsatisfactory hence farmers gave estimates that were used to compute the costs price.

The product quality attributes for the farmers were mostly live or full dressed bird whilst that for the imported chicken was presented in special cuts. Slaughtering was done manually by both farmers and retailers. This is because there were virtually no slaughtering/processing facilities for poultry.

Though there was no formal quality management system by which the farmers were expected to operate they used Good Agricultural Practices which assures the quality of the meat produced. On the other hand, the retailers that slaughtered live birds at the market had poor quality management practices.

The small scale farmers had the highest cost price (Gh¢11.3) and selling price (Gh¢16.8) whereas the large scale farmers had the lowest cost price (Gh¢9.91) and selling price (¢14.4). Also, the selling price per kilo of frozen imported chicken was Gh¢ 5 per kilo whereas the selling price for a kilo of dressed bird of 1.8kg was on average Gh ¢8.5.

According to the farmers, the major problems that constrained their marketing activities were difficulty in marketing due to slow nature of sales. This is because farmers mostly looked for market after production and competition from imported poultry products since they are cheaper. Farmers suggested that government should regulate the importation of frozen chicken and support the sector in production, processing and marketing.

6.2 Recommendations

The study identified a number of weakness and threats which will hinder the successful development of the chain in the light of its strengths and opportunities. In order to overcome these challenges and contribute to an improvement in marketing, the following recommendations need to be considered.

- For there to be improved chain coordination between farmers, the Ghana National Poultry Farmers Association can consider restructuring their activities to form broiler farmer associations at district and regional levels. Together, farmers can plan their production cycles and make available larger volumes of birds throughout the year. New services like market information, input supply, marketing, access to finance to invest into technologies, training in agribusiness management and negotiation skills can be offered. This will improve their competitive position and make marketing more efficient.
- Farmers can also consider vertical integration of their activities through processing into cut portions. This will add value to the local product and improve its quality attributes thereby creating a niche market. To promote local consumption of such products, the association can also create public awareness on the taste and quality of local broilers through the print and electronic media.
- The Directorate in conjunction with the farmer association can encourage private companies and individuals to invest into specialized slaughtering / processing points for poultry which farmers can use at a fee.
- To guarantee safety of meat for the final consumer, farmers and retailers in the chain can consider quality management through an integrated approach from production through slaughtering to retailing. In order to achieve this livestock specialist can facilitate the development of a quality manual for use at farm level whilst the veterinary officers concentrate on good hygienic practices for slaughtering at farmer and retailer level.
- The Directorate can facilitate occasional seminars, workshops, and fora aimed at bringing all actors together to share a common vision, enhance information flow, strengthen linkages and create mutual understanding through respect for roles and needs of other chain actors.
- In order to provide reliable statistics on the actors in the broiler value chain which will provide a basis for planning activities for the region, the Regional Development officer and livestock specialist for the various districts can conduct a census to quantify all actors.

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Appendices

Appendix 1 questionnaire for survey with small scale broiler farmers

General Information

1. (a) Name (b) Gender (M) (F)
(c) Age (e) Location..... (d) Educational level.....
2. What is the size of your flock?
3. How many batches do you produce in a year?
(a) Once (b) Twice (c) Thrice (d) Four Times
4. Is it the normal procedure always?
(a) Yes (b) No
5. Where do you buy your day old chicks from?
(a) Local source (b) Imported (c) Both
6. If local from where?
7. What is your source of feed?
(a) Self-prepared (b) Buying mixed ration (c) Both
8. Do you always buy from the same suppliers?
(a) Yes (b) No
9. What costs do you incur per batch?

Item	No.	Unit Cost	No of Cycles	Total cost Gh¢
Day old chicks				
Housing and Equipment				
Feed				
Health 5% Feed cost				
Utilities				
Labour - labourer				
Manager				
Subtotal				
Miscellaneous				
Total Cost				

10. What revenue do you get from the sale of birds

Item	No.	Unit Cost	No of Cycles	Total cost Gh¢
Gross Output				
Transport/ Marketing				
Gross output				

10. What do you think of the price of day old chick?
(a) Very Expensive (b) Expensive (c) Cheap (d) Very Cheap
11. Where do you sell your birds?
(a) Open market (b) Farm gate (c) Supermarket (d) All of the above
12. Who are your final customers for the point of sale stated above?
(a) Institutional buyers (b) Individual buyers (c) Traders (d) All of the above
13. Do you always sell to the same customers?
(a) Yes (b) No
14. If yes is there a contract between you and your customers?
(a) Yes (b) No

15. What do you think about getting market for your birds?
(a) Very difficult (b) Difficult (c) Easy (d) Very Easy
16. What form do you sell your birds?
(a) Full dressed (b) Special cuts (c) Live
17. If dressed or special cuts where do you slaughter?
(a) On farm manually (b) Abattoir for poultry
18. If live who does the slaughtering?
(a) Customer (b) Abattoir
19. Are you aware of the quality (live, dressed, special cuts) of products consumers want?
(a) Yes (b) No
20. What kind of vehicle do you use to transport birds?
(a) Public bus (b) Own private car (b) Specialised transport for poultry
21. Do you promote sales of your products?
(a) Yes (b) No
22. If yes which of the following types do you use?
(a) Sign boards (b) Radio and TV adverts (c) Internet (d) Exhibition/Fairs
23. What services do you get from the supporters?
(a) Credit facilities (b) Market Information (c) Husbandry practices (d) None of the above (e) All of the above
24. Do you belong to a Farmer's Association?
(a) Yes (b) No
25. If yes, what services do you get from the Association?
(a) Marketing as a group (b) Buying inputs in bulk (c) Extension Advice (d) Processing as a group
26. What are some of the constraints you face as an industry?
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.....
.....
.....
27. What Strategies do you think can be used to improve marketing?
.....
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Appendix 2 questionnaires for retailers of live birds and frozen chicken

Live birds

1. Where do you buy your birds?
2. Do you have access to supply throughout the year?
3. What costs do you incur per month?

Item	No.	Unit Cost	Total cost Gh¢
Cost of birds			
Transport			
Feed			

4. Roughly how many do you sell per month?
5. What is the selling price per bird?
6. How do you promote sales of your products?
7. What vehicles do you use in transporting birds?
8. Who are your final customers?
9. What are their preferences?
10. What problems do you face in marketing

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.....
.....

11. What Strategies do you think can be used to improve marketing?

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.....

Frozen chicken

1. Where do you buy your meat?
2. Do you have access to supply throughout the year?
3. What is the price per kilo?
4. Who are your final customers?
5. What are their preferences?
6. Roughly how many kilos do you sell per month?
7. What vehicles do you use in transporting meat?
8. Does any institution inspect your premises for food safety?
(a) Yes (b) No
7. If yes what is the name of the institution?
6. What problems do you face in marketing?

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7. What Strategies do you think can be used to improve marketing?

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Appendix 3: checklist for importers of frozen chicken

1. Which countries do you import your frozen chicken from?
2. What Quantities do you import at a time?
3. Who are your final customers?

Checklist for chairman Ghana National Poultry Farmers Association

1. What services do you offer to farmers?
2. What problems do you face as an industry?
3. How do you think these problems can be tackled?

Checklist for Director Animal Production Directorate

1. What is the role of the Directorate in facilitating chain governance?
2. What are some of the policies and programs on poultry being undertaken by the directorate?
3. What strategies can be undertaken to improve marketing for farmers?

Appendix 4

Cross tabulation and chi-square tests for farmers' perception about getting market for their birds.

		what do you think about getting market for your birds			
		very difficult	difficult	easy	Total
type of farm	small scale	0	9	1	10
		,0%	90,0%	10.0%	100.0%
	medium scale	1	9	0	10
		10,0%	90,0%	0%	100.0%
	large scale	1	9	0	10
		10,0%	90,0%	0%	100.0%
Total		2	27	1	30
		6,7%	90,0%	3.3%	100.0%

$$X^2_{\text{calculated}} = 3.00$$

$$X^2_{\text{critical}} =$$

$$df=4 \quad prob=0.558$$

Chi square test for type of promotions undertaken by farmers

		do you promote sales of your products		Total
		Yes	No	
type of farm	small scale	9	1	10
		90,0%	10,0%	100,0%
	medium scale	10	0	10
		100,0%	,0%	100,0%
	large scale	10	0	10
		100,0%	,0%	100,0%
Total		29	1	30
		96,7%	3,3%	100,0%

$$X^2_{\text{calculated}} = 2.069$$

$$X^2_{\text{critical}} =$$

$$df=2 \quad prob=0.355$$

Appendix 5 Cost summaries for different clusters of farmers

	Type	Size of flock	No. of batches	No of chicks	Unit cost of chicks	Total cost of chick	Total cost housing	No of feed (bag)	Unit cost feed	Total cost of feed /bag
	small scale	600	1	600	1.7	990	2500	66	46	3036
	small scale	1000	1	1000	1.6	1600	4500	110	45	4950
	small scale	400	2	400	1.6	1280	2650	44	46	4048
	small scale	1000	2	1000	1.7	3300	3700	110	45	9900
	small scale	1500	2	1500	1.6	4650	3900	175	46	16100
	small scale	400	2	400	1.6	1280	1900	44	45	3960
	small scale	1000	2	1000	1.5	3000	4300	110	46	10120
	small scale	1000	3	1000	1.6	4800	4500	110	46	15180
	small scale	1500	2	1500	1.5	4500	4800	160	46	14720
	small scale	1200	2	1200	1.0	2400	2780	115	45	10350
Averages			1.9		1.53	2780	3553			9236.4
	medium scale	3000	2	3000	1.5	9000	5650	330	45	29700
	medium scale	2000	2	2000	1.5	6000	5000	220	45	19800
	medium scale	3000	2	3000	1.5	9000	6000	330	46	30360
	medium scale	2000	2	2000	1.6	6400	5250	220	45	19800
	medium scale	2000	2	2000	1.4	5600	5350	220	46	20240
	medium scale	2200	1	2200	1.6	3520	5450	220	45	9900
	medium scale	2000	2	2000	1.5	6000	5690	220	46	20240
	medium scale	3000	3	3000	1.5	13500	6200	320	46	44160
	medium scale	2000	2	2000	1.5	6000	5500	220	46	20240
	medium scale	2000	2	2000	1.5	6000	5700	210	45	18900
Averages			2		1.51	7102	5579			23334
	large scale	11500	2	8000	1.6	25600	8000	889	46	81788
	large scale	5000	3	5000	1.6	24000	6500	550	46	75900
	large scale	5000	2	5000	1.6	16000	7200	560	45	50400
	large scale	5000	2	5000	1.6	16000	6900	550	46	50600

	larscale	15000	3	15000	1.5	67500	12000	1500	45	202500
	large scale	5000	3	5000	1.5	22500	7000	550	46	75900
	large scale	10000	2	10000	1.5	30000	9000	1100	46	101200
	large scale	5000	3	5000	1.6	24000	6500	540	46	74520
	large scale	10000	2	10000	1.6	32000	9200	1000	46	92000
	large scale	6000	2	6000	1.6	19200	5300	660	45	59400
Averages			2.4		1.57	27680	7760			86420.8

Health (5% feed cost)	Utilities & transport	Number of labour	Unit cost labour	Total cost labour	Number of manager	Unit cost manager	Total cost manager	Total labour cost	Miscellaneous	Total cost
151.8	151.8	1	100	100					1165.69	8095.29
247.5	247.5	2	120	240					1937.15	13722.15
202.4	202.4	1	150	300					1459.62	10142.42
495	495	1	130	260					3085.5	21235.5
805	805	2	120	480	1	80	160	640	4459.95	31359.95
198	198	1	150	300	1	80	160	460	1359.32	9355.32
506	506	2	120	480	1	80	160	640	3216.74	22288.74
759	759	2	120	720	1	80	240	960	4463.35	31421.35
736	736	2	100	400	1	80	160	560	4129.3	30181.3
517.5	517.5	2	120	480				480	2850.05	19895.05
461.82	461.82			376			88	623.3	2812.67	19769.71
1485	1485	3	150	900	1	200	400	1300	8214.4	56834.4
990	990	2	150	600	1	180	360	960	5735.8	39475.8
1518	1518	3	140	840	1	190	380	1220	8270.5	57886.5
990	990	2	150	600	1	250	500	1100	5870.1	40400.1
1012	1012	2	150	600	1	300	600	1200	5768.1	40182.1
495	495	2	150	300	1	300	300	600	3454.4	23914.4
1012	1012	2	150	600	1	400	800	1400	5927.9	41281.9
2208	2208	3	120	1080	1	400	1200	2280	11753.8	82309.8
1012	1012	3	180	1080	1	400	800	1880	5916	41560
945	200	2	150	600	1	200	400	1000	5566.65	38311.65
1166.7	1092.2			720			574	1294	6647.77	46215.67
4089.4	600	4	140	1120	1	800	1600	2720	30232.625	153030.025
3795	200	4	150	1800	1	800	2400	4200	30000	144595
2520	300	4	140	1120	1	700	1400	2520	19735	98675
2530	2530	4	150	1200	1	500	1000	2200	19887.5	100647.5
10125	10125	5	150	2250	1	700	2100	4350	80000	386600
3795	3795	4	130	1560	1	500	1500	3060	28528.75	144578.75
5060	5060	4	150	1200	1	900	1800	3000	37725	191045
3726	3726	4	150	1800	1	900	2700	4500	45000	161972
4600	4600	4	150	1200	1	800	1600	2800	35750	180950
2970	2970	4	150	1200	1	200	400	1600	22860	114300
4321.0	3390.6			1445			1650	3095	34971.89	167639.33

Total number of chick	Mortality (4%)	Output (4%)	Unit cost of output	Total rev	Profit	Profit/cycle
600	30	570	18	10260	2164.71	2164.71
1000	50	950	16	15200	1477.85	1477.85
800	40	760	18	27360	17217.58	8608.79
2000	100	1900	17	64600	43364.5	21682.25
3000	150	2850	17	96900	65540.05	32770.03
800	40	760	16	24320	14964.68	7482.34
2000	100	1900	17	64600	42311.26	21155.63
3000	150	2850	15	128250	96828.65	32276.22
3000	150	2850	16	91200	61018.7	30509.35
2400	120	2280	18	82080	62184.95	31092.47
		1767	16.8	60477	40707.293	18921.96
6000	300	5700	15	171000	114165.6	57082.80
4000	200	3800	15	114000	74524.2	37262.10
6000	300	5700	14	159600	101713.5	50856.75
4000	200	3800	15	114000	73599.9	36799.95
4000	200	3800	15	114000	73817.9	36908.95
2200	110	2090	15	31350	7435.6	7435.60
4000	200	3800	15	114000	72718.1	36359.05
9000	450	8550	15	384750	302440.2	100813.4
4000	200	3800	14	106400	64840	32420.00
4000	200	3800	15	114000	75688.35	37844.17
		4484	14.8	142310	96094.335	43378.28
16000	800	15200	14	425600	272569.975	136284.99
15000	750	14250	14	598500	453905	151301.67
10000	500	9500	15	285000	186325	93162.50
10000	500	9500	15	285000	184352.5	92176.25
45000	2250	42750	14	1795500	1408900	469633.33
15000	750	14250	14	598500	453921.25	151307.08
20000	1000	19000	15	570000	378955	189477.50
15000	750	14250	14	598500	436528	145509.33
20000	1000	19000	15	570000	389050	194525
12000	600	11400	14	319200	204900	102450
		16910	14.4	604580	436940.6725	172582.76