

**ANALYSIS OF THE LAYER CHICKEN VALUE CHAIN FOR THE DEVELOPMENT OF A MARKET-ORIENTED CHAIN TO IMPROVE PROFITABILITY OF FARMERS IN RULINDO DISTRICT, RWANDA.**



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Livestock Chains.

**By**

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## DEDICATION

This work is dedicated to my family for their devotion to stay vigorous in keeping everything in ongoing way during my studies.

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## LIST OF ACRONYMS

DOC	Day old chicks
EAC	Eastern African Community
FAOSTAT	Food agriculture organization statistics
Frw	Francs Rwandan
GDP	Gross Domestic product
GLEAM	Global livestock Environment Assessment Model
IFAD	International Fund for Agricultural Development
INFPD	International Network for Family Poultry Development
MINAGRI	Ministry of Agriculture and Animal Resources
MINICOM	Ministry of industry and commerce
MT	Metric ton
NISR	National Institute of statistics of Rwanda
RAB	Rwanda Agriculture and Animal Resources Development Board
RSB	Rwanda standards Bureau
RDC	Republic Democratic of Congo
TRABAC	the Rwanda Agriculture Business Consultancy
UN	United Nations
VCD	Value chain development
MSP	Multi-stakeholders' partnerships.
AMA	American Marketing Association
NGOS	Non-government organizations
VFM	Virtual Farmer Market
NUCAFE	National Union of Coffee Agribusinesses and Farm Enterprises
POs	producers' organization
FGD	Focus group discussion
SWOT	Strength, weakness, opportunities and threats
PESTEC	political, economic, social, environmental and culture

## EXECUTIVE SUMMARY

Any sector cannot be developed without contribution of the research and researchers. In the same line a research was conducted in Rulindo District to analyze the existing layer chicken value chain and designing a market oriented chain which should empower the medium chicken farmers to access on the market and maximizing their profit. The research was conducted in six sectors of Rulindo District through survey for 40 medium layer chicken farmers and focus group discussions organized and conducted with 24 medium chicken farmers subdivided into group, the first combined chicken farmers from Base and Bushoki sectors and the second combined chicken farmers from Rusiga and Mbogo sectors. The preference choice was based on a significant number of chicken farmers agglomerated in those sectors. The results from the research demonstrated the weakness of communication and collaboration among actors involved in the chain, particularly medium layer chicken farmers do not have sufficient communication with the buyers, inputs suppliers and the enabling business environment. They are not integrated in the chain and do not have sufficient information on the market and customers' requirements. The chain is governed by a market price and the wholesaler-retailers take lead in deciding the price for eggs. The government's institutions which are in charge of chicken farming and supporting the chicken farmers are not experienced on how a value chain should be coordinated and developed. A gap of rules and regulations for poultry sector was criticized by different key informants.

To solve the problems identified in the chain, primarily for developing the layer chicken value chain in Rulindo district, the creation of cooperatives was suggested as efficient solution, due to, medium chicken farmers will have opportunity to meet and discuss on their problem and establish a marketing strategy, organizing the supply system and minimizing the transaction cost and enlarge collaboration with the enabling business environment. The adoption of different APP using smartphones was recommended as strong way of communication based on the success stories cases. The minimization of self-confidence noted for certain farmers must be changed through emphasis of training, the situation will change and entail easy organization for the chicken farmers in Rulindo District.

The District must be deeply involved in setting policies for developing the chicken farming and supporting initiatives created by chicken farmers and contribute efficiently in sensitization for formation of cooperative through regular meeting and focus group discussions. Also the District has to take responsibility to help chicken farmers to access on the market through negotiation with concerned institutions to take measures advantaging chickens farmers as it has done for the farmers of potato in Musanze District. The contribution of government institutions to accelerate the development of layer chicken value chain in Rulindo district is first to speed up the establishment of legislation about poultry sector as it was observed very necessary for organizing the sector. The positive decisions for solving the scarcity of ingredient for making animal feeds and assuring the availability of quality and quantity inputs within the country will contribute more to the development of chicken farming in Rulindo District and in the whole country. Finally, for sustainability and promoting activities of chicken farming in Rulindo District and in country in general, a center for capacity building of chicken farmers, laboratory and equipment for eggs quality assurance should be a project to think about through collaboration of District leaders, government institutions, NGOs and other sponsors.

## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 BACKGROUND OF THE STUDY

Rwanda has a favorable weather condition for poultry farming with availability of labor at an optimum cost. Poultry farming has been seen as a way of generating income and contributes in solving household's problems economically and socially (Mahoro, et al., 2016), (Akinola, 2011).

The population of Rwanda keeping chicken is about 80% (Mbuza, et al., 2016). Indigenous chicken (Low input -low output) dominates the production system, it represents 75 % of the national flock and contributes 34 % of total egg production. The commercial chicken (High input-high output) represent 25% of national flock with contribution of 66 % of total egg production (Shapiro, et al., 2017) and (MINAGRI, 2012).

The poultry sector consists of small scale, medium scale and large scale producers. It is however dominated by small-scale producers who practice free range farming system and keep 2-18 indigenous chickens for subsistence. In this system, the birds are generally raised under poor keeping conditions and farmers sell eggs through the informal channel usually to the neighbor customers (Mahoro, et al., 2016). Small scale commercial chicken farmers are in two categories, there are those who raise less than 50 improved breeds of chicken and are estimated at 22% of total farmers and those who raise more than 50 to 500 are estimated at 46% (Mbuza, et al., 2016). The medium scale farmers of improved breeds who keep a flock size more than 500 to 5000 are estimated at 32% (Mbuza, et al., 2016). The two category of farmers are constrained by poor access to market, inadequate housing, low-level knowledge and skills and use inappropriate technologies (Sonaiya & Swan, 2004).

The large-scale chicken farmers who raise more than 5000 chickens are insignificant in number in the country but their number is increasing. They have the capacity to prepare feeds using new technologies at farm or buy large quantity of feeds from the feeds manufacturers.

The demand for eggs in Rwanda is low compared to other countries in East Africa. Within the country, consumers are numerous in Kigali city, touristic city of Musanze and cities closer to the Democratic Republic of Congo (DRC) namely Rusizi and Rubavu. The regional demand for eggs is high and the price is attractive. For instance, in DRC, the price per egg is 160 Frw (€ 0.16), while in Rwanda is 100 Frw (€0.1) per egg. According to (Kline, et al., 2013), there is also an opportunity for the export market in Tanzania and Burundi. The government of Rwanda since 2012 created an enabling environment to attract private sector to invest as large-scale poultry business companies for improvement of production and marketing of eggs; to promote the supply of sufficient eggs to Rwandan population; and to reinforce exportation of eggs in DRC where there is the largest regional export market for Rwanda (MINAGRI, 2012).

Despite the above opportunities for the poultry sector in Rwanda, layer chicken producers are constrained by poor market access, poor quality feed, high price of feeds, unavailability of day-old chicks, limited extension services, low technical know-how in poultry farming and poor hygiene (MINAGRI, 2012), (Vernooij, 2018), (Mbuza, et al., 2016). In addition, (Mbuza, et al., 2016) indicated that, market-oriented poultry production in Rulindo District is not developed. These altogether resulted in undeveloped production and poor marketing access (Maniraho, 2018). Lack of documented accurate information in poultry sector hinders the value chain development (Mbuza, et al., 2016).

## 1.2 LIVESTOCK PRODUCTION IN RWANDA

The Government of Rwanda decided to boost its economy through the Ministry of agriculture and livestock with adoption of different policies and activities towards transformation of agriculture and livestock from subsistence to market-oriented production and value addition to ensure the competitiveness of the products on the market. For a good accomplishment of the policies, all agriculture and livestock institutions have unified in one institution called Rwanda Agriculture and Animal Resources Development Board (RAB), which is under the Ministry of Agriculture and livestock and has the mandate of implementation of government policies about research and extensions services in agriculture and livestock. In Rwanda, livestock accounts for 30% of agricultural GDP and 12% of national GDP ( NISR, 2011).The Rwanda's livestock population in 2018 included more than 1.29 million cows, 5.44 million chickens, 1.33 million pigs, 2.73 million goats, 1.26 million rabbits, and over 600,000 sheep, data from RAB indicated by (Anon., 2019).

## 1.3 POULTRY PRODUCTION IN RWANDA

The total number of chicken accounted in Rwanda in 2014 was 4,917,000 live chickens. The village chicken in 2014 contributed 3000 tons of eggs and 2144 tons of chicken meat (NISR, 2012), (FAOSTAT, 2016). The current egg production was approximately 3091 tones and the growth rate of egg production from 2011 until 2017 was 174 % (Ndungutse, 2016).

The figures below demonstrates the situation of eggs production in Rwanda compared to Kenya, Tanzania and Uganda in 2011.

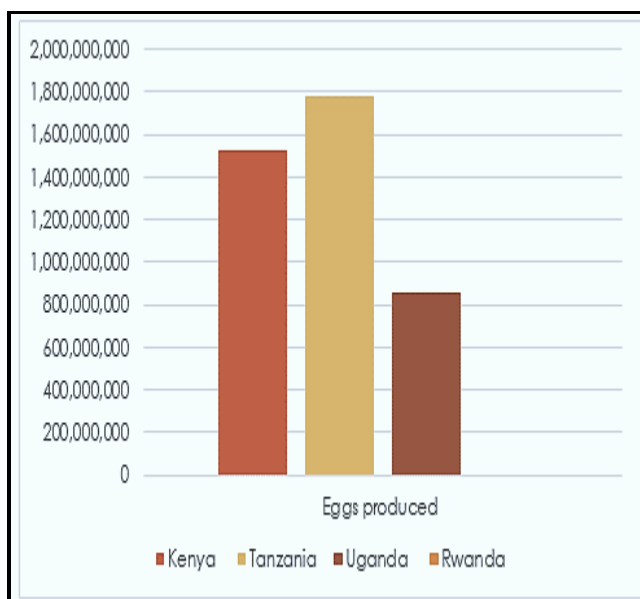


FIGURE 1: SITUATION OF EGGS PRODUCED IN EAC INCLUDED RWANDA IN 2011.

Source : (Vernooij, 2018).

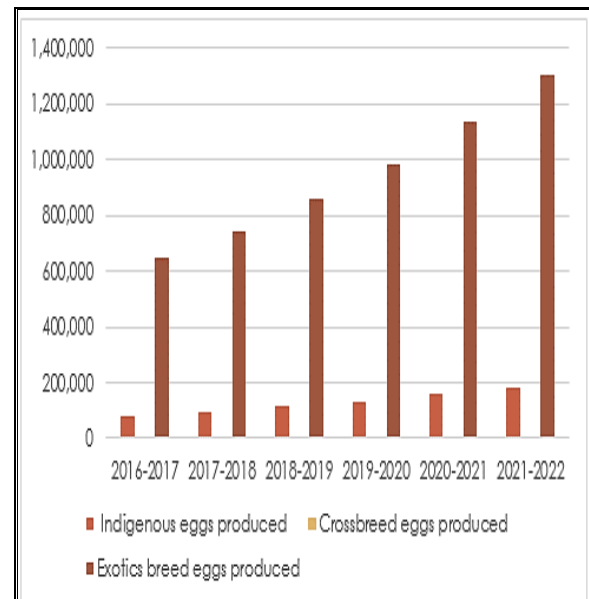


FIGURE 2: SITUATION OF EGGS PRODUCTION IN EAST AFRICA IN 2011.

Source : (Vernooij, 2018).

The poultry value chain in Rwanda involves actors playing different roles starting from inputs suppliers up to the delivery of eggs to consumers. The following map shows the actors involved in the chain.

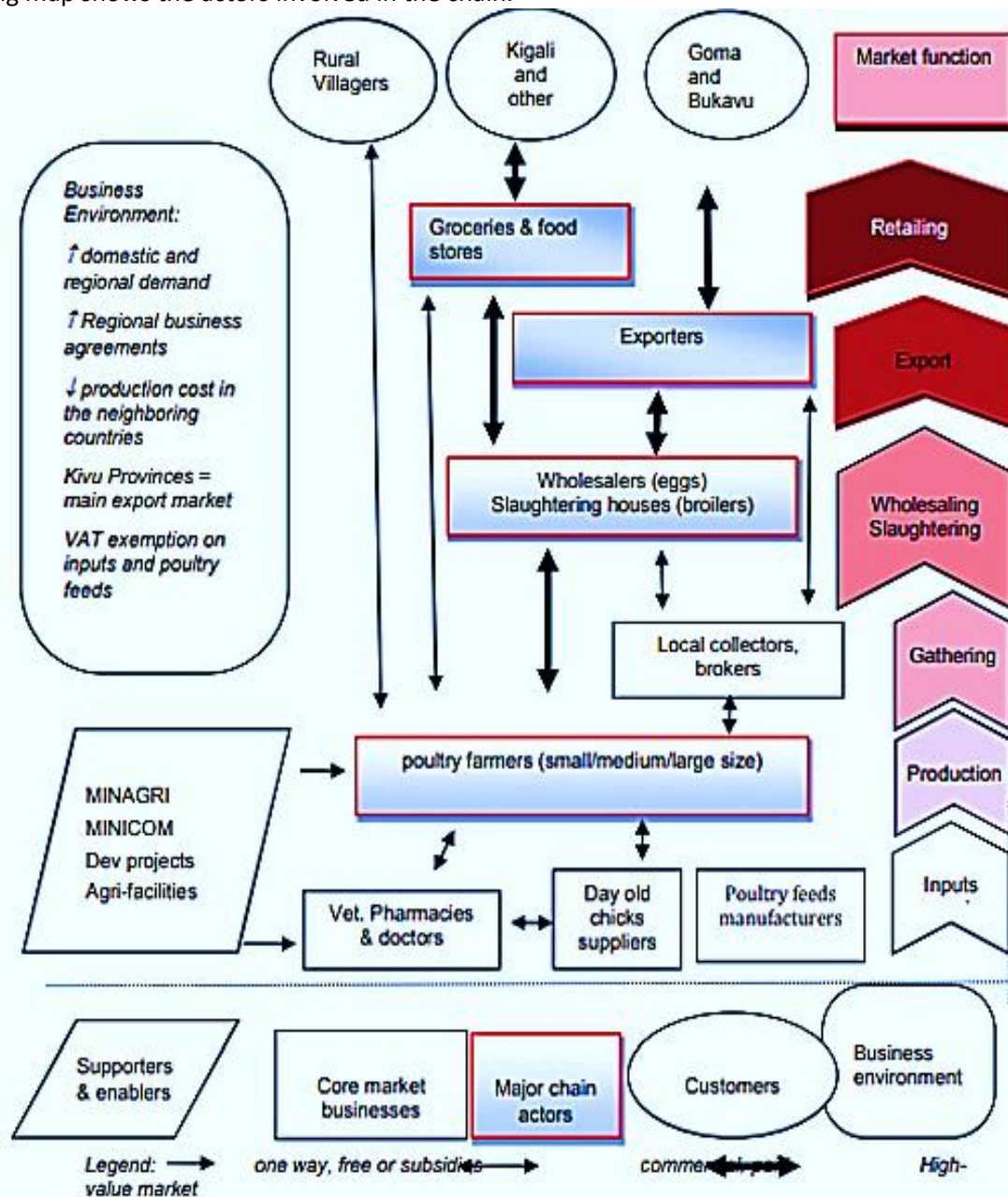


FIGURE 3: POULTRY VALUE CHAIN MAP IN RWANDA.  
SOURCE: (MIKLYAEV, ET AL., 2017).

## 1.4 POULTRY PRODUCTION IN RULINDO DISTRICT

Rulindo District is located in rural area where agricultural and livestock activities are main source of income. The feeder roads available in the District facilitate accessibility to local markets and Kigali City (Mbuza, et al., 2016), provide potential opportunity to supply eggs in others cities like Musanze and Rubavu closer to Goma, in RDC. The layer chickens farmers are in different categories, 50% of poultry farmers raised local poultry, 23, 3% raised crossed breeds, 15% raised mixed breeds and 11.7 % raised exotics breeds (Maniraho, 2018).The current eggs production is estimated at 165 thousand eggs per day coming from 42 small and medium chicken farmers and 7 large chicken farmers.

### Causal diagram indicating main problem.

The causal diagram below illustrates the cause-effect, root causes to the main problem of the poultry sector in Rulindo District.

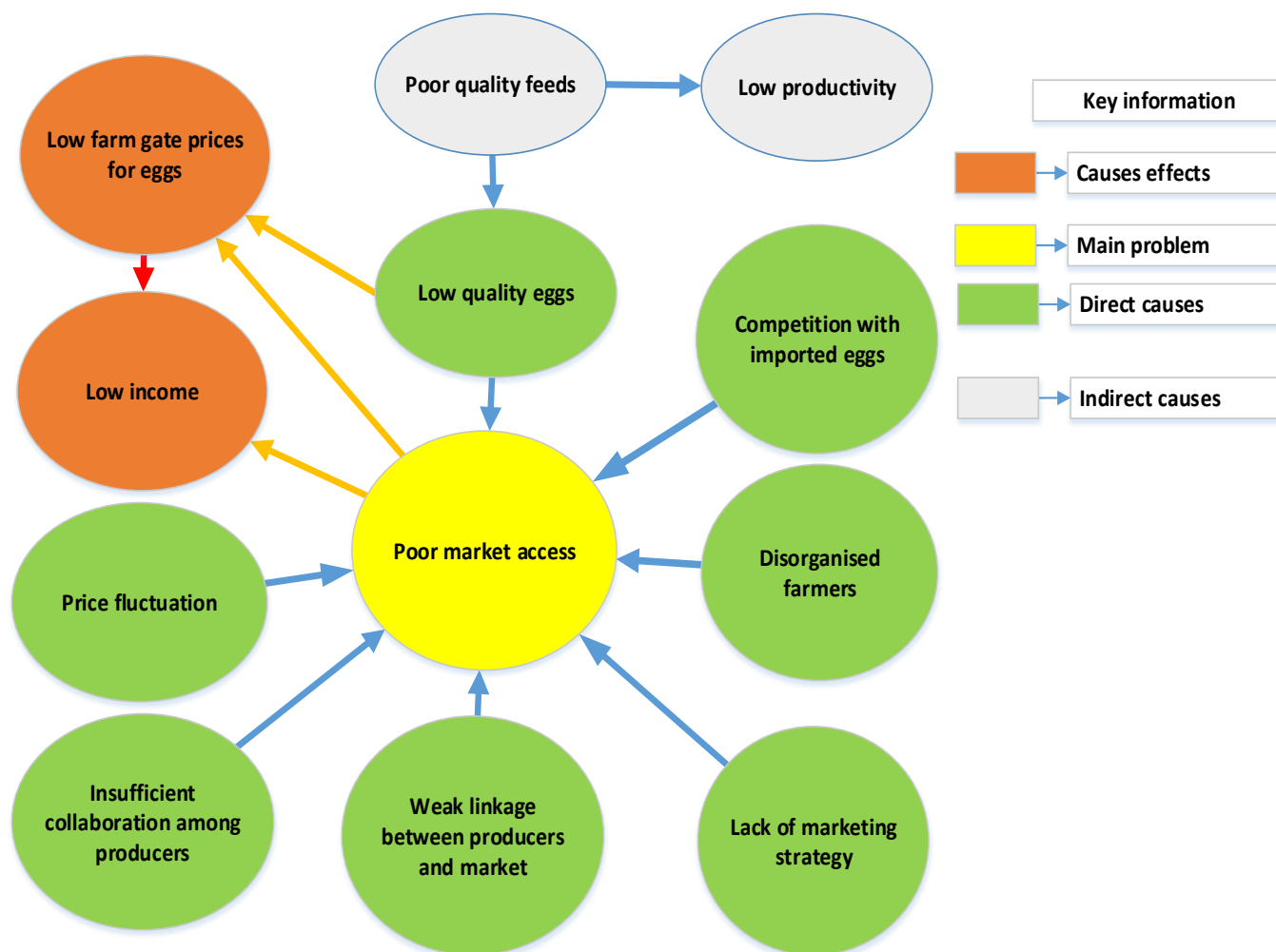


FIGURE 4: CAUSAL DIAGRAM OF POOR MARKET ACCESS FOR MEDIUM LAYER CHICKEN FARMERS IN RULINDO DISTRICT

SOURCE: (MANIRAH, 2018), (MBUZA, ET AL., 2016).

## 1.5 PROBLEM STATEMENT

In Rulindo District, the main problem for medium scale chicken farmers is poor access to market. This is because the layer chicken production chain and marketing channels are undeveloped thus jeopardizing production processes and profitability. Consumers with greater purchasing power live in and around cities. Marketing for eggs require market-oriented strategies by producers to access to better markets in the cities and available regional markets in Democratic Republic of Congo.

## 1.6 PROBLEM OWNERS.

The problem owners are the chicken farmers especially 40 medium layer chicken farmers, Rulindo district and RAB. The last has the responsibility to implement findings from research. Once medium scale layer chicken farmers want to carry out interventions for solving identified problems, RAB has in his mandate to give support and assistance to them for increasing productivity. This research is commissioned by RAB to find out the necessary strategic interventions for developing market-oriented layer chicken value chain.

## 1.7 RESEARCH OBJECTIVE

To analyze the layer chicken value chain in order to develop market-oriented chain and advise RAB on the strategic interventions towards chain development that will contribute to income of medium layer chicken farmers.

## 1.8 RESEARCH QUESTIONS

### 1.8.1 RESEARCH QUESTION 1:

**What is the status of the existing layer chicken value chain in Rulindo District?**

#### SUB-QUESTIONS:

1. What are the stakeholders and their roles in the layer chicken value chain?
2. What are the power relationships and coordination mechanism in the chain?
3. What are the value added and value share among the actors in the chain?
4. What are the constraints and opportunities for layer chicken value chain?

### 1.8.2. RESEARCH QUESTION 2:

**What are the marketing strategic interventions required to access regional market?**

#### SUB-QUESTIONS:

1. What are marketing mix and market requirements for eggs?
2. What are the strategies for accessing regional market?
3. What are the roles of farmer organizations in layer chicken value chain development?
4. What are the drivers influencing development of market oriented layer chicken value chain?



## **CHAPTER TWO**

### **2.0 LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK**

#### **2.1 LITERATURE REVIEW**

##### **2.1.1 VALUE CHAIN ANALYSIS**

Value chain analysis is a process where a firm identifies its primary and support activities that add value to its final product and then analyze these activities to reduce costs or increase differentiation. It represents the internal activities a firm engages in when transforming inputs into outputs. Its goal is to recognize, which activities are the most valuable to the firm and which ones could be improved to provide competitive advantage. In other words, by looking into internal activities, the analysis reveals where a firm's competitive advantages or disadvantages are. The firm that competes through differentiation advantage will try to perform its activities better than competitors would do. If it competes through cost advantage, it will try to perform internal activities at lower costs than competitors would do. When a company is capable of producing goods at lower costs than the market price or to provide superior products, it earns profits (Jurevicius, 2013). Competitive strategies are based on integrating activities in the value chain. Integration can increase a firm's capacity to implement strategies, for instance intervene quickly and effectively to market forces, improve its response to customer needs, and reduces costs (Prescott, 2001).

##### **2.1.1.1 STAKEHOLDERS**

Stakeholders are any group or individual that can affect or be affected by activities of an organization. They are directly or indirectly involved in the chain. The internal stakeholders are actors in the chain and the external are composed by social and political actors who play a fundamental role in the credibility and acceptance of business activities, including governments, institutions, competitors, consumer advocates, environmentalists, special interest groups, and the media (Silva, et al., 2019). In addition, stakeholders are defined as individuals or groups that have interest in any decision or activity of organizations (Kröder & Natale, 2017). According to (Eden & Ackermann, 2009) stakeholders are people or small groups with the power to respond to, negotiate with, and change the strategic future of the organization.

The value chain actors are directly deal with the products (produce, process, trade and own them). The value chain supporters are the services provided by various actors who never directly deal with the product, but whose services add value to the product. The value chain influencers are the regulatory framework, policies, infrastructures, etc. (at the local, national and international level) (Agri-ProFocus, 2012).

##### **2.1.1.2 POWER RELATIONSHIPS AND COORDINATION MECHANISM**

###### **2.1.1.2.1 POWER RELATIONSHIPS IN THE CHAIN**

Power is considered as the heart of the supply network that has a great effect on the strategic decisions, resources, the interdependencies, activities performed, and consequently the type of relationship created among the supply chain entities (Kähkönen.A, 2014).

The power and interdependence play a considerable role in understanding the buyer–supplier relationships. The nature of the buyer-supplier relationship base on the power position of buyers and suppliers in the chain. The performance in a value chain determines the relationships among actors in supply chain. The buyer-supplier relationships is characterized and determined by trust, commitment, and frequency of communication, relationship duration and reputation (Morsy, 2017).The success of value chain depend on the mode of relationships between actors. Value chain integration is determined by a period and various degrees based on the relative size, scope, ownership, and stakeholders' interest (Ilyas, et al., 2006).

#### **2.1.1.2.2. VALUE CHAIN COORDINATION MECHANISM.**

The value chain coordination mechanism is related to the food value chain businesses, which form alliances with horizontal and/or vertical partners to take collective action to either overcome or ameliorate chain failure, or to take advantage of new opportunities available due to innovations in products or processes. The collective action to be chosen varies according to the existing capabilities and the possibility for collaboration, particularly in relation to the potential for value-creating innovation. The outcome of the collective action is to supply the goods and services in a coordinated value chain (Fleming, et al., 2018 ). In Zambia, the smallholder farmers had the difficulty to access on the market and lack of the power to negotiate better price for their crops. The adoption of Virtual Farmers Markets (VFM) APP for smartphones had successful helped smallholder farmers to be linked to the buyers and other stakeholders in the chain. They negotiated through APP by E-commerce system and reached to the consensus about quality, quantity, and price and delivery time. It reduced the transaction cost, improved coordination in the chain and smallholders farmers gained good price and income had been increased (FAO, 2018).

#### **2.1.1.3 VALUE ADDED AND VALUE SHARES AMONG CHAIN ACTORS.**

A share is essentially an exchangeable piece of value of a company, which can fluctuate up, or down depending on several different markets factors (MBN, n.d.) . Value added occurs in different stage of the chain depending by actors and value of activities added, it relates mainly to quality, costs, delivery time, delivery flexibility and innovativeness. The size of value added depends by the end-customer's willingness to pay. The potential opportunity to add value is determined by size and diversity of markets and technological capabilities of the actors. Moreover, market information on product and process requirements are important key to be able to produce the right value product for the right market (Trienekens, 2011). The processing of agriculture product is not advanced in Africa and sometimes a very little added value is executed (Drost, et al., 2012).

### **2.1.2 MARKETING STRATEGIC INTERVENTIONS FOR MARKET ORIENTED LAYER CHICKEN VALUE CHAIN.**

#### **2.1.2.1 STRATEGIES FOR ACCESSING REGIONAL MARKET**

##### **2.1.2.1.1 MARKETING MIX.**

Marketing refers to the process of taking the product to the end user for consumption. It includes the identification of potential market, searching information on that market about consumer's wants and needs. The products supply must fulfill the consumer's needs, ensure the advertisement of the product, and satisfy the demand and delivery on time, give importance to the quality of product, the price and the available market. According to the American Marketing Association (AMA, 2013) marketing is "the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large". Marketing of chicken products are mainly constrained by poor infrastructure and lack of information (Markos, et al., 2014).

#### **Place**

The diffusion of information among different actors in agriculture value chain leads to the market performance. The marketing information system helps the core stakeholders to choose the time and place to sell their product, that allow them to be more integrated on the market with stable price (FAO, 2017). The guaranteed market and availability of market information attract investors to put money in chicken farming (Victor, et al., 2015).

## **Product**

The organization by farmers producers the supply system facilitates the technical actions aiming to improve the product processes about weighing, quality control and packaging, also it helps farmers to be in position of bargaining power by negotiating with the buyers (Danau, et al., 2011).

## **Price**

The producers have to know the market price in various markets, demand and their capacity to supply and verify if the current price is able to cover the cost and provide benefit for them. They must remember that, the level of demand depends of purchasing power of consumers and their willingness to buy (Hilmi, 2019). The lack of information of producers about the markets prices give advantage to the middleman and traders to pay low price at farm gate. The unimproved marketing channels with ad hoc sales must be replaced by coordinated links between farmers and wholesalers, exporter, retailers and consumers institutions with adoption of market-oriented contract (FAO, 2007). The unfavorable position on the market for producers compromise their bargaining power and comes more complicated for setting their products sales price. The high price encourage producers to produce more , the price stability and guaranteed market are key important for producers to take decisions to invest in production (Danau, et al., 2011) . In Nigeria, poultry farmers sold chickens and eggs to traders and middleman. Those traders came buy at farm gate and took lead in deciding the price and farmers did not have other choice as accepting the given price as eggs are perishable food (Ugwu, 2009). In Sierra Leone, the Medium- and larger-scale chicken's farmers were directly linked to retailers including supermarkets or to hotels, restaurants, and this collaboration empowered them to bargain power in price negotiation (Schweisguth, 2015), (USAID, 2017).

## **Promotion**

Promotion relates to different activities aiming to reach a better product or service to a targeted group of customers, attract them and create a good environment of willing to buy, it includes advertisement, sales promotion, direct or indirect public relations, publicity and personal selling (Roman & Zgiep, 2013).

### **2.1.2.1.2 MARKET REQUIREMENTS FOR EGGS (QUALITY PERCEPTION FOR EGGS).**

#### **Shell quality**

The shell quality focus on texture, color, shape and condition. The external quality characteristics of shell eggs to be considered are cleanliness, soundness (unbroken), smoothness and shape. The most desirable shell qualities are cleanliness and soundness; producers and traders pay attention on both during eggs handling. Eggs showing any defects should be removed from eggs destined to the retail trade. Consumers demonstrate adverse reactions to cracked or dirty eggs. The micro-cracks have a negative impact on the quality of eggs. These eggs may be sold locally and possibly only a few hours after lay. If the eggs are with dirty (blood or faeces), consumers are not motivated to buy them. The shell color is also a condition for customer preferences, certain prefer white eggs other prefer browns eggs. It is advisable to sort eggs according their color (Hilmi, 2019).

#### **Yolk and albumen quality**

The good quality of eggs, the yolk should be round, firm and stand up well, and be yellow in color. Customers give importance on the quality of yolk and they have prejudice against very pale or deeply colored yolk. The yolk should have a pleasant, mild egg odor, and flavor and should be surrounded by a large amount of upstanding thick white with only a small amount of thin white. The egg white should have the normal slightly green-yellow color, though it may be slightly cloudy in appearance. Consumers are

generally very critical of any abnormal conditions in the egg yolk and white. The quality of eggs can be damaged due to the following factors, natural factors, temperature, humidity, time, handling, storage, contaminating (Hilmi, 2019).

#### **2.1.2.1.3 VALUE CHAIN DEVELOPMENT (VCD)**

The VCD is defined as a chain type that focuses on strengthening certain actors and improving relations between stakeholders and other actors in a chain, it is defined as a business-environment type that focuses on improving the business environment in which chain actors operate their activities. VCD aims to increase competitiveness for a subset of chain actors, which results in higher income for stakeholders and small businesses by establishing win-win relationships among chain actors (Donovan, et al., 2016). The following strategies help to upgrade a value chain:

##### **Upgrading through an increase of value added**

The upgrading a value chain through increase of value added production can be presented in different forms such as upgrading of products (improve quality of product); upgrading of processes (reduction cost or increased productivity); functional upgrading (adopting new function in sourcing production or distribution functions); and inter-sectorial upgrading (product differentiation). The upgrading of value added always take into account on the demand of the market in terms of intrinsic quality attributes (product quality, composition, and packaging) or extrinsic quality attributes and environment where the products are produced. Process and products upgrading are important strategies to be considered by the farmer producers in developing countries. The functions upgrading (specialized processing, branding) are mainly adopted in developed countries (Dijk & Trienekens, 2012). The process upgrading refers to the improvement of methodology of production by increasing efficiently the outputs based on new technologies or on change in management and in distribution process (KIT, et al., 2006).

##### **Upgrading of market access possibilities**

The upgrading market access possibilities focus on choosing the right way to establish horizontal and vertical relationships in order to design the right marketing channel.

The collaboration with horizontal relationships provide the facilities to purchase with the partners the inputs for production and building marketing for produced products. The horizontal relationship also proves to be important for creation of farmer's organization, cooperatives or associations. The vertical relationship aims to choose the right channel for the right market. The farmer producers might make a choice for the channel that is easily accessible for them and that they respond to the criteria of quality products requested on the market (Dijk & Trienekens, 2012).

##### **Upgrading of governance structure**

The modern market oriented value chain prefers to speed up the trading relationship between producers and consumers or traders with adoption of contract, it seems not necessary to involve intermediaries in the chain as most of the cases are unwanted by both part. It reduces the transaction cost and make easy to control the supply in the whole value chain. It decreases delivery uncertainty and increase quantity and quality consistency of the product. Preference is the utilization of relational contract involving interpersonal relationships and trust (Dijk & Trienekens, 2012).

##### **Upgrading through partnerships and actors for change.**

The producers have to build a stable communication within the chain and external network with the partners to make good relationship that can facilitate upgrading processes either by providing technological, organizational, political and educational support (Dijk & Trienekens, 2012). They must be

able to organize continuous learning on innovation, sustain their organization with improvement and reinforcement of cooperation with new buyers, processors, traders and retailers (KIT, et al., 2006). Actors for change includes internal and external actors contributing differently and efficiently in value chain upgrading, government, NGOs, civil society could bring strong change in upgrading value chain. The examples from government for upgrading the value chain are, establishing rules, regulations and policies. Regulate market access through negotiation for removing the barriers for trade, facilitate value chain upgrading by putting in place appropriated infrastructures, provide to value chain actors the materials and technology for production etc... (Dijk & Trienekens, 2012).

#### **2.1.2.2 ROLES OF FARMERS' ORGANIZATION IN VALUE CHAIN DEVELOPMENT.**

The farmer's organization can be formal organizations such as cooperatives or informal organizations such as group of farmers or associations. The producer's organizations are considered as key actors in agriculture development, as they are able to use collective actions to develop the position of producers from production to the markets. It strengthens the bargaining power and give them a voice in the whole production processes. It helps in collection of the produce, processing and in assuring the quality of the products needed at the market, provide to its member market information and accomplish marketing activities and help in adoption of innovations technologies giving assistance to its members (Bijman & Ton, 2008). In Uganda, the adoption of the farmer ownership model for Uganda's National Union of Coffee Agribusinesses and Farm Enterprises (NUCAFE) helped the producers to perform and undertake more functions in the whole process of coffee value chain and they increased their incomes stage by stage and maximized their profit by getting better price at the market (Nkandu, 2008). The important success factors for POs are thereafter referred, it must be a driver for change, efficient in networking capability and internal system organization under rules of sharing incentives, costs allocations and benefits (Berdegue, 2008). In Ethiopia, the smallholder farmers challenged by the problems of linkage to the market, price instability, high transaction cost, difficulty to reach the products to the markets and dominance of middlemen in the chain and that reduced the profit margin. The government of Ethiopia judged important the use community associations, cooperatives and cooperatives unions for supply inputs and output marketing. Those farmer's organization helped smallholder farmers succeeding with accessibility to the markets selling their products and got more profit. The success factors were the training given to the members about commodity, marketing skills, ownership and active participation of the members and involvement of the government local offices (SG2000, et al., 2016).

##### **2.1.2.2.1 ROLE OF COOPERATIVES IN LAYER CHICKEN VALUE CHAIN DEVELOPMENT.**

The cooperatives enterprises play a crucial role in making livelihoods for an estimated half of world's population. They contribute in increasing additional income through profit sharing and distribution of dividends. Cooperatives develop democratic knowledge of their members in practices and promote social inclusion (ILO, 2015). A good example is Uriri Farmers 'Cooperative Society in the District of Rongo District in Nyanza Province, it contributed in increasing production of soybean with addition value and helped members increasing income and improving knowledge capacity. It delivered training, facilitated reception of inputs and financial loan to its members (MDF-SA, 2009).

Cooperatives contribute more in gender balance where women take voice and empowerment. They participate efficiently and gain place in governance of the cooperative. It gives also opportunity to women to participate in the development of their family and their countries. Furthermore, a large number of women are members and consumers in their cooperatives and contribute more in production chain (ILO, 2015).

### 2.1.2.3 DRIVERS INFLUENCING DEVELOPMENT OF MARKET ORIENTED LAYER CHICKEN VALUE CHAIN.

#### System efficiency

Different stakeholders large and small in layer chicken value chain have to create opportunity of working together and performing with reducing the cost and increasing efficiency on the market (Nadja & Merten, 2015).

#### Product quality

The competition and the market situation change rapidly with new products, the layer chicken farmers have to build a production system that deliver on the market a dominating quality of eggs able to stay on the market, satisfying the customer requirement and increasing a market share (Nadja & Merten, 2015).

#### Product differentiation

The layer chicken farmers have to think about their production processes and the product they deliver on the market and most importantly on the competitors. Making a product (eggs) differentiation with addition value like packaging, branding, labelling will help them to be more competitive on the market (Nadja & Merten, 2015)

#### Social and environment standards

Certain consumers are sensitive and aware of social and environment conditions in which the products are produced. Layer chicken farmers are responsible to produce eggs in environmentally and socially way to ensure the quality of their product on the market, also contribute to develop working conditions along the value chain (Nadja & Merten, 2015)

#### Enabling business environment

Poultry farmers in the whole chain are working within environment factors, social, economic, political and cultural environment, which determines the nature and success of business transactions within the chain. In addition, regulations, institutions and interventions that immediately affect a particular sector influence the market. Changes in the business environment (like in trade regulations) can open new market opportunities (Nadja & Merten, 2015). The Market Systems are the value chains that bring products and services to the market. The market system framework as contained a value chain will serve as tool for identification of strategic interventions for layer chicken value chain development.

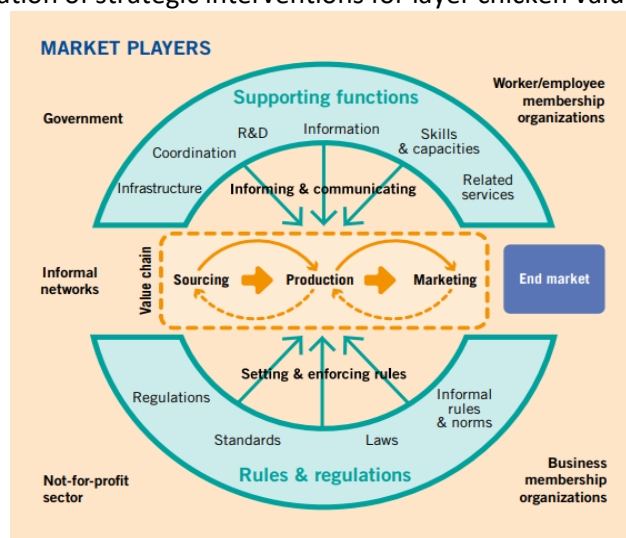


FIGURE 5: MARKET SYSTEM FRAMEWORK.

Source : (Nadja & Merten, 2015)

## 2.2 CONCEPTUAL FRAMEWORK

A conceptual framework is defined as a set of interconnected ideas, events, and topics showing how each of them is correlated to other for a main particular phenomenon or concept (Svinicki, 2010), also conceptual framework is defined as a network of intersected concepts that together make a comprehensive understanding of a phenomenon or phenomena (Jabareen, 2009). The figure below shows the conceptual framework of the research.

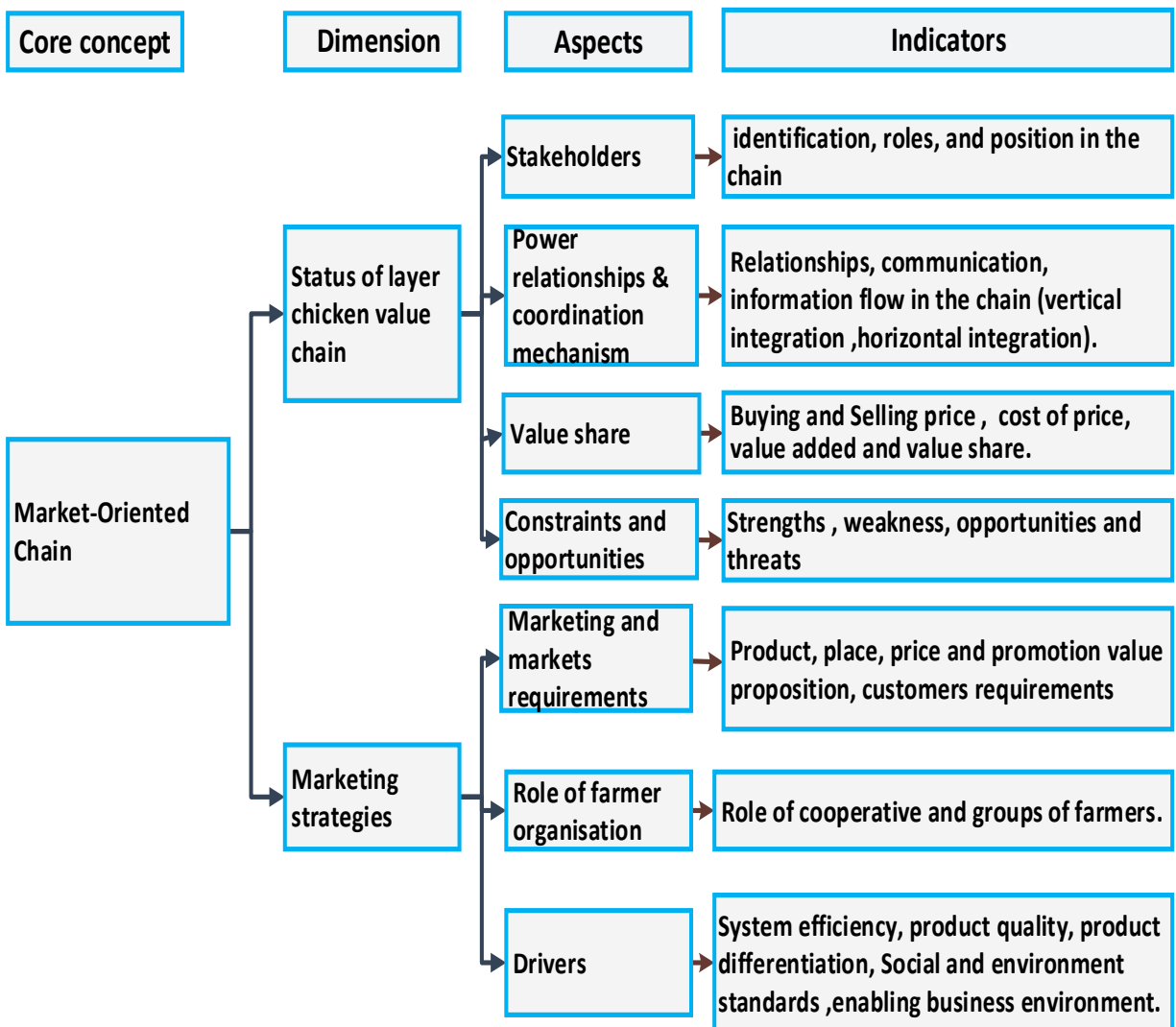


Figure 6 : CONCEPTUAL FRAMEWORK  
Source : Adapted from (Verschuur, 2019).



### 2.2.1 DEFINITION OF KEY CONCEPTS.

#### **Market orientated value chain.**

Market orientation is organizational wide generation of market intelligence pertaining to current and future customer's needs, dissemination of the intelligence across departments and organizational wide responsiveness to it. The following factors, competition, government regulations, technology and other environmental forces entail the market intelligence generation. Market intelligence dissemination implies that responding to a market need requires the participation of all departments in an organization through horizontal communication. Responsiveness focus on the targeted customer segment, look at the current products or services and the future needs and establish a promotion (Kohli & Jaworski, 1990).

In a market oriented value chain, each actor influence the other actors, and the competitiveness of the whole chain is influenced by the coordination of chain actors in generating, sharing and disseminating market intelligence throughout the chain (KhanhLePhiHo, et al., 2018).

#### **Marketing strategy**

Marketing strategy is a set of a company's goals and objectives combined into a single comprehensive plan. It helps a company to identify the best customers and understand the customers 'needs (Nadja & Merten, 2015).

#### **Value chain**

A value chain describes the full range of activities that are required to bring a product or service from conception, through the intermediary phases of production and delivery to final consumers, and final disposal after use. This includes activities such as design, production, marketing, distribution and support services up to the final consumer. The activities constituting a value chain can be contained within a single firm or divided among different firms, within a single geographical location or spread over wider areas (Nadja & Merten, 2015).



## CHAPTER THREE

### 3.0 RESEARCH METHODOLOGY

#### 3.1 DESCRIPTION OF THE STUDY AREA

Rulindo District is one of the 30 Districts of Rwanda, is located in Northern Province. The total area covered by the District is 567 km<sup>2</sup>. The total population of Rulindo district in 2010–11 was 294,000, with females making up 52.7% of the population. The population of Rulindo district represents 16% of the total population of Northern Province and 2.7% of the total population of Rwanda. The majority is young, with 82% of the population under 40 years old (NISR, 2011). Annual rainfall varying from 1100 to 1500mm, average annual temperature varying from 11°C to 28°C (BIGANIRO, 2014).

The study was focused on 6 sectors selected according to their localization take into account on the possibilities to access on the market, their dominance in activities of chicken farming and infrastructures facilities available like roads, water, and electricity.

**Administrative map of Rulindo District.**



FIGURE 7: ADMINISTRATIVE MAP OF RULINDO DISTRICT  
SOURCE : (UNCDF, 2011).

### **3.2.1 DESK RESEARCH**

The scoping was used to search information through Greeni, google scholar, journals, books, websites, reports on the already studied poultry value chain and other chains, policies and strategic interventions used to develop the value chains, the roles of farmer organizations in developing the value chain, the drivers influencing the development of market oriented chain, roles of gender in value chain development.

### **3.2.2 SURVEY**

Structured interview permitted to collect quantitative data from medium layer chicken farmers using a pre-prepared closed questionnaire survey. The survey was conducted to 40 medium layer chicken farmers raising in the following six sectors, Bushoki, Base, Rusiga, Mbogo, Ntarabana and Masoro. The survey provided information on incidences of diseases, feeds issues, knowledge issues, supports, produce volume, total investment, and number of chickens and selling price, farmer's organization preference, strategies to access to the region market.

### **3.2.3 FOCUS GROUP DISCUSSION**

This approach helped to collect information on layer chicken value chain, to understand the constraints and opportunities faced by chicken farmers in the chain, and to get different views on how to come up with the solutions. After survey, two focus group discussions composed by 24 medium chicken farmers was organized and conducted in two session of twelve farmers each, one was occurred in Bushoki Sector and combined the medium chicken farmers from Base and Bushoki sectors and another was occurred in Rusiga sector and combined medium chicken farmers from Mbogo and Rusiga sectors, in those 4 sectors medium layer chickens farmers are more agglomerated.

### **3.2.4 CASE STUDY**

Semi-structured interview had been employed to gather quantitative and qualitative data by using a pre-prepared checklist. It helped to capture views from 20 key informants about the stakeholders involved in layer chicken value chain, power relationships and coordination mechanism in the chain, marketing mix and market requirements for eggs, support services, drivers, constraints and opportunities and roles of gender and farmer's organization in chicken value chain development. The interested key informants are composed by inputs suppliers (2), collector traders (1), wholesaler-retailers (5), Middleman (1) exporter/importer (1), financial institution (1), MINAGRI (1), MINICOM (1), RAB(2), Rulindo District (2), RPIA (1), RSB(1).

### **3.2.5 OBSERVATION**

This approach helped to collect information based on observation of the field realities, attitudes of medium chicken farmers in the study area, the conditions of raising their chicken, labor involved in farming activities, manure management and trading activities in the wholesaler-retailers' shop.

### 3.2.6 SAMPLING STRATEGY

The sampling strategy was focused on medium layer chicken farmers, collector traders, wholesalers-retailers, Middleman, inputs suppliers, exporter/importer, financial institution and key informants.

TABLE 1: SAMPLING STRATEGY

RESPONDENTS	SIZE	METHOD	SAMPLING METHOD
Poultry farmers	40	Survey	Simple random sampling
Collector trader	1	Interview	Purposive sampling
Wholesaler-Retailers	6		Snowball sampling
Middleman	1		
Inputs suppliers	2		Convenience sampling
Exporter /Importer	1		
Financial institution	1		
MINAGRI 1, MINICOM 1, RAB 2, District 2, RPIA 1, RSB 1, BRD 1.	9		Purposive sampling
<b>TOTAL</b>	<b>61</b>		

### 3.2.7 RESEARCH STRATEGY

The quantitative and qualitative data were collected through different actors, supporters, and enablers and compared with other case studies from literature review. The table below summarizes the research strategy including research questions, method of data collection.

TABLE 2: TABLE OF RESEARCH QUESTIONS, METHOD OF DATA COLLECTION AND ANALYSIS TOOLS.

Research questions	Methods of data collection	Type of data	Analysis tools
<b>What is the status of the existing layer chicken value chain in Rulindo District?</b>			
What are the stakeholders and their roles in the layer chicken value chain?	FGD, interview , desk research	Qualitative data	Stakeholders matrix , value chain map
What are the power relationships and coordination mechanism in the chain?	Interview , FGD	Qualitative data	Grounded theory
What are the value addition and value share among the actors in the chain?	FGD , interview, desk research	Quantitative & qualitative	MS Excel, grounded theory
What are the constraints and opportunities for layer chicken value chain ?	FGD, interview, desk research	Qualitative	SWOT analysis
<b>What are the marketing strategic interventions required to access on regional markets?</b>			
What are the marketing mix and markets requirements for eggs?	Survey , interview ,FGD, desk research	Quantitative & qualitative	SPSS, grounded theory
What is the role of farmer's organizations in layer chicken value chain development?	Interview, FGD, desk research	Qualitative	Grounded theory
What are the drivers influencing the development of market oriented layer chicken value chain?	Interview, desk research	Qualitative	Grounded theory

### 3.2.8 RESEARCH DESIGN

The figure below explains the logical sequence of the research from the beginning up to the end. It comprises desk study, field study, data collection, data processing, discussion, conclusion and recommendation.

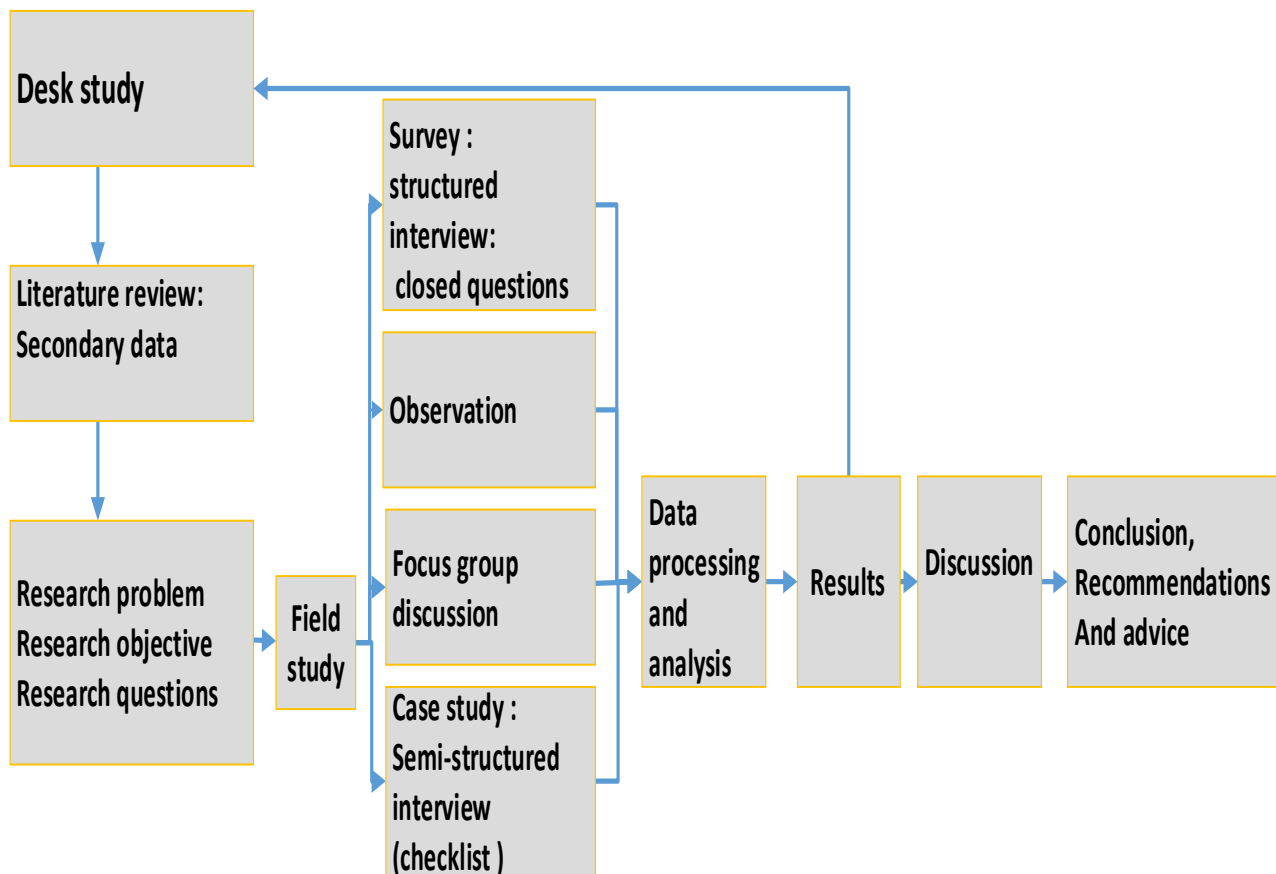


FIGURE 8: RESEARCH DESIGN

Source: Adapted from (APCM, 2019).

TABLE 3: EXPECTED RESULTS, METHOD OF DATA COLLECTION AND ANALYSIS

Research Strategy	Method	Tools	Respondents /sources	Outcomes	Methods of data analysis
Desk Study	Literature review	Scoping	Greeni search engine, google scholar, journals, books, websites, and reports.	Information on stakeholders, Value chain , chain relationships, strategic interventions, drivers	Chain mapping, stakeholder matrix
Survey	Semi-structured Interview	Semi-structured Questionnaire, Telephone, note book	40 chicken farmers	Production volume, total investment, number of chickens, selling price, marketing strategy.	SPSS Version25
Case study	Interview with Key informants(20)	Checklist, Telephone, note book.	MINAGRI 1, MINICOM 1, RAB 2, District 2,RPIA1, Exporter/importer 1,wholesaler-retailers 5 ,inputs suppliers 2,financial institution 1, Middleman 1,RSB 1	Information on constraints and opportunities, trends, Policies, strategies, supports services.	Grounded theory, SWOT, PESTEC
	Observation	Telephone	Farmers' farms, farmers, traders	Field practices, opportunities and challenges	Ground theory
	Focus Group Discussion	Checklist, telephone, Note book, flipchart, Markers	24 Chicken farmers subdivided into two groups of 12 farmers each	Information on diseases issues, feeds issues, knowledge issues, supports and subsidies.	Ground theory

## CHAPTER FOUR

### 4.0 FINDINGS ON LAYER CHICKEN VALUE CHAIN ANALYSIS IN RULINDO DISTRICT.

This chapter describes the results obtained from

- ❖ The survey in chapter 4.1 about marketing strategic intervention for accessing the regional market, farmer organizations in layer chicken value chain development.
- ❖ Focus group discussions in chapter 4.2 and transcripts in annex 3, about stakeholders and their roles, relationships and coordination mechanism, value added and value share, constraints and opportunities in the chain.
- ❖ Interview with different key informants in chapter 4.3 about market requirements for eggs and drivers influencing development of market oriented layer chicken value chain.
- ❖ Observation in chapter 4.4. Presents the results about the realities on the field.

#### 4.1 RESULTS FROM SURVEY

##### 4.1.1. STAKEHOLDERS ANALYSIS

##### 4.1.1.1 SUPPLIERS OF INPUTS

Medium Layer chicken farmers raises individually and buy drugs from the nearest veterinaries shops but most of the time, they buy inputs through sales shop the more known agriculture and livestock inputs importers companies and national manufacturers of feeds.

#### Day Old Chicks

As indicated in the figure 10, 52.5 % of the respondents buys chicks through AGROTECH, 27.5 % buys through UZIMA Chicken and the remaining 20 % of chicken farmers purchase chicks through other individual and supplier companies.

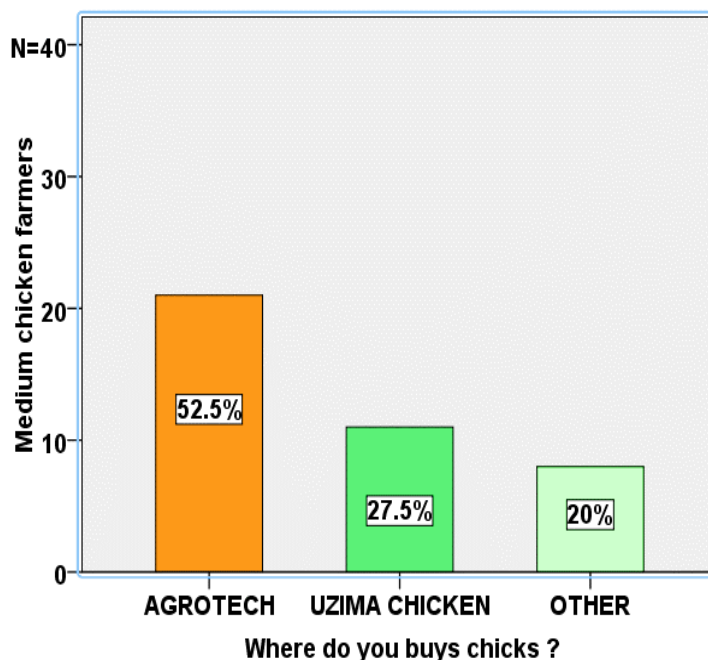


Figure 9: Suppliers of chicks for the medium chicken farmers.  
Source: Author, field data (2019).

### Chicken feeds

For chicken feeds the figure 11 indicates, 42.5 % of the respondent source chicken feeds from GORILLA feeds ltd, 37.5 % from TUNGA feeds and 20 % use their own prepared chicken feeds.

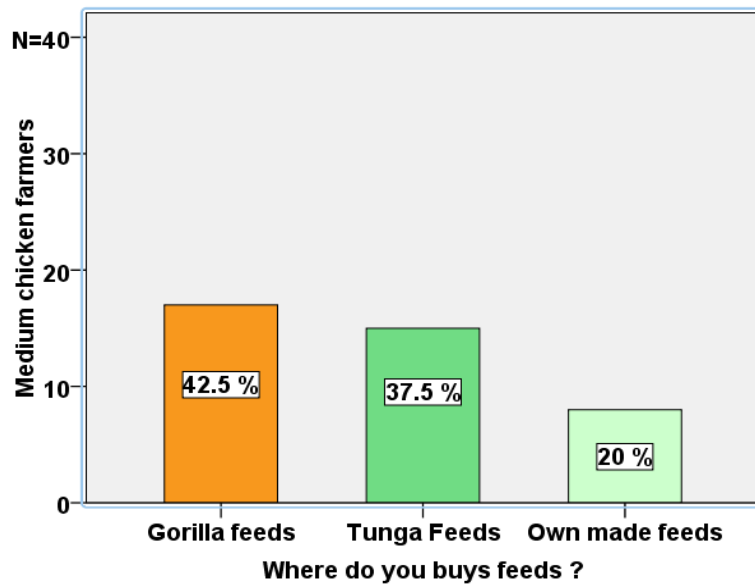


Figure 10: Suppliers of feeds for medium chicken farmers

Source: Author, survey data (2019).

#### 4.1.1.2 PROFILE OF THE RESPONDENTS IN THE STUDY AREA

The respondent profile indicates and gives information on 40 medium chicken farmers where a survey was conducted. Among the respondents, 67.5 % are females and 32.5 are males. For age, the dominated respondents are in the category of 36-45 years old. For education, the majority of respondents 47.5 % attended the secondary school and the large number of medium chicken farmers 57.5 % has experience in chicken farming of more than 2 years (see details in the table 4).

TABLE 4: PROFILE OF THE RESPONDENTS IN THE STUDY AREA

Parameters	Category	Count	Percentage (N=40)
<b>Sex</b>	Female	27	67.5
	Male	13	32.5
<b>Age</b>	36-45 years	27	67.5
	46-60 years	13	32.5
<b>Educational Level</b>	Primary	13	32.5
	Secondary	19	47.5
	University	8	20
<b>Experience in Chicken farming</b>	< 1 year	2	5
	1-2 years	15	37.5
	>2years	23	57.5

Source : Author, survey data (2019).



The pictures below demonstrate involvement and contribution of women in activities of chicken farming in Rulindo District.



#### Farm size and eggs production

The medium chicken farmers as showed by the results from survey, 67.5 % raise from 500 to 1000 layer chickens, 30 % raise from 1001 to 3000 layer chickens and the remaining 2.5 % raise from 3000 to 5000 layer chickens. For the production of eggs, 67.5 % medium layer chicken farmers produce eggs between 400 and 900 per day and 30 % gain production of eggs between 1000 and 2900 and 2.5 % obtain production of eggs from 3000 to 4900 per day. The table below shows the details.

**TABLE 5: FARM SIZE AND EGGS PRODUCTION.**

Chicken number	Respondents	Percentage	Eggs production	Respondents	Percentage
500-1000	27	67.5 %	400-900	27	67.5 %
1001-3000	12	30 %	1000-2900	12	30 %
3000-5000	1	2.5 %	3000-4900	1	2.5 %
<b>TOTAL</b>	<b>40</b>	<b>100</b>	<b>TOTAL</b>	<b>40</b>	<b>100</b>

#### 4.1.2 STRATEGIES FOR ACCESSING TO THE REGIONAL MARKET.

##### 4.1.2.1 MARKETING MIX.

###### Place

About the market, where medium chicken farmers sell eggs, the results from survey demonstrated, 47.5 % of the respondents sell their produced eggs to the Wholesaler-Retailers, 37.5 % sell to the collector traders, 17.5 % sell to the middlemen and 2.5 % sell to the supermarket or restaurants.

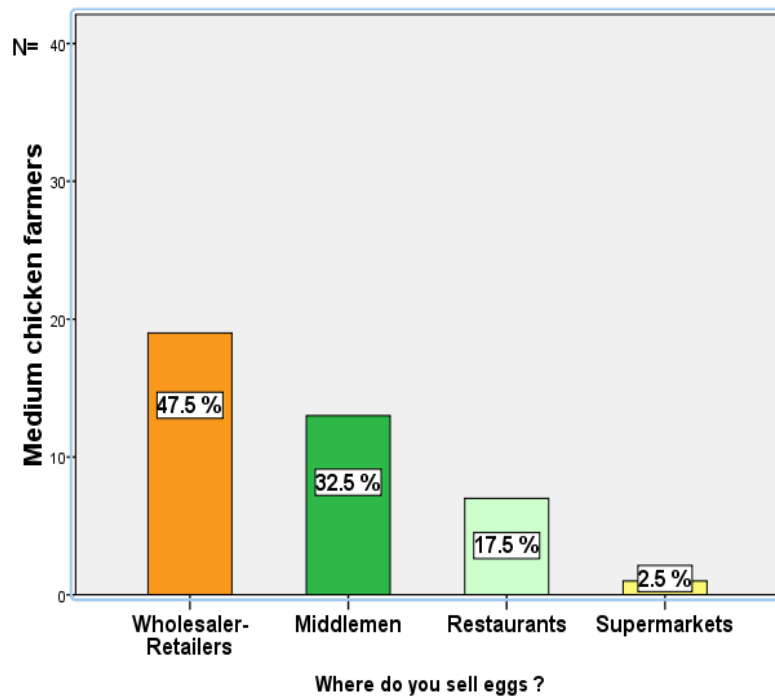
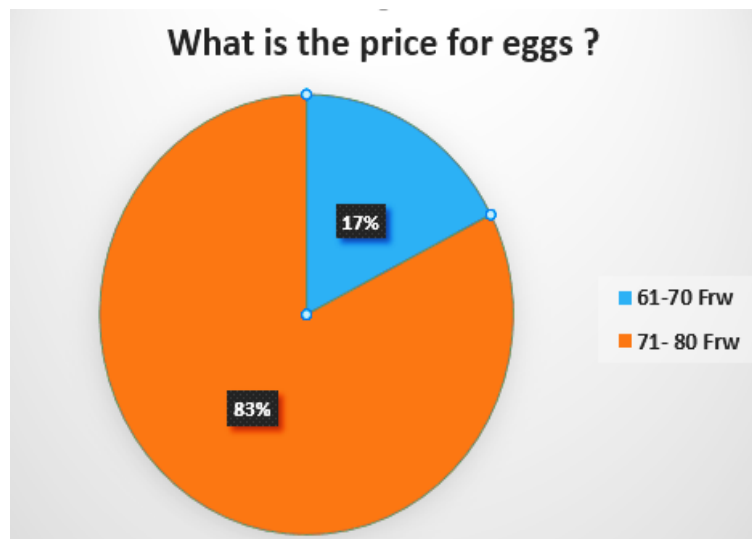


FIGURE 11: CUSTOMERS FOR EGGS.

SOURCE: AUTHOR, SURVEY DATA (2019)

###### Price

The selling price for eggs is between 61 Frw and 80 Frw depending with who medium chicken farmers sell eggs among wholesalers retailers, collector traders and middleman. The results from survey showed in the figure below, 83 % of medium chicken farmers sell eggs at the price between 71-80 Frw and 17 % sell at the price between 61 to 70 Frw.



N= 40/Medium chicken farmers

Figure 12 : Selling price for eggs.

Source : Author, survey data (2019).

### Status of the price for egg.

For the price fluctuation, the results from survey illustrated the instability of the price by 87.5 % of respondents out of 12.5% respondents benefiting stable price. The change of price on the market is also signaled by key informant importer and exporter.

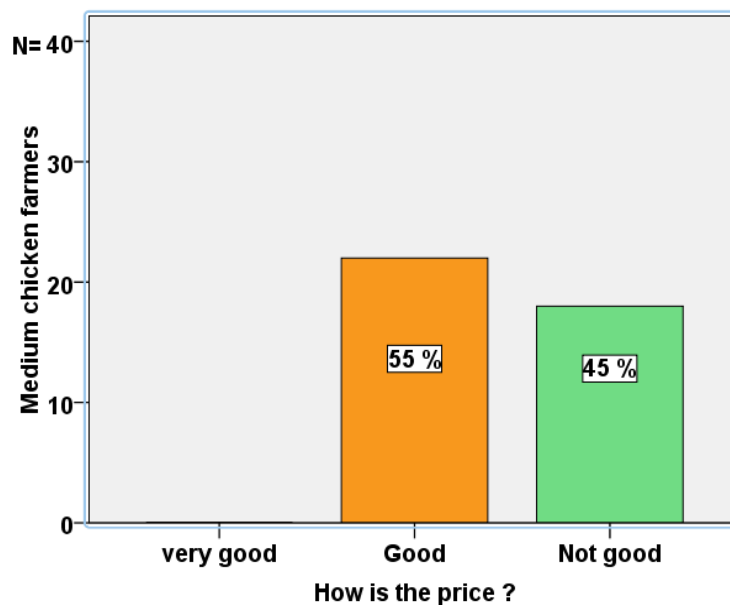


FIGURE 13 : APPRECIATION OF THE PRICE PAID FOR EGG.

Source : Author, survey data (2019).

### Appreciation of the price paid for egg.

For the appreciation of the price of eggs, the results from 55% of respondents revealed that, the price per egg paid to the medium chicken farmers is good and 45 % said, the price is not good, none considered the price as a very good price.

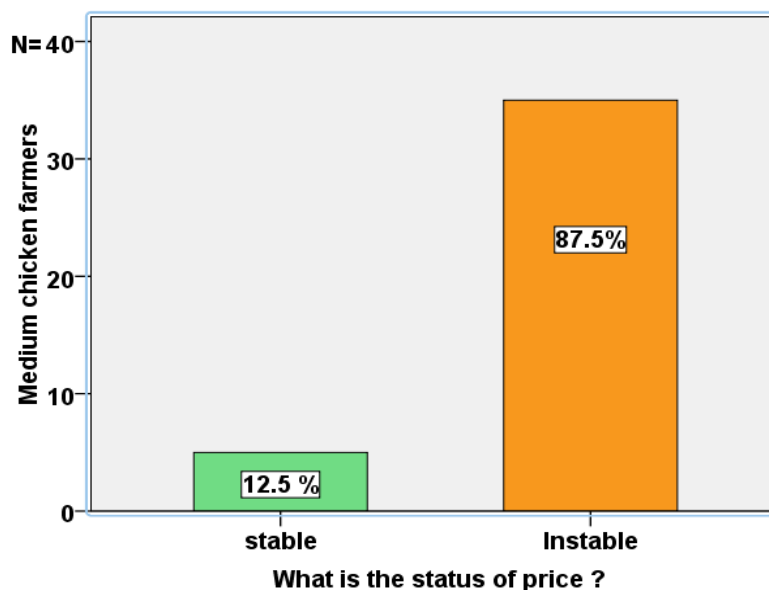


FIGURE 14: STATUS OF THE PRICE FOR EGG.

Source : Author survey data (2019)

### Decider of the price for eggs.

There is a confusion about who is decider of price for eggs between buyers and producers. The results from survey showed that, 50 % of the respondents confirmed the wholesaler-retailer as a leader in deciding the price for eggs, followed by producers at 40 % and middleman at 10 %. Generally, buyer decide the price at 60 % and the medium chicken farmers decide the price at 40%.

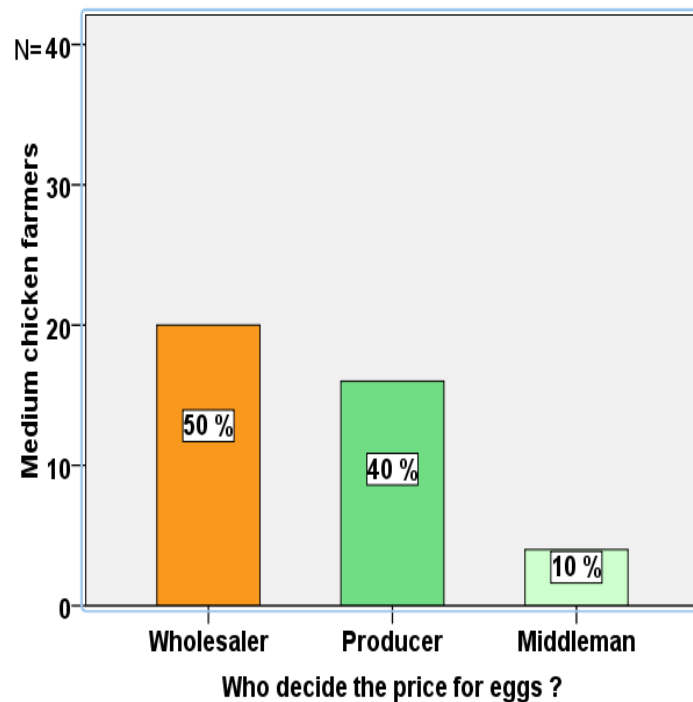


Figure 15: Decider of price for eggs.

Source : Author survey data (2019).

### Product

The most of the medium layer chicken farmers are not categorized eggs, The findings from survey determined 35 % of the respondents categorized eggs by their size and 65 % of respondents revealed unable for the practice as showed in the figure 17.

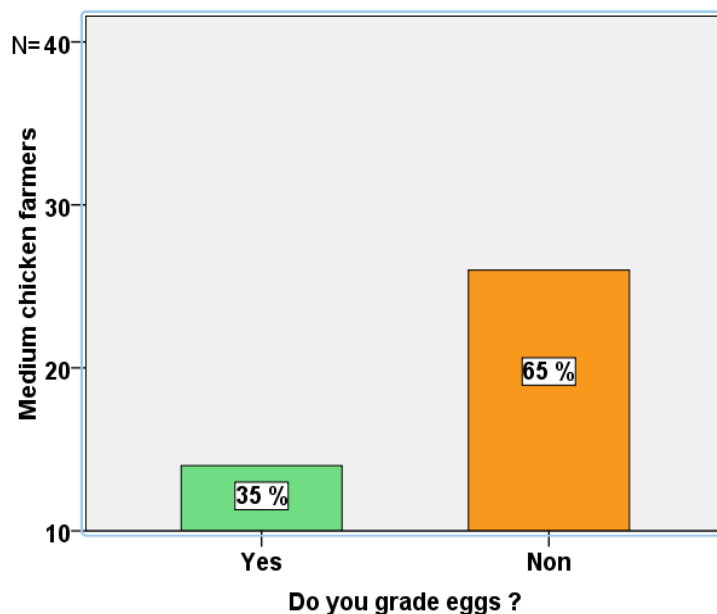


Figure 16: Grading level of eggs.

Source : Author survey data (2019).

## Promotion

To promote chicken farming as a business activity, the results from survey showed, 52.5 % of the respondents preferred to cooperate with other stakeholders, 35 % chose to get training, 7.5 % wanted getting loan and 5 % wanted to get all together. The figure show the detailed results.

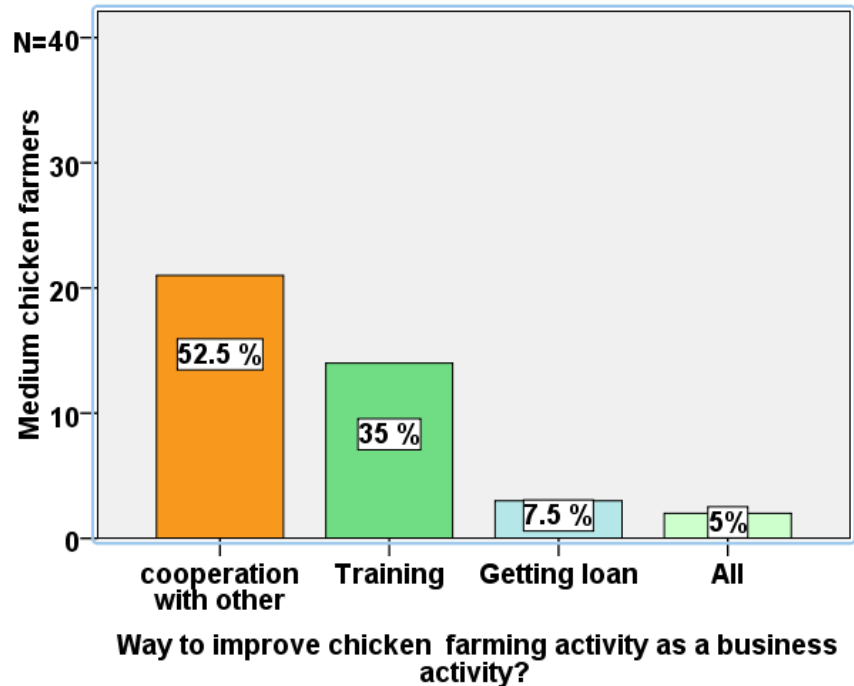


Figure 17: Promotion of chicken farming as a business activity  
Source : Author survey data (2019).

### 4.1.2.2 UPGRADING OF MARKET ACCESS POSSIBILITIES

## Market Access

To access on the market requires adoption of strategies, for searching the more appropriated, the surveyed respondents, 52 % are motivated to use organization of supply, 35 % preferred the collective marketing and 13 % chose the contract farming. The figure below illustrates the dominance of organization of supply compared to other possibility for market access.

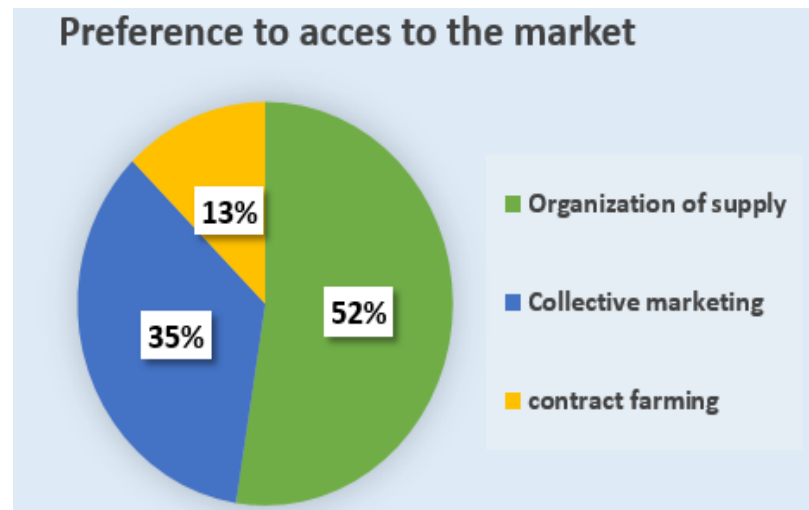


FIGURE 18: PREFERENCE OF MEDIUM CHICKEN FARMERS TO ACCESS TO THE REGIONAL MARKET.

Source: Author Survey data (2019).

#### 4.1.2.3 MOTIVATION LEVEL TO BE MEMBER OF FARMER'S ORGANIZATION

##### Organization preferred by medium chicken farmers

To determine the farmer's organization preferred by medium layer chicken farmers in Rulindo District, among 40 respondents, 57.5 % preferred creation of cooperatives and 42.5 % preferred farmer's group creation. The details are illustrated in the right figure.

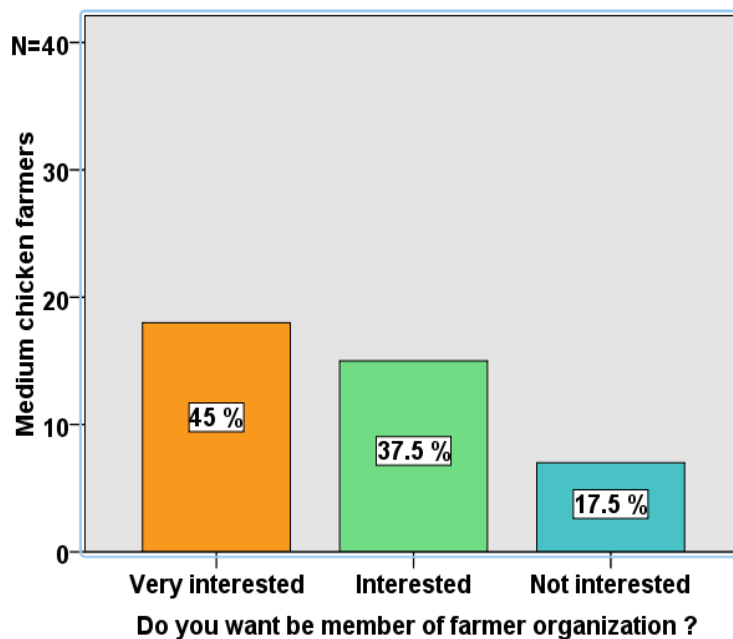


Figure 19: Motivation level to be member of farmer's organization

Source : Author, field data (2019).

##### Farmer organization

To know the motivation of creation of farmer's organization as one of the method could contribute in layer chicken value chain development, the results from survey demonstrated in the figure 19 showed 45 % of the respondents are very interested to be member of farmer's organization, 37.5 % are interested and 17.5 % are not interested. In total 82.5 % of the respondents gave positive response.

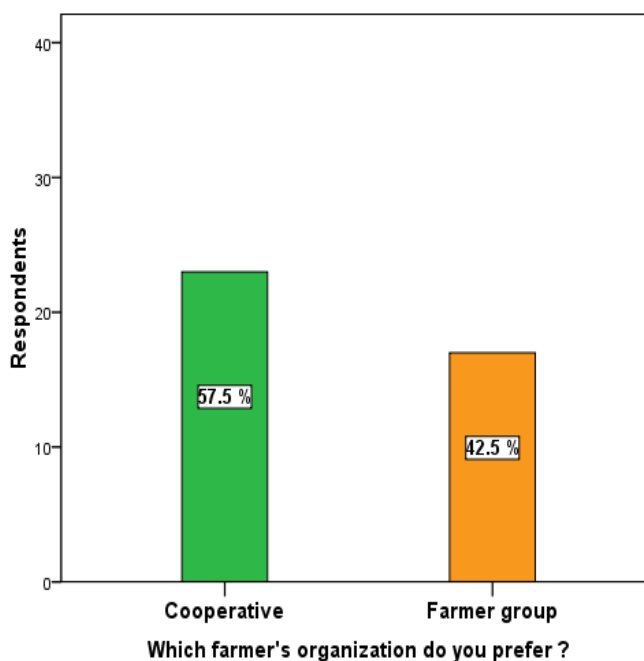


Figure 20: Organization preferred by MEDIUM CHICKEN farmers.

Source : Author, field data (2019).

## 4.2 RESULTS FROM FOCUS GROUP DISCUSSION

This paragraph give information on the findings from two focus group discussions with 24 medium chicken farmers, one was occurred in Rusiga sector and another was occurred in Bushoki sector.

### 4.2.1. STAKEHOLDERS ANALYSIS AND THEIR ROLES

#### **Inputs suppliers**

Medium layer chicken farmers stated, there is no input suppliers operating in Rulindo District, all are in Kigali City. They buy DOC through supplying companies in AGROTECH and UZIMA Chicken, feeds through TUNGA feeds and Gorilla feeds. Gorilla feeds do reaching feeds to the farmers through the businessman distributors placed in the region where farmers are many and supply demand is higher. Others manufacturers suppliers of chicken feeds are ZAMURA feeds Ltd, and HUYE Feeds Ltd.

#### **Collector traders/ middlemen**

The collector traders and middlemen buys eggs from the chicken farmers through trust as declared during FGD and as showed in the figure 11 resulted from survey. The medium layer chicken farmers are busy with farming activities, they don't have enough time to search market information and organize themselves transportation and sales.

#### **Wholesalers/retailers**

The wholesaler-retailers source eggs directly from medium layer chicken farmers; based on the current selling price, they negotiate with farmers or impose the buying price without intervention of chicken farmers. They buys eggs without take into account on the quality of eggs in terms of cleanness, dirty and size of eggs or candle eggs. According to the information provided during FGD, Certain wholesalers do separation of eggs by their size and pay different price but certain medium chicken farmers are antagonist for that practice, it is disadvantaged for them

#### **Exporters/Importer**

There is no any importer or exporter who source eggs in Rulindo district named by participants during FGD.

#### **Consumers**

As explained by medium layer chicken farmers participated in FGD, the free movement in cross border market of Rubavu, increases a number of consumers form RDC and they enjoy it by seeing buyers coming buys eggs, and when there is a circumstance disturbing the movement chicken farmers are out of sufficient buyers.

### 4.2.2 COORDINATION MECHANISM

The coordination mechanism in layer chicken value chain base on the market price, the buyer who pay better price leads the chain and has a voice more other actors in the chain. The chain is not well coordinated, each actor work individually and look at his proper interest without taking into account to the other actors involved in the chain, said participant in FGD. There is no significance coordination between inputs suppliers and producers, and between producers and buyers and each farmers search where to sell eggs, declared by RPIA.

#### 4.2.3 UPGRADING THROUGH AN INCREASE OF VALUE ADDED

This paragraph indicates purchasing and selling price, value added and value share among actors in the chain. Sometimes is there the variation of value share when the wholesalers buys directly to the chicken farmers instead to be supplied by collector traders and when middlemen sell to the supermarkets instead to sell to the shop and restaurants. The table below serves as example of results from the field, interview and FGD.

TABLE 6: PRICE FOR EGG OF EXOTIC BREED FOR DIFFERENT ACTORS IN THE CHAIN.

Actors	Purchasing Price	Selling price per egg	Added Value	Value share
Producers	-	77 Frw	77 Frw	77 %
Collectors traders & Middleman	77 Frw	80 Frw	3 Frw	3 %
Wholesalers-retailers	80 Frw	83 Frw	3 Frw	3 %
Retailers shop, restaurants & supermarkets	83 Frw	100 Frw	17 Frw	17 %

Value added = selling price of actor - the previous price of actor

Value share =  $(\text{Value added} \times 100) / \text{Final price of retailer}$

#### Value share

As demonstrated in the figure at the right side, producers earn 57% of value share, middleman gains 18%, retailers take 15%, collector trader and wholesalers-retailer each has a value share of 5%. In layer chicken value chain, producers, middlemen and retailers gain more profit compared to collector traders and wholesaler-retailers.

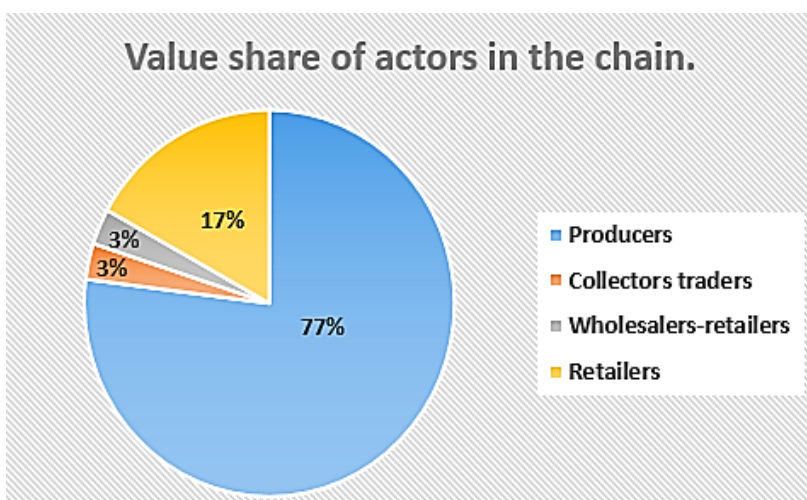


Figure 21: the value share among actors in the chain.

Source : Author FGD & interview data (2019).



#### 4.2.4 VALUE CHAIN DEVELOPMENT

The medium chicken farmers in Rulindo district claim themselves without think on how to be organized and prepare a better way of interventions for solving problem through a developed value chain where they could be empowered and gain more profit. The development of layer chicken market oriented value chain requires first the mindset change of certain farmers who are self-confident and influence others in negative way, unfortunately, those chicken farmers are chosen as leaders of others and are barriers for any change for value chain development as declared by chicken farmers participated in FGD. They work closely in small group of few farmers and they think being more specialized in chicken farming and they oppose for any change that are not wanted or they do not find profit.

The figure below demonstrate focus group discussion with medium layer chicken farmers from Base, Bushoki, Rusiga and Mbogo sectors.

**Focus group discussion in Bushoki Sector**



**Focus group discussion in Rusiga Sector.**



#### 4.3 RESULTS FROM INTERVIEW

The results from interviewer described in this chapter are relevant to the key informants found in annex 6 of this document.

##### 4.3.1 INTERVIEW WITH IN CHARGE OF COOPERATIVES IN RULINDO DISTRICT (KEY INFORMANT 1).

To raise chicken is not easy; it requires commitment and daily follow up, it is not possible for our people who always have their preoccupation to raise together as a cooperative, working in cooperatives necessity initiatives of farmers having the same intellectual skills and capital for investment, with targeted goal to solve identified problems.

##### 4.3.2 INTERVIEW WITH LIVESTOCK SPECIALIST –MINAGRI (KEY INFORMANT 2).

MINAGRI in collaboration with RAB, MINICOM, RSB, set rules and regulations for agricultural business from input supplying to retailing function. It collaborate with partners, private companies and NGO'S involved in the development of agriculture and livestock sector. The stakeholders involved in poultry sector are poultry farmers represented by RPIA but is still not yet decentralized. The strategies achieved

by the MINAGRI to develop poultry sector focused on exemption of VAT for livestock inputs and that increased industries making feeds from zero to five manufacturers. Privatization of former national hatchery to UZIMA chicken increased the production of day old chicks at affordable price but the supply is still insufficient. The market for eggs at the national and regional market is available for producers but the problem is the organization for access, challenges are the price fluctuation for eggs and increase of price for feeds. There is no specific rules and regulation for poultry and poultry products. The Rwanda's people do not have culture to consume eggs.

#### **4.3.3. INTERVIEW WITH SALES AND MARKETING OFFICER / AGROTECH (KEY INFORMANT 3).**

AGROTECH supply inputs to the chicken farmers, day old chicks, starter feeds, and concentrate rich in energy, special vitamins, antibiotics and vaccines. It doesn't has a direct collaboration with the chicken farmers. He said, "once chicken farmers are grouped into cooperatives is possible to negotiate with our company and getting quality medicaments and drugs at a reasonable price ". The chicken farmers do not have knowledge on how to use drugs and vaccines, do not respect the medicament prescription, they distribute overdose or under dose, they keep medicaments in bad conditions, lose the quality and curative properties, and become inefficient. Some of the chicken farmers make themselves feeds using ingredients bad conserved and contained aflatoxin danger for chicken and human healthy (quality of eggs).

#### **4.3.4. INTERVIEW WITH SALES AND MARKETING OFFICER /GORILLA FEEDS (KEY INFORMANT 4).**

There is no direct relationship between industry and chicken farmers, Gorilla feeds do reaching feeds to the farmers through the businessman distributors placed in the region where farmers are many and supply demand is high. The challenges, chickens farmers claims about the quality of feeds, in case their production fall down, most of the cases occurred, it was there apparition of diseases, chicken farmers do not have skills to diagnose clinically diseases and do not respect the calendar for vaccination. There is a gap of technician experienced in poultry farming and health management. There is no exact calendar for poultry vaccination established within the country and there are no standards for ingredients used in feeds making. There is no sufficient raw material for making feeds in the country, we imported from Zambia, Tanzania and India, importation is costly higher and only tax for VAT is exempted, justification for increase of price for one kilo of feeds produced. There is also a gap knowledge and skills in chicken feeds formulation.

#### **4.3.5 INTERVIEW WITH FOODS PRODUCTS STANDARD OFFICER-RSB (KEY INFORMANT 5).**

The mandate of RSB is to set the standards and technical specification of the finished products and execute inspection on Airport and borders. Deliver certificate based on the existing standards, execute national standards laboratory test of processed products. There are no established quality standards for eggs and guidance for production of environmentally friendly eggs.

#### **4.3.6 INTERVIEW WITH ACTING SENIOR MANAGER AGRICULTURE FINANCING BRD (KEY INFORMANT 6).**

Rwanda's Bank for development give loan to the farmers based on their business plan and cash flow of the farm. The chicken farmers give the prepared project and the bank analyze them.

The bank give loan for investment or working capital. The minimum loan delivered by BRD is 50 million, the payment period and variation of interest rate depended by business plan and cash flow, experience

in chicken farming, assurance of market with contract. The medium layer chicken farmers in Rulindo district are not able to benefit loan from BRD because are not fulfill condition for loan. The reason why government sensitize farmers to be grouped into cooperatives to be able to access on loan and other different advantages. The first thing for investment is the market, nowadays people wants improve their wellbeing with consumption of protein, for that there is a large market of eggs in RDC. The challenges faced by BRD, some farmers take loan and do not want to pay, we noticed significant loss of amount not reimbursed by the chicken farmers.

#### **4.3.7 INTERVIEW WITH HEAD OF DEPARTMENT OF ANIMAL RESOURCES AND TECHNOLOGY TRANSFER RAB (KEY INFORMANT 7).**

Rwanda Agriculture and Animal Resources Development Board (RAB) is a government institution under the Ministry of Agriculture and Animal Resources in charge of the implementation of government agriculture and livestock policies. RAB provide capacity building to the chicken farmers through extensions services, and do a research related to agriculture and livestock. It collaborates with other national research institutions mainly universities and with other researchers working in private, public sectors and NGO's. The whole layer chicken value chain is not developed. There is a scarcity of ingredients for feeds making, insufficient supply of necessary medicaments, DOC, and vaccines. At the national level, to develop the poultry value chain, some activities have already achieved including privatization of the former national hatchery to UZIMA Chicken for solving the problem of insufficient supply of DOC, the company had been asked to raise parental stock to be able to produce DOC commercial layers instead to produce only SASSO breed. To solve the problem of raw materials, the key informant argues to collaborate with private companies for importation of ingredients for feeds and procuring facilities to store maize produced within the country.

#### **4.3.8 INTERVIEW WITH MONOGASTRIC PROGRAM RAB (KEY INFORMANT 8).**

Poultry sector is ongoing development in Rwanda, investors and stakeholders increase. The increase of small stock production is a component of the Strategic Plan for transformation of Agriculture 4 (PSTA) established by MINAGRI. The consumption for egg is still low; it is because the population is unfamiliar with culture to consume eggs. The poverty, insufficient government policies and consumer unawareness reduce the level of consumption and affect negatively market opportunity; emphasis of fighting malnutrition among children in the country will increase the level of capita egg consumption. The lack of establishment of standards for manufacturing of feeds and insufficient chicken breed within the country hamper the development of poultry sector in Rwanda.

#### **4.3.9 INTERVIEW WITH RULINDO DISTRICT ANIMAL RESOURCES OFFICER (KEY INFORMANT 9).**

Stakeholders involved in chicken farming are chicken farmers and collector traders of eggs. The collaboration between chicken farmers and Veterinaries technicians of sector is not efficient. Chicken farmers consider and think self-confident and self-sufficient due to their experience in chicken farming and tend to be not flexible for collaboration. There is no special support given to the chicken farmers, only advice is given through the meeting. The Challenges hindering the chicken farming in Rulindo District are, high price of feeds compared to the price of eggs, fluctuation of price for eggs, chicken farmers do not have any control about the change for price of eggs, traders comes and dictate the price to the farmers saying market is not good. Market is not assured compared to the production of eggs, the quality of chicks imported is not trusted by the farmers. There are no veterinaries pharmacies selling the necessary medicament needed by the chicken farmers, it requires to travel to Kigali City, farmers spend more time

and money to access on vaccines and medicaments. There is no organized way or facilities already done by sales companies for facilitation of accessibility. Insufficient manufactured feeds due to ingredients deficit leads to increase of price for feeds and chicken farmer quit the domain by lack of interest. Day old chicks, vaccines and medicaments are not fulfill quality standards. At the District level, there is no policies for developing the medium layer chicken farmers. Strategies for value chain development are: Increase the price for eggs and maintain it fixed. The attribution of the price fixation is the task of MINICOM. The district has to take voice and defend the idea and reason to increase the price for eggs, solve the problem of expensive feeds. Install in the farming zone the industry for feeds making. District in collaboration with RAB and MINICOM have to work together, discuss and take decisions about organization of the market for eggs, the creation of farmer's cooperatives is very important to develop a layer chicken value chain.

#### **4.3.10 INTERVIEW WITH COMMUNITY PROCESSING CENTERS PROGRAM SPECIALIST –MINICOM (KEY INFORMANT 10)**

- The business licensing issues and regulations for traders are facilitated by the government through the Ministry of Industry and Commerce (MINICOM). Nowadays, the Ministry focus on the value chain for meat and fish not for poultry value chain.
- There is no current information for trades of eggs and poultry.
- There are no rules and regulation related to trades of chicken and eggs

#### **4.3.11 INTERVIEW WITH MANAGING DIRECTOR OF JM POULTRY AND FOOD SUPPLY LTD (KEY INFORMANT 11).**

Before bird flu appeared in Uganda influenced the stop of importation, he imported eggs from Uganda and did re-export to RDC. Nowadays, he buys eggs directly from the farmers through trust. He has the stores in Rubavu, Ruzizi and in RDC. He said not find the sufficient quantity of eggs to supply, he wait the whole week to obtain the quantity needed. The quality of eggs is not checked before buying, he said, "there is no material for testing the quality and there is no standard for comparison, this a gap but for us is not a gap because it does not affect our business". Challenges encountered are the price fluctuation and insufficient eggs produced, sometimes too many eggs on the market. Challenges in chicken farming, insufficient of feeds and increase of price for feeds pushing farmers to sell chickens and leave the sector. Vaccines and medicament in the country are insufficient and not fulfill quality standards, Gaps from stopping importation, it take time to deliver eggs, advantage for chicken farmers of Rwanda, price for eggs was increased due to, no competition of eggs from Uganda.

#### **4.3.12 INTERVIEW WITH WHOLESALER-RETAILERS KIGALI (KEY INFORMANT 12).**

The key informant said, the customers prefer to buy more exotic egg than local eggs because the price for exotic eggs is 2300 Frw per tray and price for local egg is 3900 Frw per tray.

#### **4.3.13 INTERVIEW WITH COLLECTOR-TRADER & MIDDLEMAN RULINDO DISTRICT (KEY INFORMANT13)**

There is a competition between collector's traders and middleman depending on the demand on the market. The wholesalers and collector traders accuse middlemen to provoke increase variation of price for egg, and middleman accuse wholesalers to be obstacle for buying eggs. Chicken farmers needs sufficient money to buy feeds, reason why they sell eggs globally at lower price instead to sell to the



middlemen. The dirty eggs are not in willing to pay by the customers. The high tax requested per eggs by Rulindo District (payment of one Rwandan franc per egg) is a big challenge for collector traders.

#### **4.3.14 INTERVIEW WITH WHOLESALERS-RETAILERS –RUBAVU DISTRICT (KEY INFORMANT 14, 15, 16, 17, 19).**

There is no sufficient collaboration between chicken farmers and traders “. The relationships between buyers and producers are informal, not sufficient and are characterized by mutual trust for both sides and leaded by the payment power during purchase of eggs. To get sufficient quantity of eggs the wholesalers-retailers sometimes pass through collector traders, because they don't know where farmers chicken are and they don't have any connectivity with them. The wholesalers don't collaborate between them, everyone works individually and it is difficulty to sell eggs at the same price and in the same condition. The small eggs are sold at the low price and it is a loss for the sellers. Clients are not satisfied when they are buying dirty eggs; many of them prefer to buy brown eggs. They declared, it should be better to cooperate as traders of eggs for decisions making about the price and sorting eggs. If possible, chicken farmers can collect together their produce for facilitation of the work, it will be easy to find needed quantity and facilitate business and communication with them, and they will benefit more rather than selling as individual farmer. The perception about the color of shell eggs, customers like brown eggs as confirmed by wholesalers-retailers. The reason given by consumers, those eggs are not easily broken during cooking, and for consumption, shell of boiled eggs is easily removable. The customers grade themselves eggs by their size and color and according their appropriated need and preference. They are not motivated to buy dirty eggs. The pictures below showed customers in activities of sorting and eggs according their preference.

##### **Customers sort & grade eggs by their size and color in Rubavu District**



**Source: Author field data (2019).**

#### **4.3.15 INTERVIEW WITH MEMBERS BOARD OF RPIA (KEY INFORMANT 18).**

RPIA give training to the chicken farmers, members and no members of associations, especially members benefit the supplement field visit and outside country training. The body members of RPIA said, “Chicken farmers exchange information about the techniques of chicken farming but there is no collaboration to

search together the market for eggs, each farmer tries to find his buyer”. For the role of RPIA in value chain development, there is no special activity done by association. The challenges explained are, weakness for self-organization, insufficient capital and low level of understanding, absence of collaboration between buyers and chicken farmers. The last are not familiar to sell directly eggs to the market, always they trust the middleman or wholesalers, and the culture were mentioned as major cause to not being feel capable and comfortable to access themselves the market. The keys informants from RPIA, declared the layer chicken value chain can’t be well coordinated and developed without involvement of the government policies, measures and supports.

#### **4.3.16 INTERVIEW WITH MIDDLEMAN (KEY INFORMANT 20).**

The key informant said “we do not have sufficient capital for buying eggs, and always we are in competition with collector traders and wholesalers-retailers”. Medium layer chicken farmers prefer to sell eggs to our competitors because they buy more eggs and chicken farmers needs money for buying feeds.

#### **4.4 Observation**

Chicken farmers in Rulindo District take chicken farming as profitable secret private activity (Mukoto village). They are in conflict for interest on the market, and tend to keep in secret their chicken farming activities; they do not want give deep information about profit, they fear to be taxed by the District. Certain consider themselves knowing everything for chicken farming and neglect technical assistance. The hygienic conditions are not respected and some chicken farmers do not put litter in the house’s chicken, and the manure are not well managed.

#### **4.5 SUMMARY OF STAKEHOLDERS AND THEIR ROLES IN THE LAYER CHICKEN VALUE CHAIN.**

The map below shows the details on the existing layer chicken value chain in Rulindo district. The information given in the map are the results from FGD and interview with wholesaler-retailers, collector traders and middleman.

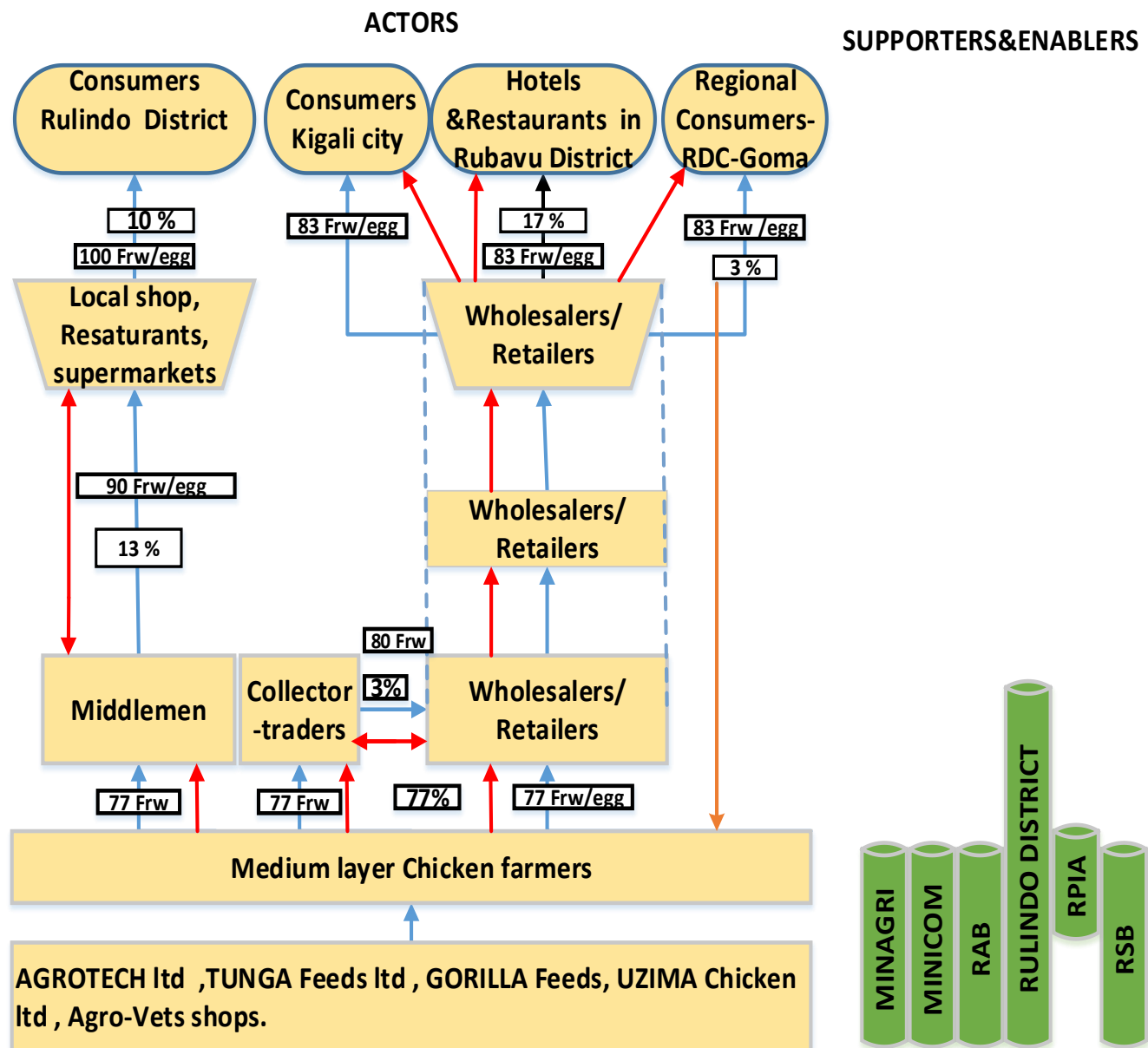


Figure 22 : Layer chicken value chain map in Rulindo district

Source : Author field data (2019).

The table below relates information about stakeholders involved in layer chicken value chain in Rulindo District. This information was provided by participants during FGD, and the interviewed key informants.

**TABLE 7: SUMMARY OF ACTORS INVOLVED IN LAYER CHICKEN VALUE CHAIN**

Functions	Actors	Roles
Inputs supplying	Inputs suppliers	They supply feeds, day old Chicks, medicaments and vaccines. They give instructions of the use of inputs.
Producing	Producers	They buy inputs, they produce eggs, and they sell eggs to the wholesalers-retailers, collector traders and middlemen.
Collecting	Collectors traders/Middlemen	Collects eggs and at farm level, transport and sell to the wholesalers-retailers, middlemen supply to the local shop and restaurants.
Wholesaling /Retailing	Wholesalers-Retailers/Exporter	They buy eggs from farmers and through collector traders. They sell eggs to the retailers, individual consumers, Hotels and restaurant. Exporters retail eggs within the country and do export to the RDC. Retailers sell eggs to final consumers at the national and e regional markets.
Consuming	Consumers	They finance the chain, buy and consume eggs, sort and grade eggs before buying.

**TABLE 8: SUMMARY OF SUPPORTERS AND ENABLERS INVOLVED IN LAYER CHICKEN VALUE CHAIN.**

Supporters names	Roles of supporters
Government of Rwanda	Regulating agricultural business from input supplying to retailing function. Regulate and impose rules on livestock products trade including eggs. Remove VAT tax for inputs increasing the production Facilitate and support investments
Ministry of Agriculture and Animal Resources ( MINAGRI )	Setting the policies, rules and regulations for improving production and business of agriculture and livestock products including poultry sector, Give assistance to the farmers and farmer's organizations.
Rwanda Agriculture and Animal Resources Development Board ( RAB )	Provide capacity building to the poultry farmers through extensions services, Facilitate the farmers for importations of day old chicks, Ensure the availability of poultry feeds in quantity and in quality, facilitate the poultry farmers to access on the vaccines and medicaments.



Rwanda Standard Board ( RSB )	Ensure the quality standards of inputs, set quality standards for agriculture and livestock products.
MINICOM	Training of poultry farmers to access on the markets Helping the farmers to be grouped into the cooperatives and associations, help in controlling the quality of inputs imported, set rules and regulations for trade of agriculture and livestock products.

## CHAPTER FIVE

### 5.0 DISCUSSIONS

This chapter is the subject to compare the results found on the field by analyzing the existing layer chicken value chain in Rulindo District with the information clarified in literature review. The results originated and captured through the field survey, interview with key informants and focus group discussions.

#### 5.1 LAYER CHICKEN VALUE CHAIN ANALYSIS IN RULINDO DISTRICT.

The layer chicken value chain in Rulindo District involves actors from producers to the consumers. The layer chicken value chain is not developed confirmed by key informant 7 “the whole value chain is not developed “and there is no defined marketing channel where medium chicken farmers are involved as supported by (Maniraho, 2018).

##### **Inputs suppliers**

The results from FGD demonstrated, there is no strong inputs suppliers operating in Rulindo district only the small Agro-Vets shop are found and there is no direct collaboration between inputs suppliers and the medium layer chicken farmers as mentioned by the key informant 3 and 4; find more information on the interview with key informant 9; 3; and 4 in chapter 4. The supply of inputs as supported by (John Belt, 2015) is very important for producers, the inputs must be accessible, affordable and being in a good quality to intensify rural agriculture development. The facilitation of supply inputs to the layer chicken farmers in Rulindo District should provide reduction of transactions costs and saving of the time.

##### **Producers**

As demonstrated in the profile of respondent results from survey, the number of females respondents were more than the number of males, means that the farms visited during survey women were present and doing daily farming activities as demonstrated by the pictures in chapter 4, paragraph 4.1.1.2 and as stated by (SOFA Team, 2011), habitually women contribute more in agriculture production. The dominant medium chicken farmers are in the category of age between 36 and 45 years and the large number had attended a secondary school. Many chicken farmers their chicken number ranged between 500 and 1000 chicken per farmer. The approach of the chicken farmers through focus group discussions, meeting and training could help in value chain development and extensions of farming activities.

##### **Wholesalers-retailers**

The wholesaler-retailer take lead in the chain and play important role in determining the price for eggs as shown in chapter 4, paragraph 4.2.1. They are more integrated in the chain more than other actors as showed in the value chain map figure 22. The problem for them, they can't find where they can source sufficient quantity of eggs. The eggs produced in Rulindo District are transported to the store of wholesalers-retailers in Rubavu District and are retailed to the consumers dominated by customers from RDC, see more details in the paragraph 4.3.14.

### **Consumers**

The wholesalers-retailers confirm having many consumers from Democratic Republic of Congo and individual consumers, Hotels and restaurant within the Country. They said, the number of buyers is sufficient when the price for egg is moderate. There is no sufficient consumers within the country as specified by key informant 2 in the paragraph 4.3.2 and by key informant 8 in the paragraph 4.3.8.

## **5.2 POWER RELATIONSHIP AND COORDINATION MECHANISM**

The relationships between buyers and medium chicken farmers are informal, not sufficient and are characterized by mutual trust for both sides and leaded by the payment power during purchase of eggs, declared by the wholesalers-retailers. As the power relationship in a value chain is determined by the type of relationship created among the supply chain entities (Kähkönen.A, 2014), and consider there is no tangible relationship identified among actors of layer chicken value chain in Rulindo District as explained in the chapter 4. Paragraph 4.2.2 that means the power relationship in layer chicken value chain stay insignificant. The chain is not well coordinated, no significance coordination between inputs suppliers and producers and between producers and buyers as showed in chapter 4. To solve the problem of coordination and relationship for access to the market, the use of APP E-commerce in smartphones (mentioned in chapter 2, paragraph 2.1.1.2.2) was efficient in Zambia. The utilization of the same technology could help to improve the coordination and relationship in the chain and establishment of negotiation about selling and buying in layer chicken value chain in Rulindo District.

## **5.3 VALUE ADDED AND VALUE SHARE**

The potential opportunity to add value is determined by size and diversity of markets and technological capabilities of the actors. Moreover, market information on product and process requirements are important key to be able to produce the right value product for the right market (Trienekens, 2011). As stated in focus FGD, medium chicken farmers in Rulindo District don't have sufficient market information that explains are out of exact information on customer needs and requirements and are not aware about the additional value related to the quality like sorting, grading and packaging eggs. They do not have skills and material for facilitation of addition value practices as said by the key informant 11 in the paragraph 4.3.11.

## **5.4 Challenges and opportunities**

### **Inputs suppliers**

There is insufficient production of maize within the country. The necessary ingredients for chicken feeds making are imported as announced by key informant 7, more details are in the paragraph 4.3.7 and findings from key informant 4 are in the paragraph 4.3.4. Maize is a principal favored element for animal feeds making, unfortunately is in competition for consumption between animal and human mainly in East Africa, other constraint for maize production is the limited water for irrigation during dry season (Daly, et al., 2016).Based on the above information, is the role of the researchers to search the suitable ingredient more available and affordable can substitute maize for making animal feeds particularly in Rulindo District where poultry sector continue increasing.

### **Producers**

There is a scarcity and increase of price for feeds. The DOC, vaccines and medicaments are in insufficient supply in the country and particularly in Rulindo District, as explained by medium chicken farmers during FGD and by the key informant 7. The increase in number of the manufacturers of feeds do not have solved the problems of insufficiency of feeds in the country. Inputs suppliers are not in direct collaboration with the layer chicken farmers in Rulindo district. To solve the similar problem of inputs for the farmers in Mityana District in Uganda, The Kawakawa Global 2000 Uganda (NGOs) adopted the local initiatives to retail inputs through public-private partnerships and extensive training delivered to the Agro-dealers. The youth and volunteers farmers invested in agro-dealers sales shop near to the farmers. They succeeded to supply inputs in the District and reducing transactions cost of inputs for farmers (SG2000, et al., 2016). This methodology could give positive impact in Rulindo District if chicken farmers are more sensitized and trained and demonstrated the willing to buy. Other approach, the chicken farmers should negotiate with inputs suppliers and find the better way they can be supplied the feeds at a reasonable price without struggling day to day and one by one.

### **Wholesaler retailers**

The communication and exchange of information between wholesaler-retailers was identified as a constraint in trade of eggs as detailed in the previous paragraph 4.3.14, in the same paragraph wholesalers retailers said, “the trade is not organized, we failed to form a cooperative “. It is time for the medium chicken farmers of Rulindo District to be sensitized to cooperate and be embedded in the trade of eggs for maximizing their profit because those who are in trade are not producers and are not organized.

### **Collector traders& middlemen**

The collector traders and middlemen said to be constrained by the high tax demanded (3 Frw per egg) by District for each eggs transported. There is no significant profit margin for eggs, said member board of RPIA. Taxing produced eggs is like not supporting the development of poultry sector because layer chicken farmers get a little income due to the causes enumerated in different paragraph (high cost of feeds, loss due to the diseases, high transportation cost of feeds).

### **Exporter**

It is revealed, the quantity of eggs to supply is not enough as explained by key informant 11 in the paragraph 4.3.11. He mentioned also the constraint of price fluctuation once eggs are too many on the market. It is necessary to emphasize the chicken farming for increasing production while doing adjustment of the market from informal to formal market to ensure a guaranteed market.

### **Consumers**

Customers are not always customers, as declared by certain wholesaler-retailers in the paragraph 4.3.14, and as it was our observation during field research, customers do activities of sorting and grading eggs to gather preferred quality eggs, it is time consuming for them and the jobs that are doing, are not a paid jobs, it should be changed and give the value to the customers. It is needed to add value to the commercialized eggs referring on the customer needs and requirements that will help to maintain clients and create loyalty. The cooperation of medium chicken farmers in Rulindo District and their involvement in trade of eggs will make a change , technical assistance and support should be assured and be a trump.

## **5.5 STRATEGIES FOR ACCESSING REGIONAL MARKET**

### **5.5.1 MARKETING MIX**

#### **Place**

The market opportunity is available in RDC compare to the Country because the level of consumption in Rwanda is constrained by culture and other causes pointed by key informant 2 and 8 in the paragraph 4.3.2 and 4.3.8. The key informant 6 interviewed stated, the first thing for investment is the market. There is a large market in RDC. According to (FAO, 2017), the exchange of information among actors in a value chain leads to the market access and marketing. The producers choose the right place and the right time to sell their product at the right price. Information resulted from FGD and key informant 7 said, the market for eggs is available but the challenges are the absence of linkage between producers and buyers.

#### **Price**

As there are no rules that regulate the price in the country, through interview with wholesalers –retailers and FGD, both side buyer and producer brought confusion about the decider of price for eggs. The results from survey showed the dominance of the wholesalers in deciding the price for eggs (see details in figure 15). The unfavorable position on the market for medium chicken farmers compromise their bargaining power and comes more complicated for setting their products sales price. The high price encourage producers to produce more , the price stability and guaranteed market are key important for producers to take decisions to invest in production (Danau, et al., 2011). In Sierra Leone, the medium- and larger-scale chicken's farmers were directly linked to retailers (including supermarkets) or to hotels, restaurants, and this collaboration empowered them to bargain power in price negotiation (Schweisguth, 2015), (USAID, 2017). From this experience, the medium layer chicken farmers in Rulindo District must be directly connected to the customers (market) through improved exchange of information and negotiation mentioned in the paragraphs of power relationships and coordination mechanism.

#### **Product**

The unawareness about the quantity and quality of eggs, and related processes rooted to the insufficient of skills and lack of market information and motivation from the better price hindered the medium chicken farmers to satisfy the demand on the market of RDC as stated by the key informant 11. The key informant 11 said, customers are not aware about the quality of eggs, this is not true because clients make choice referring on the quality of eggs as showed in the pictures chapter 4, paragraph 4.3.14. The organization of supply by the farmer producers helps to improve their position of bargaining power by negotiating with the buyers (Danau, et al., 2011). In Rulindo District, medium chicken farmers do not have any organization helping them to carry out together production and marketing processes of their product, that entails the absence of improvement in the chicken farming sector and value chain development.

#### **Promotion**

Medium chicken farmers in Rulindo District do not have any plan for advertise their activities and their produced eggs (see results of FGD in chapter 4). They are trusting the collector traders, wholesalers and middlemen as their final market or happily interested to see them coming to take eggs in their farm. This prohibit their integration in the chain, bargaining power and getting more profit. According to (Roman & Zgiep, 2013) medium chicken farmers should being organized themselves to accomplish activities aiming to reach a better product, market or service to a targeted group of customers.

### **5.5.2 MARKET REQUIREMENTS FOR EGGS (QUALITY PERCEPTION FOR EGGS).**

The most desirable quality for eggs are cleanliness and soundness; the cracked eggs may be sold locally and possibly only a few hours after lay. If the eggs are with dirty (blood or faeces) consumers are not motivated to buy them. It is advisable to sort eggs according their size and color (Hilmi, 2019). This information provided by (Hilmi, 2019) is truly similar to the results provided by collector traders and wholesalers –retailers during field research. The key informants 11 and 5 said, there are no established quality standards for eggs and there is no material for testing the quality. The key informant 3 indicated that, feeding chicken with bad quality feeds, contained aflatoxin and use inadequately the medicaments that has negative impact on quality eggs produced and on health of consumers. The perception about the color of shell eggs, customers like brown eggs as confirmed by wholesalers-retailers key informants (details are in the paragraph 4.3.14).

### **5.5.3 VALUE CHAIN DEVELOPMENT**

The whole layer chicken value chain is not developed. At the national level, policies and strategies had been already applied for developing poultry value chain, said by key informant 7, details given in paragraph 4.3.7. At the District level, there is no specific policies in place for developing layer chicken value chain in the District, initiatives of inputs suppliers are ongoing, declared by key informant 9, see details in the paragraph 4.3.9. The inappropriate collaboration and coordination among actors in layer chicken value chain are hindering factors for layer chicken value chain development in Rulindo district. The medium chicken farmers are not organized and do not have direction for adjusting their processes in production and in marketing, informed participants in FGD. To develop a layer chicken value chain will solve the problem faced by the chicken farmers and will be empowered and gain more profit. The mindset change, flexibility, cooperation, trust and commitment of actors are the success playing factors for achieving the common goal to access to market and maximize profit through layer chicken market oriented value chain. The vertical and horizontal coordination will be facilitated and the views from medium chicken farmers will contributed in promoting the sector.

#### **5.5.3.1 UPGRADING STRATEGIES TO ACCESS MARKET**

The chicken farmers participated in FGD argued organization of supply system of their produced eggs and this is possible when they are grouped into cooperative, details are in the transcript of FGD in annex 3. The level of strategies preference of medium layer chicken farmers to access the market is demonstrated in the figure 18 chapter 4. The adoption of views from the chicken farmers will influence and improve the existing layer chicken value chain and farmers will gain more benefit compare to the previous selling way. Collective marketing could be a solution for medium chicken farmers raising in Rulindo District even if the respondents preferred that method at the level of 35 %. The layer medium chicken can't easily understand why exchange of market information to reach the customers should be achieved in a common way, this statement from the chicken farmers necessities the extensive training for comprehension of the importance of collective marketing.

#### **5.5.3.2 UPGRADING OF GOVERNANCE STRUCTURE**

The relationship between producers and collector traders and wholesalers is based on informal collaboration through selling and buying, they apply trust instead of contract, findings from interview and FGD. According to (Dijk & Trienekens, 2012), the modern market oriented value chain prefers to speed up the trading relationship between producers and consumers or traders with adoption of contract.

Most of medium chicken farmers in Rulindo District think not necessary to sign a contract with the buyers, only 12.5 % interviewed respondents understand well the importance of signature of contract. The adoption of vertical coordination seems difficulty to be applicable this moment, as layer chicken value chain is new system for the all stakeholders and many of them are not aware of the importance of collaboration and coordination within the chain.

### **5.5.3.3 UPGRADING THROUGH PARTNERSHIPS AND ACTORS FOR CHANGE.**

The collaboration direct between chicken farmers with consumers and other partners is not generally applied in Rulindo District (see details in transcript of FGD). This is not convenient with the reality of (Dijk & Trienekens, 2012) stated that, “The producers have to build a stable communication within the chain and external network with the partners to make good relationship that can facilitate upgrading processes either by providing technological, organizational, political and educational support “. There is no any partnerships undertaken by medium chicken farmers in Rulindo District

### **5.5.4 ROLES OF FARMER ORGANIZATIONS IN LAYER CHICKEN VALUE CHAIN DEVELOPMENT.**

According to the key informants 1 and 9 interviewed, there is non-existence of operational chicken farmer’s organization in Rulindo District. The results from two FGD organized with participation of 24 medium chicken farmers and interview conducted with different key informants stipulated on the adoption of farmer organization and 82.5 % of the respondents are interested to be member of farmer’s organization, specifically cooperative, to be a better way to solve the problems related to development of layer chicken value chain and market access. As it was the case in coffee value chain in Uganda, the adoption of the farmer ownership model organization helped the farmer producers of coffee to perform and undertake more functions in the whole process of coffee value chain and increased their incomes and standard of living (Nkandu, 2008). In Ethiopia, the smallholder farmers had the problems to access on the market as clarified in chapter 2, paragraph 2.2.2, they succeeded through the training received on commodity ,marketing ,ownership and active participation and involvement by the government local office (SG2000, et al., 2016). The adoption of farmer’s organization in Rulindo District tends to expectation of tangibles results as all findings from survey, FGD and interview showed it as efficient solution.

#### **5.5.4.1 ROLE OF COOPERATIVES IN LAYER CHICKEN VALUE CHAIN DEVELOPMENT IN RULINDO DISTRICT.**

The key informant 3 and 6 insists on the advantage of working into the cooperatives. The key informant 6 said, our bank deliver a minimum loan valued at 50,000,000 million, that loan can help chicken farmers to increase production and accessing to the market (for details consult paragraph 4.3.6). The key informant 9 judge very important to create cooperatives and pre-cooperatives groups for common sensitization, improve knowledge and skills, the low level of understanding and thinking of chicken farmers (more clarification in the paragraph 4.3.9). The FGD as mentioned in above paragraph determined creation of cooperatives as efficient way to solve the problems. A concrete example where cooperative had been a powerful method, is the case of Uriri farmer’s cooperatives in Kenya, Uriri farmer’s cooperatives helped its members increasing income and improving knowledge capacity. It delivered training, facilitated reception of inputs and financial loan to its members (MDF-SA, 2009), see more detail in chapter 2 paragraph 2.1.2.2.1.

#### **5.5.5 DRIVERS INFLUENCING THE DEVELOPMENT OF MARKET ORIENTED LAYER CHICKEN VALUE CHAIN.**

##### **System efficiency**

The system efficiency in layer chicken value chain in Rulindo District does not exist as there is no sufficient collaboration of actors involved in the chain as declared by different key informants in previous paragraphs. Referring on examples given above, Uriri Framer's cooperative performed to change its members through training and facilitations, in Zambia the Virtual Farmers Markets were coordinated the smallholders farmers with the markets and other stakeholders, in Ethiopia ,training received about ownership and active participation were successfully helped in the change of farmer's behavior. The adoption of the same methodology must change attitudes and behaviors of layer chicken farmers in Rulindo District and from that innovation for application of system efficiency will be applied.

##### **Product quality**

The medium layer chicken farmers must supply to the market quality eggs able to stay on the market, satisfying the customer requirements and increasing a market share (Nadja & Merten, 2015). The unawareness about quality for eggs, use of poor quality feeds and mistreatment with antibiotics and misuse of other chemicals leads to the production of untrusted eggs about the quality standards and safe eggs as provided by different key informants. Reinforcement of approach to the chicken farmers must improve progressively the change about the quality for eggs.

##### **Product differentiation**

The layer chicken farmers have to think about their production processes and the product they deliver on the market and most importantly on the competitors (Nadja & Merten, 2015).

To produce a differentiated product depends on the market and demand of consumers. Separation of eggs and packaging according their size and cleanness could add value to the delivered eggs; those activities are attributed to the customers as declared by the wholesalers and as showed in the pictures in paragraph 4.3.14 and it consume time for customers.

##### **Social and environment standards**

Certain consumers are sensitive and aware of social and environment conditions in which the products are produced (Nadja & Merten, 2015).In Rulindo District, chicken farming activities are occupied by family members and rarely allocated to the workers. The waste is not well managed, chicken farmers put manure in the bags and pass long time on the farm waiting clients. They contribute in increase of greenhouse gas emission in atmosphere.

##### **Enabling business environment**

The key informant 7 and 6 showed existing potential opportunity as adequate environment for investment in chicken farming and market orientation, as supported by (Nadja & Merten, 2015), the changes in the business environment like in trade regulations can open new market opportunities. The government of Rwanda in collaboration with Rulindo District constructed the feeder road facilitating accessibility to the market, population have access on potable water and electricity. The key informants interviewed confirm RDC as a large market and a cross-border market constructed in the side of Rwanda enabling consumers from RDC. The gaps in establishment of rules and regulations about poultry sector and marketing was noted and showed by different key informants. As suggested by participants in FGD, in the coming years, the construction of a center for capacity building in chicken farming and a collection center for eggs will contribute to solve the problems encountered by chicken farmers in Rulindo District



## 5.6. SWOT ANALYSIS FOR LAYER CHICKEN VALUE CHAIN IN RULINDO DISTRICT

The information given in the tableau below is key phrases delivered during FGD, interview, survey and observation.

TABLE 9: TABLEAU OF CONSTRAINTS AND OPPORTUNITIES IN THE LAYER CHICKEN VALUE CHAIN.

<b>STRENGTHS</b> <ul style="list-style-type: none"> <li>• Interested layer chicken farmers for investment</li> <li>• Initiative of learning and doing</li> </ul>	<b>OPPORTUNITIES</b> <ul style="list-style-type: none"> <li>• Selling eggs at the regional market</li> <li>• To be grouped into cooperative and increase income</li> <li>• Producing egg through contract</li> </ul>
<b>WEAKNESS</b> <ul style="list-style-type: none"> <li>• Absence of chicken farmers' cooperative and lack of willingness for collaboration identified for certain chicken farmers.</li> <li>• Disorganized selling of eggs</li> <li>• Poor records-keeping</li> <li>• Insufficient sanitary measures</li> <li>• Self-confidence of knowing everything for chicken farming observed for certain chicken farmers.</li> </ul>	<b>THREATS</b> <ul style="list-style-type: none"> <li>• Difficult to access on chicken feeds and drugs</li> <li>• Lack of regular extensions services</li> <li>• Difficulties to access on the market</li> <li>• Absence of rules, regulations and guidelines for chicken farming and commercialization of chicken products.</li> </ul>

## 5.7 PESTEC OF LAYER CHICKEN VALUE CHAIN IN RULINDO DISTRICT

The following tableau demonstrates the analysis results of layer chicken value chain by using PESTEC tool.

TABLE 10: ANALYSIS OF LAYER CHICKEN VALUE CHAIN

POLITICAL	ECONOMICAL	SOCIAL	TECHNICAL	ENVIRONMENTAL	CULTURAL
<ul style="list-style-type: none"> <li>• Government policies</li> <li>• lack quality standards</li> <li>• Insufficient of quantity and quality of chicks</li> <li>• Absence of standards for manufacturing feeds</li> <li>• insufficient supply of vaccines and medicament</li> <li>• unavailability of subsidies</li> <li>• Insufficient of ingredients for making chicken feeds</li> <li>• Infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Market access</li> <li>• Decision of price</li> <li>• Income</li> <li>• Bargaining power on the market</li> <li>• Value added</li> <li>• Eggs production</li> <li>• Capita consumption</li> <li>• Investment</li> <li>• Outbreaks</li> </ul>	<ul style="list-style-type: none"> <li>• Self-confidence</li> <li>• Consumption preference</li> <li>• Collaboration</li> <li>• Motivation</li> <li>• Fighting malnutrition</li> </ul>	<ul style="list-style-type: none"> <li>• Capacity building</li> <li>• Sorting, grading and packaging eggs</li> <li>• Absence of specialized technicians in chicken farming and treatment</li> <li>• Absence of calendar for vaccination</li> </ul>	<ul style="list-style-type: none"> <li>• Waste not well managed</li> </ul>	<ul style="list-style-type: none"> <li>• Unfamiliar of consumption of eggs</li> </ul>

## CHAPTER SIX

### 6. CONCLUSIONS

The objective of the study was to analyse the layer chicken value chain in order to develop market-oriented chain and advise RAB on the strategic interventions towards chain development that will contribute to income of medium layer chicken farmers. The following conclusion was based on analysis of data from survey, interview, focus group discussion and literature review. The conclusion focused on the position of stakeholders, their roles and integration in layer chicken value chain and different possibility for developing the value chain. It demonstrates also the challenges faced by chicken farmers and opportunities that are in their disposal. The following elements were part of the research questions and are fundamental for writing conclusions.

#### 6.1 STATUS OF THE EXISTING LAYER CHICKEN VALUE CHAIN

##### 6.1.1. STAKEHOLDERS AND THEIR ROLES IN THE CHAIN

There is insufficient collaboration, coordination and communication among all stakeholders in the chain. There is no initiatives already in place for developing the chain and empower medium chicken farmers. The medium layer chicken farmers are actors in the chain without being strongly integrated within the chain and their collaboration with enabling environment is limited. The women are more involved (67.5 %) in chicken farming activities more than the men as demonstrated by finding of the research. The use of APP-E commerce was revealed efficient in Zambia (FAO, 2018). In Rulindo District the same method in combination of use of APP whatsapp and organization of the regular meeting could improve collaboration among stakeholders.

##### 6.1.2 POWER RELATIONSHIPS AND COORDINATION MECHANISM

The poor coordination among actors in the chain was identified from the inputs suppliers to the consumers, medium chicken farmers are not vertically and horizontal integrated in the chain. The wholesalers –retailers and middlemen (60 %) are owner of the power in the chain and are chief decisions makers for the price.

#### 6.2 MARKETING STRATEGIC INTERVENTIONS TO ACCESS TO REGIONAL MARKET

##### 6.2.1 MARKETING MIX AND MARKET REQUIREMENT FOR EGGS

The chicken farmers sell their produced eggs to the wholesalers-retailers coming arbitrary take eggs at the farm level. They do not have any plan to replace selling based on trust and informal market by the selling based on contract and formal market. The medium layer chicken farmers and consumers in Rulindo District are not aware about the quality of eggs during production and adding value to the produced eggs (sorting, grading, packaging and labeling), on the contrary part, the consumers coming from RDC are more sensitive and aware about the quality for eggs.

#### **6.2.2. STRATEGIES FOR ACCESSING TO REGIONAL MARKET**

For accessing the region market, especially being in connectivity and in relationships with the consumers and traders from RDC, medium layer chickens farmers preferred the collective of supply at the level of 52 % of the respondents. This method will help chicken farmers to aggregate their produced eggs and reach together to the market, reducing transaction costs and getting better price.

#### **6.2.3 FARMER ORGANIZATIONS FOR LAYER CHICKEN VALUE CHAIN DEVELOPMENT.**

There is no active farmer's organization identified in Rulindo District, 82.5% of medium chicken farmers want to be member either for cooperatives or for group of farmers. The creation of cooperatives was determined as a way to work together as chicken farmers and build effort for accessing to the regional market and accomplishing efficient marketing.

#### **6.2.4 THE DRIVERS INFLUENCING DEVELOPMENT OF MARKET ORIENTED LAYER CHICKEN VALUE CHAIN.**

There is no existing rules and regulations within the Country about poultry sector, there are no clear policies established at the District level aiming to promote the chicken farming and chicken farmers. In the surrounding zone of medium chicken farmers, there are no infrastructures like laboratories, training centers for capacity building, eggs collection centers, industry for feeds that entails a disenabling environment for value chain development.

## CHAPTER EIGHT

### 7.0 RECOMMENDATIONS

The following recommendations are addressed to the medium layer chicken farmers, Leaders in Rulindo District and for RAB to observe the gaps identified in the existing layer chicken value chain and implement the strategies interventions recommended to develop a market oriented chain that allow chicken farmers to be more integrated and benefiting more profit.

#### 7.1 MEDIUM LAYER CHICKEN FARMERS

- Improve and expand communication within the chain and enabling business environment.
- Establish a regular calendar meeting to discuss on the problems they are facing and find out the proposal for solutions and make a plan for implementation
- Avoid to think always on the support from the government and donors
- Change the selfishness culture characterizing certain chicken farmers to the cooperation attitude.
- Working in group to reduce transaction cost, increase bargaining power and maximize profit
- Minimize the self-confidence of knowing enough because always the improvement is needed and exchange of views based on experience is very important between different stakeholders.
- Organize the creation of cooperatives for chicken farmers in Rulindo District
- Adopt the system of contract farming to more guarantee the market and avoid the risk of price fluctuation
- Improve the production processes based on the customer requirements and needs
- Buy equipment for additional value including machine for sorting, grading and packaging eggs.

#### 7.2 RULINDO DISTRICT

- Sensitize the chicken farmers to be grouped into the cooperatives for bargaining power on the market.
- Negotiate with inputs supplier companies with intervention of MINAGRI, RAB, and MINICOM for organization of supply system and adjustment of the price for feeds and
- Increase approach and organize the training and focus group discussion with the chicken farmers
- Contribute in adjustment of fixed price for eggs in collaboration with concerned institutions, as it had been done for other produce like potato in Musanze District.

#### 7.3 RWANDA AGRICULTURE AND ANIMAL RESOURCES DEVELOPMENT BOARD (RAB)

- Speed up and take lead of preparation of rules and regulations related to poultry sector
- Take measures aiming to help technically the chicken farmers and contribute to make available necessary medicaments and vaccines in the country.
- Prepare the calendar for chicken vaccination for prevention of outbreaks.
- Contribute in organization of the markets for eggs and protecting interest for the medium chicken farmers.
- Plan in collaboration with the District, the construction of a center for capacity building of chicken farmers.

#### **7.4 RECOMMENDATION FOR FUTURE RESEARCH:**

- To find ingredients locally available that can substitute maize and soy beans
- Influence impact of the high cost of feeds on the income benefited by chicken farmers
- Possibility of eggs transformation and conservation

#### **7.5 FUTURE MARKET –ORIENTED LAYER CHICKEN VALUE CHAIN**

In this new layer chicken value chain, medium chicken farmers will be fully integrated in the chain vertically and horizontally, accessing to the market will be easy compare to the previous chain and adoption of short chain will be possible, impossible with the existing chain and the governance of the chain will change from the spot market relational or modular through contract. The down figure illustrate Future market-oriented layer chicken value chain map.

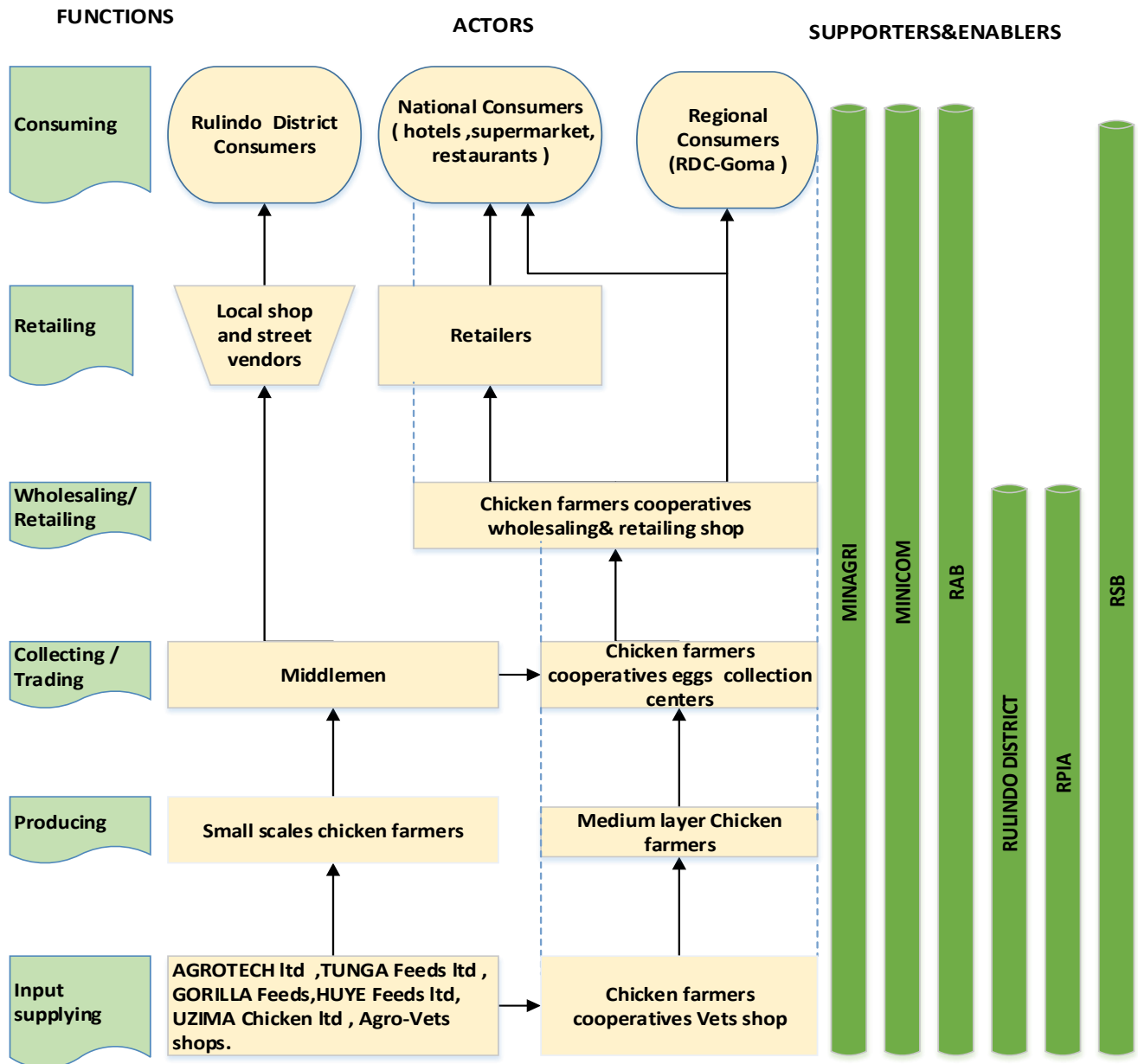


FIGURE 23: FUTURE MARKET –ORIENTED LAYER CHICKEN VALUE CHAIN  
SOURCE : AUTHOR FIELD DATA (2019).

## 7.6 SUGGESTED PROJECT PROPOSAL AND ACTIVITIES FOR IMPLEMENTING SOME RECOMMENDATION FROM RESEARCH

The proposed activities and preparation of the project will be achieved in collaboration of RAB, Rulindo District and medium chicken farmers with regular intervention and coordination of chain facilitator, who will act as catalyst for change. The meetings and focus group will be organized and the signature of memorandum of understanding will be adopted.

**TABLE 11: PROJECT PROPOSAL AND ACTIVITIES FOR IMPLEMENTING SOME RECOMMENDATIONS FROM RESEARCH**

Project or Activity	Detailed activities	Attributed person & Institutions	Proposed achievement Period
<b>1. Strengthening the capacity of chicken farmers in the Districts of Gakenke &amp; Rulindo.</b>	-Preparation of project with terms of reference ( objectives, planned activities, involved persons, implementation plan, budget and materials ) - Analyze available budget & allocations - Searching financial support within or out of the Country	Chain facilitator	October-December 2019
Coordination of the chain: Reference case of App used for Virtual Farmers Markets (VFM) in Zambia (FAO, 2018).	Organize a regular stakeholders meeting - semester ( Establishment of collaboration and communication, Make the linkage group, Discussions& share responsibilities).	- Chicken farmers - RAB & District - Chain Facilitator	-December 2019
Creation of cooperatives of chicken farmers	* Sensitization of chicken farmers (Meeting, Focus group discussion, training on importance of cooperatives with success stories).	- District Animal Resources Officer, RCA staff, Chain facilitator, local leaders.	January-February 2020
Organization of group of farmers for facilitating the linkages and supports	Creation of the cooperatives-One cooperative at the level, farmers raising in three sectors will be organized in a linkages groups for sharing information and help each other	- District Animal Resources Officer , Chain facilitator, Sector vets	-March 2020
Capacity building on Value chain &Value chain development	Sector Vets, Chicken farmers and other stakeholders and partners supporting the sector and working in area	Chain facilitator	April 2020
Organization of collections of eggs by the farmers	selection area for collection take into account on the quality eggs to be collected	Chicken farmers cooperatives Sector vets	April 2020
Searching the markets	Contact and negotiate with the wholesaler-retailers, hotels in Rubavu , Musanze and Kigali Cities	Chicken farmers cooperatives	-May 2020
Plan the supply through Contract	Organization of supply and signature of Contract	Chicken farmers cooperatives	-May 2020



Make a study to open a sales Shop	Open the sales shop in Kigali, Musanze and Rubavu Cities	Chicken farmers cooperatives& Chain facilitator	June-July 2020
<b>2. Construction of a center for capacity building in Rulindo</b>	preparation of project Construction of a center for capacity building in chicken farming included Vet Pharmacy shops	RAB,District,Chicken farmers Chain facilitator, funders	July 2020-December 2021.

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## ANNEXES

### ANNEX 1: CHEKLISTS.

#### **MINAGRI- Key informant (Checklist).**

1. Current status of poultry sub-sector (Stakeholders involved and their collaboration, partners, importation of eggs, strengths, weakness, opportunities, threats).
2. Rules and regulations in place.
3. Accessibility on the market (Domestic, regional and international, competition with imported eggs, marketing strategies, projection policy for poultry sector).
4. Policies (activities for improvement of markets for eggs) in next 5 years.
5. Quality standards for eggs produced (use of antibiotics)-policies for Certification
6. Support services for chicken farmers (incentives & subsidies, capacity building).
7. Roles of farmers' organization in layer chicken value chain development (cooperatives).
8. Activities already achieved and proud of them (list)
9. Contribution of poultry sector in family economy & livelihood, country GDP.
10. Capita for egg consumption (level, measures for increase).
11. Taboo and culture for egg Consumption-Measures.

#### **RAB– Key informant (checklist).**

1. Status of chicken farming (Stakeholders involved and their collaboration, partners, importation of eggs, strengths, weakness, opportunities, threats).
2. Government policies for chicken farming
3. Support services given to the chicken farmers (capacity building-when, materials-what, level of services delivered-high, middle, low).
4. Challenges faced by poultry farmers-what, what is your intervention?
5. Strength, opportunities, weakness & threats in chicken farming.
6. Strategic intervention for developing poultry sector –Planned activities (for farmers, traders)
7. Stakeholders involved in implementation of government policies related to chicken farming & their roles
8. Roles of farmer organization (cooperatives-efficiency).
9. Status of market for eggs (national, regional, international, importation of eggs).
10. Monitoring of quality of eggs on the markets
11. Activities already achieved and proud of them (list)

#### **MINICOM (Ministry of industry and Commerce) – Key informant**

1. Status of market & trends of poultry products (importation & exportation).
2. Rules and regulations in place aim to promote poultry sector
3. Policies aim to promote chicken farmers –market oriented
4. Activities accomplished by the Ministry to help poultry farmer's organizations (cooperatives, associations, company's traders for eggs, Chicks and live chickens).
5. Strengths, weakness, Opportunities and threats in commercialization of eggs, Chicks, feeds and culling chicken.
6. Strategies for improvement of market at national, regional and international level (Possibility for a new business line for eggs produced in Rwanda).
7. Activities already achieved and proud of them (list).

### KEY INFORMANT –EXPORTER

1. Gender:                      F                      M
2. Age----- Education level-----
3. What is the name of your company                      ?
4. How long have you been in this business                      ?
5. Where do you sources eggs                      ?
6. Do you get the quantity of eggs required                      ?      Yes ☐      if No ☐ why ?
7. Do you get the quality of eggs required                      ?      Yes ☐      if No ☐ why ?
8. Quality of eggs produced in Rwanda are able to compete at the regional market.
  - a. Yes ☐ if yes, what are the indicators?
  - b. No ☐ if No. why?
9. Do you purchase eggs from different traders?      YES ☐      if No ☐ why?
10. Are you working with the farmer organizations (cooperative)?
11. What are the challenges do you face for marketing of eggs?
12. Support from the government (who give the support? what support do you benefit?)
13. What is the cost of crate of eggs outside of the Country?
14. What is the cost of crate of eggs for the farmers, middleman, wholesalers?
15. How much do you spent on transport by crate of egg?
16. What are the other cost do you incurred during trading of eggs?

### KEY INFORMANT –RCA ( Rwanda Cooperative Agency ).

- Current status of chicken farmer cooperatives
- Support services given to the chicken farmers (capacity building-when, materials-what, level of services delivered-high, middle, low).
- Challenges faced by chicken farmers grouped into cooperatives -what, what is your contribution.
- Implementation of government policies
- What is the role of cooperatives in chicken farming development?

### RBS (Rwanda Standards Bureau) – Key informant

1. What is the quality of eggs available on the markets ?
2. Quality of eggs produced in Rwanda are able to compete at the regional market.  
Yes ☐                      No ☐  
If yes, what are the indicators?  
If no, why ?
3. What is the policies for improving the quality of eggs (certification, grading eggs, and packaging ) ?
4. Do you monitor the quality of eggs available on the markets?
5. Consumers are happy with the quality of eggs available on the markets.
6. What are the challenges faced by traders in terms of quality of eggs?

**WHOLESALE, COLLECTORS, MIDDLEMEN & RETAILERS-KEY INFORMANT- (CHECKLIST).**

1. Shop name .....location.....owner.....
2. Where do you source eggs (place, chicken farmers, Middleman) ?
3. What quantity of eggs do you receive per day/per week /per month in your store?
4. Who supply eggs ?
5. What is the dominant type of eggs you receive ( local indigenous eggs, exotic breeds eggs).
6. What type preferred by consumers ? Why?
7. Who are the buyers (Hotels, restaurant, institutions, individual consumers, traveler’s hawkers)?
8. What is the buying price and selling price?
9. What are the other costs involved?
10. What factors do you consider for quality of eggs (grade, broken, cracked and dirty eggs)?
11. Do you candle eggs before buying?
12. What is your collaboration with others actors involved in the sector? Who are?
13. Do you receive the eggs supplied directly by
  - A) Medium-scale poultry farmers : Yes ☐ no ☐
  - B) Farmers cooperatives : Yes ☐ no ☐If no, what must be done to empower farmers and farmer’s cooperatives in terms of opportunity to supply?

**RULINDO DISTRICT KEY-INFORMANT-**

1. Status of poultry sub-sector (Stakeholders involved and their collaboration, partners, strengths, weakness, opportunities, threats).
2. Support services offered to the medium-scale poultry farmers
3. Bottlenecks in layer chicken value chain
4. Strategies for layer chicken value chain development
5. Policies for market oriented chain development
6. Challenges for marketing channel of eggs in the District
7. Opportunities available in Rulindo District for marketing of eggs
8. Status of farmers organization and their roles in layer chicken value chain development
9. Why chicken farmers are agglomerated in Rulindo District?

**KEY INFORMANT RPIA (Rwanda Poultry Industry Associations).**

1. What are the support services do you give to medium scale chicken farmers.
  - A) Members of association
  - B) Not members in your association?
2. What are the opportunities available to access to the better price market (national, regional, international) ?
3. What are the challenges faced in marketing and selling of eggs?
4. What are the challenges do you face in chicken value chain?
5. Do you get support ? Who give the support?
6. What is the collaboration among different actors in the layer chicken value chain?
7. What must be done to solve the problems and develop the chicken value chain?
8. What must be the strategic interventions to improve marketing for eggs?
9. What must be the strategic interventions to develop layer chicken value chain?



### FOCUS GROUP DISCUSSION –Checklist

1. Status of layer chicken value chain (actors in the chain and their roles, strengths, weakness, opportunities and threats).
2. Problems faced in marketing and selling of eggs
3. What is the collaboration among different actors in the chain
4. Production and economic parameters in terms of volumes, quality, cost and selling price, amount sold & quality issues.
5. Promotion of poultry products, problems they face in marketing, opportunities/benefits for forming cooperatives, farmers group or association.
6. Perception of layer chicken farmers in promoting the market of eggs
7. Participate in designing a new business model that can help them to get more income and showing the sustainability of the model.
8. Supports services they benefit from District, RAB, MINAGRI & others
9. Why chicken farmers are agglomerated in Rulindo District?

### INPUTS SUPPLIERS –Checklist

1. Company name :                      localization :                      Staff name and position :
2. Type of inputs supplied to chicken farmers.
3. Relationships between your company and chicken farmers
4. Opportunities, Challenges in supplying inputs
5. Capacity of chicken farmers to buy inputs
6. Strategies for improving linkage with the chicken farmers

### KEY INFORMANT FINANCIAL INSTITUTION –BRD

1. What support do offer to the farmers (livestock-chickens)
2. Collaboration between the financial institution and chicken farmers
3. Challenges and opportunities of working with the farmers.

### ANNEX 2 : QUESTIONNAIRE SURVEY.

Questionnaire survey- Interviewees (Please tick the correct answer) layer chicken farmers.

- |  |                          |       |
|--|--------------------------|-------|
| 1. Sector :                            | Respondent Number :      | Tel : |
| 2. What is your age ?                  |                          |       |
| a. 18- 35                              | <input type="checkbox"/> |       |
| b. 36-45                               | <input type="checkbox"/> |       |
| c. 46-60                               | <input type="checkbox"/> |       |
| d. > 60                                | <input type="checkbox"/> |       |
| 3. What is your sex ?                  |                          |       |
| a. Female                              | <input type="checkbox"/> |       |
| b. Male                                | <input type="checkbox"/> |       |
| 4. What is your level of educational ? |                          |       |
| a. Primary                             | <input type="checkbox"/> |       |
| b. Secondary                           | <input type="checkbox"/> |       |
| c. University                          | <input type="checkbox"/> |       |

5. **What is your experience in chicken farming?**
  - a. 1 < year ☐
  - b. 1-2 years ☐
  - c. > 2 years ☐
6. **How many layer chickens do you have?**
  - a. 500-1,000 ☐
  - b. 1001 -3,000 ☐
  - c. 3001-5,000 ☐
7. **What is the capital of investment (in Frw)?**
  - A) 1,000,000- 2,000,000 ☐
  - B) 2,000,001-3,000,000 ☐
  - C) 3,000,001-5,000,000 ☐
  - D) > 5,000,000 ☐
8. **What is the production of eggs per day?**
  - A) 400- 900 ☐
  - B) 1000 -2900 ☐
  - C) 3000- 4900 ☐
9. **How is the production ?**
  - A) Low ☐
  - B) Middle ☐
  - C) High ☐
10. **Where do you sell eggs ?**
  - A) Middleman ☐
  - B) Restaurants ☐
  - C) Supermarket ☐
  - D) Wholesalers ☐
  - E) Exporter ☐
11. **How many eggs do you sell per day/per week /per month?**
  - A) 501- 1000 ☐
  - B) 1001-3000 ☐
  - C) 3000- 5000 ☐
12. **What is the price per egg ?**
  - A) 50-60 ☐
  - B) 61-70 ☐
  - C) 71-80 ☐
  - D) 80-100 ☐
13. **How is it he price ?**
  - A) Very good ☐
  - B) Good ☐
  - C) Not Good? ☐
14. **Who decide the price for egg/ who has the say for price fixation?**
  - a) Producer ☐
  - b) Middleman ☐
  - c) Wholesalers ☐

- d) Exporter ☐
- e) Consumers ☐
- 15. What is the state of price ?**
- a) Stable
- b) Instable
- 16. What is the accessibility for the market?**
- a) Very easy
- b) Easy
- c) Difficulty access
- 17. What are the strategies for access on the regional market ?**
- a) Organization of supply ☐
- b) Collective marketing ☐
- c) Contract farming ☐
- d) Improving quality ☐
- e) Adoption of short chain (Closer collaboration with buyer) ☐
- 18. Do you get support? Yes ☐ No ☐**
- A) Subsidies ☐
- B) Training ☐ C) Inputs ☐ D) Loan ☐
- 19. Who give the support?**
- A) DISTRICT ☐ D) MINICOM ☐ G) Other ☐
- B) RAB ☐ E) RCA ☐
- C) MINAGRI ☐ F) NGOs & Cos ☐
- 20. How can you improve chicken farming as your business activity?**
- A) Cooperation with other ☐
- B) Getting loan ☐
- C) Training ☐
- D) All ☐
- 21. Do you belong to a farmer organization? Yes ☐ No ☐**
- A) If no, are you interested to become a member of farmer's organization?
- a) - Very interested ☐
- b) - Interested ☐
- c) - Not interested ☐
- B) What do you prefer?**
- a) - Cooperative ☐
- b) - Farmer group ☐
- c) - Association ☐
- 22. Do you grade eggs ? Yes ☐ No ☐**
- A) - Small ☐
- B) - Medium ☐
- C) - Big ☐
- 23. How are the eggs handled ?**
- A) - Separation of eggs according size ☐
- B) - Separation of broken and cracked eggs ☐
- C) - Separation of dirty eggs (blood, faeces) ☐

24. Do you package eggs? Yes ☐ No ☐

If yes, what do you use for packaging?

A) Cartons ☐

B) Trays ☐

C) Other ☐

If no, why ?

A) Lack of materials ☐

B) Not required by consumers ☐

C) Unknown importance ☐

25. Do you add information on packaged eggs ? Yes ☐ No ☐

If no, why ? A) Lack of materials ☐

B) Not required by consumers ☐

C) Unknown importance

26. Where do you source chicks ?

AGROTECH ☐ UZIMA Chicken ☐ Other ☐

27. Where you buys do feeds?

### ANNEX 3 : FOCUS GROUP DISCUSSION

#### FOCUS GROUP DISCUSSION IN BUSHOKI SECTOR.

Each chicken farmers raise individually and buy medicaments from the nearest veterinaries shops, most of time they buy inputs in supplier Company named AGROTECH. The local shop does not possess diversified sufficient and quality medicaments, and are out of condition to keep the vaccines. The medicaments in the Country are not enough and vaccines are not available when are needed by the chicken farmers.

For feeds, chicken farmers arrange themselves to find feeds. Certain farmers make themselves feeds using local available ingredients with their own formula and that lead to the low production and low quality of eggs. Other farmers buy industries feeds but at the expensive cost, because they do not have other alternative way. Industries feeds do not approach chicken farmers to supply easily feeds, are not able to satisfy the demand, they make feeds without know how many farmers are and how many chickens are in the country, they make feeds by estimation. The feeds made by industries are expensive and not easily affordable by chicken farmers, government exempted the tax for raw material for feeds but still now price for feeds is higher, is there a government weakness said by the farmers. It should be there involvement of government to know the making cost for one kilo of feed, cost of tax and interest for manufacturer and from that government can discuss with manufacturers and decide the affordable selling price advantaged for both side.

To solve the problems, the concerned government institution especially sector should help chicken farmers to be grouped into cooperatives and help them to be linked with inputs suppliers. Chicken farmers do not benefit any training about chicken farming. It should be opportunity for chicken farmers to discuss about problems faced, diseases and their prevention.

For the market of eggs, chicken farmers sell through intermediaries who know where the market is and who has information about the price but they do not know how to raise chicken. Why intermediaries has information on the market? Why chicken farmers had not information on the market? Middleman take time to search the market and chicken farmers fear to search the market, the creation of cooperatives must be the solution, other reason farmers raise few chicken is not able to go search market for few produced eggs but middleman can collect eggs from different farmers. Once cooperative is created, it can be easy for raising and for finding market. Cooperatives can be created by initiation of sector leaders, but the challenges remain the trust between members related to the background of working the cooperative.



### FOCUS GROUP DISCUSSION IN RUSIGA SECTOR.

Farmers encounter many problems, chicks, drugs feeds are expensive and we work in loss when the cost for eggs fall down. We do not have any control on the price of eggs. It seems difficult to do farming activities and business of egg as individual farmer. To achieve business activities require cooperation and support. The price for eggs stay stable long time. Drugs, chicks, feeds increases but price for eggs do not change. The farmers here are many but it is difficult to work together to import chicks, drugs and vaccines that can reduce the price cost, the imbalance in understanding and capacity in money create impossibility to be grouped into cooperative. The understanding and skills and knowledge should be improved, there is no government institution that give credit for farming chicken, the financial institution that offer credit, begin to calculate interest since the first day, normally the payment should be occurred when chicken begin laying. That is a big challenge for the farmers. To solve those problem necessity the change of mind and thinking of the chickens farmers for working together. The first support, we need is the capacity in investment, getting loan according the return on investment taking into account on the period of production. Give training about how to manage the chickens farms and how to access on the market through cooperation of farmers. The creation of cooperative in Rulindo District is possible but group of farmers, which are in the same category, are preferable. Is possible but it will depend of the members; it can created without coming solve the real problem. The traders have information on the market more than chickens farmers do. Farmers are busy with farming activities, it is not easy for him to be concentrated on the market information but before give eggs to collectors we call traders in Rubavu to have information about the current price. Why chickens farmers do not sell eggs directly to wholesaler or other clients through contract? The level of understanding of chickens farmers is still low, it was not here opportunity of meeting and training to sensitize chickens farmers about the market. The organization of training, field visit can change the mind set and rigidity of some chicken farmers thinking more experienced and having more knowledge in chicken farming and neglect everything from advisors, researchers and extensions services, unfortunately they face big loss of died chickens due to diseases. The farmers like easy thing, they do not want thing that consumes their time, reason to sell eggs to collectors not directly to the wholesaler, the more experienced farmers showed resistance for understanding the cooperation and working together with other farmers because they buy eggs at low price from the neighbors small farmers and resell to the collectors. Once the importation of eggs from Uganda is stopped ,the price of eggs increases, up to now we don't have any problem about the price but the price vary without know why ?



**ANNEX 4: SPPSS RESULTS ON THE STRATEGIES TO ACCESS TO THE MARKETS AND WILLINGNESS TO BE MEMBER OF FARMER ORGANIZATION.**

**Which organization do you prefer ?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cooperative	29	72.5	72.5	72.5
	Farmer group	11	27.5	27.5	100.0
	Total	40	100.0	100.0	

**Do you want be member of farmer organization?**

		Frequency	Percent	Valid Percent	Cumulative Percent
	Very interested	18	45.0	45.0	45.0
	Interested	15	37.5	37.5	82.5
	Not interested	7	17.5	17.5	100.0
	Total	40	100.0	100.0	

**Strategies for access to regional market**

		Frequency	Percent	Valid Percent	Cumulative Percent
	Organization of supply	21	52.5	52.5	52.5
	Collective marketing	14	35.0	35.0	87.5
	contract farming	5	12.5	12.5	100.0
	Total	40	100.0	100.0	

**Annex 5 : Photographs of interviews**

**Interview with RCA staff in Rulindo District.**



**Interview with livestock specialist in MINAGRI.**



**Interview with sales Marketing officer AGROTECH  
Marketing officer Gorilla feeds ltd**

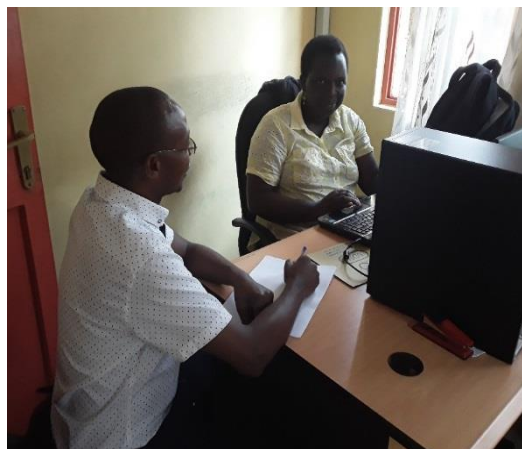




**Interview with Acting Senior  
Manager-Agriculture Financing BRD**



**Interview with Head of monogarstric program  
RAB**



**Interview with Head of Department Animal Resources &  
Technology transfer RAB.**



**ANNEX 6 : LIST OF KEY INFORMANTS.**

No	NAME	INSTITUTION AND POSITION
1.	RUKERAMIHIGO J.Nepomuscene	RCA/Staff in charge of cooperatives in Rulindo District.
2.	RUSHIGAJIKI Didace	MINAGRI/ livestock specialist
3.	Dr Spiridio NIYODUSENGA ( DVM/ MSc)	AGROTECH, sales and marketing officer
4.	Dr Twagirumukiza Bernard	Gorilla Feeds/ Sales and marketing officer
5.	Aimable Mucyo	Rwanda Standard Bureau /Foods products standards officer
6.	Eric Nkusi Bukeye	BRD/Acting Senior Manager Agriculture Financing
7.	Dr Nadayisenga Fabrice ( DVM/ MSc)	RAB/Head of Department of animal Resources and Technology Transfer
8.	Hirwa Claire D’Andree (PhD)	RAB/Head of monogastric program
9.	Mukagasana Alphonsine	Rulindo/District Animal Resources officer
10.	Dr Ossiniel Nshimiyumukiza	MINICOM, Community processing Centers program (CPC) specialist
11.	JM POULTRY and FOOD SUPPLY Ltd	Murenzi Alphonse/Managing Director
12.	Mujawamaliya Francine	Wholesalers/Retailer Kigali
13.	Uzayisenga Emerth	Collectors –traders of eggs /Rulindo district
14.	Mukamutesi Jacqueline	Collector-traders /Retailer Rubavu District
15.	Sentama DAVID	Wholesaler/ Retailers Rubavu District
16.	Umulisa Aline	Wholesaler/Retailer Rubavu District
17.	Uwase Francine	Wholesaler/retailer Rubavu District
18.	Ruzibiza Jean Claude	President of Rwanda Poultry Industry Associations
19.	Mukabasenga Anita	wholesaler/retailer Rubavu district
20.	Nirere Cyriaque	Middleman

## **ANNEX 7: CONSENT FORM**

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**Date: 11 Sep. 2019**

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**Theme/Study: APCM-LC**