

# Broiler's Supply Chain Analysis at Wonogiri Regency, Central Java Province

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**Abstract**—The purpose of this research is to find out the model and form of distribution flow coordination on Broiler's supply chain at a chicken farm in Wonogiri district. This research is a qualitative research and the data collecting method is done by observing, interview, and documentation. The results showed that the model and form of distribution flow coordination on Broiler's supply chain at a chicken farm in Wonogiri district started from farmers selling all livestock production to companies that are permanent partners of the farmers, subsequently the company sells livestock production to the brokers. The brokers processed the broilers into chicken meat and then distributed to traders, retailers, restaurant, supermarket, and also sell it directly to the consumers. According to the findings of the research, it is recommended to the farmers that it would be better to lessen the company's role by directly sell the broilers to the brokers, so that the farmers would be able to gain more profit and simplify the distribution flow.

**Keywords**—supply chain, distribution, broiler

## I. INTRODUCTION

In developing economic activities, livestock business activities have a pretty good appeal in contributing to efforts to improve the economy in Indonesia. The livestock sub-sector contributed 1.57% of Indonesia's total GDP or a total of Rp. 167 trillion rupiah [1].

Broiler is a term to refer to a strain of chicken cultivated with technology that has economic characteristics, with the characteristics of rapid growth as a meat producer, better feed conversion, ready to cut at a relatively young age and produce quality soft fibrous meat [7]. Poultry breed chickens are young chicks and females under the age of 56 days when sold at a particular weight, has fast growth and has a wide chest with a large pile of meat [9].

In the development of the poultry industry in Indonesia, there are several problems that are often faced, namely (a) the problem of supplying animal feed raw materials, where most of the important animal feed raw materials must be imported; (b) indications of an oligopolistic market structure on the input market and an oligopsonistic market on the output market that puts independent farmers in a weak position; (c) supply chain institutions for broiler, layer, and local poultry businesses have not run efficiently; and (d) vulnerable to external shocks, both in the form of economic crises, price fluctuations, and outbreaks of poultry diseases (especially bird flu).

In addition to the above factors, the cost of varying broiler supply chain activities is a very influential factor on the level of income which will ultimately affect the sustainability of the broiler supply chain in Wonogiri Regency. Whereas for large traders and brokers / agents, the costs incurred include the

costs of purchasing broilers, loading and unloading costs, and transportation costs that vary according to distance of location, time / purchase of broilers to the next supply chain.

To increase livestock business, good marketing efforts are needed from producers to consumers. Supply Chain is an effort made by the company in an integrated manner to improve its efficiency through the related supplier chain, starting from the initial supplier (raw material supplier) to the end customer (end customer). This effort is carried out by increasing communication and better cooperation in every link of the company chain, which is involved in product creation [15].

Supply chain management is defined as a series of approaches used to integrate suppliers, producers, warehouses and stores effectively so that inventory can be produced and distributed at the right amount, to the right location, and at the right time so that the overall cost of the system can minimized while trying to satisfy needs and services [13].

Supply chain strategies should be considered as one of the most important drivers of supply chain performance and companies' success [3]. Supply chain strategy includes all activities and cultures of the members are operating within a supply chain and should be followed by every organization competitive strategy. In order to being successful, every organization's competitive and supply chain strategies should be matched [4].

Supply chain is a network companies that jointly work to create and deliver a product to the end user. Companies these usually include suppliers, factories, distributors, stores or retail, as well supporting companies such as logistics service companies [8]. Supply chain management is the integration of material and service procurement activities, conversion into semi-finished goods and final products, and delivery to customers [2].

To achieve maximum competitive advantage through the supply chain, the supply chain must be performing at its best or anything it has gained will be short-lived [5]. Companies have to select and pursue strategies associated with higher performance [14].

As supply chain and operational performance enjoy a noticeable overlap, we can also consider and study operational performance as well. There is a causal relationship between operations strategies and operational performance which lead to sustainable competitive advantage [11]. Operations strategies have been addressed by researchers and practitioners as they believe that operations strategies can be considered as strong drivers of companies' successes [12]. One of the most applicable measures for operations strategies is competitive priorities, which can evaluate operational

performance as well. The competitive priorities framework can also be thought of as way to conceptualize and measure operational performance, or even competitiveness [6].

Analytical Hierarchy Process Method is the basis for making a decision, which is designed and done rationally by making the best selection of several alternatives that are evaluated with multi criteria. In this process, decision makers ignore small changes in decision making and then develop all priorities to rank priorities from various alternatives [10]. The main equipment of the Analytic Hierarchy Process (AHP) is to have a functional hierarchy with the main input of human perception. With hierarchy, a complex and unstructured problems resolved into their groups and organized into a hierarchical form. With AHP complex decision problems can be broken down into a manageable set of pairwise comparisons, help decision makers to arrive at the best alternative.

II. MATERIALS AND METHODS

A. Data Collection Methods

Collecting data and information needed in this study is done in several ways, namely:

1. In-depth interviews were conducted to obtain information and data related to the supply chain of broiler chickens in Wonogiri Regency, including the number of production and sales, supply and distribution as well as partnership relationships between suppliers and distributors (traders). This technique was completed by filling out questionnaires and field observations to obtain an overview of the application of broiler chicken supply chains in Wonogiri Regency.
2. Expert opinion, this data is data generated from experts and expert judgment. The determination of the weight of importance is obtained based on the AHP questionnaire.
3. Literature study, namely by conducting a literature study related to this study to obtain information theoretically, so that it can be a reference in determining decisions and provide clear direction to achieve the expected goals.

B. Data analysis method

The analysis used in this study is an analytical method used to obtain an in-depth and objective picture of the supply chain of the broiler commodity. The purpose of using this analysis is to describe the nature of a situation that is temporarily running at the time of the study, and examine the causes of certain symptoms.

The main objective of this research is to make efficient supply management of broiler chickens in Wonogiri Regency. By using AHP, the problem will be solved in an organized frame of mind, so that it can be used as a way to make effective decisions on the problem.

The working principle of AHP is to simplify a complex problem that is not structured, strategic and dynamic into its parts, and organize in a hierarchy. The intended hierarchy arrangement will be organized into several desired levels which include the desired goal, the factors that affect the goal, the actors involved in finding the goal, the arrangement of the goals that achieve the goal and alternative strategies in achieving the goal.

From the hierarchy an assessment of the relative importance of two elements at a given level is made in relation

to the level above it. The assessment results are input data in the form of pairwise comparison matrices.

The above mathematical calculation is a basic principle in weighting elements at the scenario level of the ultimate goal. However, in practical implementation, the AHP weighting process can be done by using Expert Choice 11 software.

III. RESULT AND DISCUSSION

Based on the existing pattern, the supply chain of broiler products can be divided into two, namely: (1) Independent pattern; and (2) Business partnership pattern. In the independent pattern, where the breeder is a livestock handyman (cultivator) and at the same time as a manager will receive all the benefits and all risks arising from the livestock business run.

Supply chain in the independent pattern shows that there are two sources of broiler livestock products, namely smallholder broiler breeders (small scale) and livestock companies (large scale). The results of the people's broilers are sold to collectors, then collectors sell to the slaughtering services or middle man, then most of them are aimed at market traders and retailers in traditional markets. Meanwhile, broiler livestock products from large companies are sold to agents or suppliers, then to slaughtering services, then sold to traditional markets and partly to modern markets and institutional consumers (Hotels, Restaurants, Hospitals, etc.)

Supply chain in the business partnership pattern (contract farming) by taking a case in Wonogiri Regency shows that there are two sources of broiler livestock products, namely plasma broiler breeders (small scale) and production results from core company (large scale). According to the agreement, the entire production of plasma breeders broilers is fully accommodated by the core company. Then the core company is marketing the results. The pattern of yield marketing is relatively the same as the independent pattern, namely through collecting traders and agents or suppliers, then collecting traders sell slaughtering services or middle man traders, then most of them are aimed at market traders and retailers in traditional markets and some are sold to agents or suppliers, then to slaughtering services, then sold to traditional markets and partly to modern markets and institutional consumers (Hotels, Restaurants, Hospitals.)

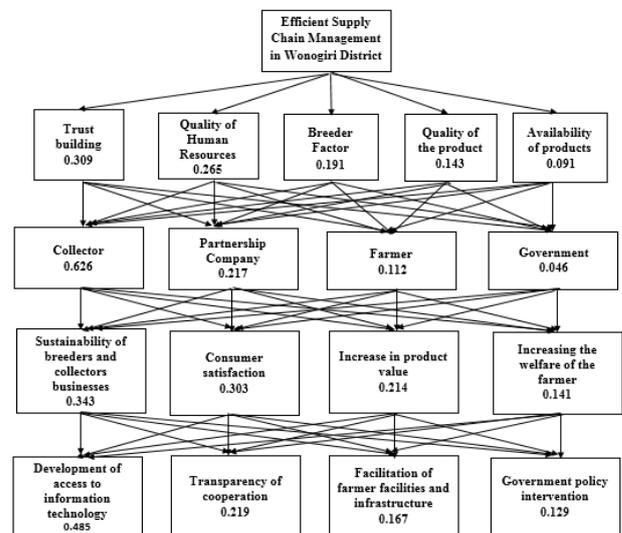


Fig. 1. Hierarchy Process Analysis Diagram.

Based on the results of interviews and questionnaires, it is known that there are four constituent elements in the supply chain hierarchy in Wonogiri Regency, namely: 1. Factors that make up the supply chain. 2. Actor actors who form the supply chain. 3. The objectives to be achieved in forming the supply chain. 4. Alternative scenarios for forming supply chains.

#### *A. Factors that make up the supply chain*

Trust building was ranked the most important, namely 0.309, then number two followed by the quality of Human Resources at 0.265, then number three, breeder factors with a score of 0.191, fourth Product quality with a rating of 0.143 and the fifth availability of products with a value of 0.091

Trust building is the main factor where among the broiler chicken supply chain members in Wonogiri Regency is highly valued, it can be seen that farmers do not need written contracts with collectors and collectors also do not have written contracts with partner companies. It is trust that underlies working relationships among members of the supply chain. Trust in this case is not to do things that are detrimental to fellow members of the supply chain and are willing to accept business risks.

The quality of human resources gives a second effect in achieving goals. It is possible indeed that the parties view HR quality as a supporting factor in establishing efficient broiler chicken supply chain management in Wonogiri Regency. When the quality of human resources is inadequate, the expected results will not be maximal.

Breeder quality is the third factor in shaping the management of broiler chicken supply chains in Wonogiri Regency, because high quality breeder can compete in the market. With the existence of a broiler chicken partnership company in Wonogiri Regency that maintains the quality of a good DOC type to the maintenance and control of chicken livestock health until the harvest period, broiler chicken products in Wonogiri Regency are maintained in quality.

The quality of broiler chicken products in Wonogiri Regency ranks fourth where each member of the supply chain always maintains the quality of the product until the product reaches consumers.

Product availability is the fifth in forming efficient broiler chicken supply chain management. Broilers are always available throughout the year making this product one of the most needed products for the community. The availability of continuous broiler chickens is a collection business where collectors already have a harvest plan schedule. Continuous broiler chicken that is always available will have competitiveness.

#### *B. Actors involved in forming Efficient Broiler Chicken Supply Chain Management in Wonogiri Regency*

The most important actor in the supply chain of broiler chickens is found in the Collector which gets a weight value of 0.626 then number two by the partnership company with the number 0.217 then number three in the Farmer with a number of 0.112 and finally to the government with a value of 0.046

Collectors have the most important role in forming efficient broiler chicken supply chain management because of the role of collectors in bridging the economic needs of farmers and market supply needs. Collectors strive to continuously provide broiler chickens to consumers by

coordinating regularly and with farmers and consumers. All of that is done by collectors to jointly try to form efficient supply chain management so that mutual prosperity can be achieved.

Broiler chicken partnership companies become the second actor which is very instrumental to provide guidance to breeders such as helping breeders when broiler chickens are attacked by disease and assisting farmers in raising broiler chickens. The partner company is the party that guarantees the marketing of the products produced. The support of partner companies in the marketing aspect will affect the sustainability and success of the broiler business in establishing an efficient broiler chicken supply chain management in Wonogiri Regency. With the market guarantee, broiler chicken products produced by farmers have a definite market and farmers do not need to be confused to sell their products.

Breeders become the third actor in broiler chicken supply chains in Wonogiri Regency where breeders as the spearhead of broiler chicken supply chains, it is necessary to facilitate infrastructure and facilities that support the cultivation of broiler chickens. With the fulfillment of the needs of breeders, breeders can conduct cultivation activities properly. Farmers no longer need to find difficulties in finding DOC or are confused to deal with broiler chickens that have been stricken with disease. If infrastructure and facilities are easily available, breeders will be more enthusiastic in raising broilers.

The government is considered to have very little influence in establishing efficient broiler chicken supply chain management in Wonogiri Regency. The small value of the government is possible indeed the role of government that is felt less in achieving goals. In fact, many parties expect the government as a determinant of the policy direction of broiler chicken business development, a policy that accommodates various related elements, is a force that can be a supporter to form efficient broiler chicken supply chain management

#### *C. The objectives to be achieved in forming efficient management of Broiler Chains in the Regency*

Sustainability of breeders and collectors businesses is the highest weight, in the case of 0.343, then number two followed by consumer satisfaction at the number 0.303, then number three, the increase in product value by 0.214 and lastly, that is increasing the welfare of the farmer by 0.141

Sustainability of Farmer and Collector Businesses become the first in its aim to maintain the sustainability of the business of breeders and gatherers, other parties must intervene in assisting farmers and collectors. Farmers and collectors must be assisted in terms of facilities and infrastructure so that their efforts continue. This relationship should be a mutual relationship between farmers, collectors and partner companies. The role of companies in facilitating loans in business capital to farmers in providing capital to farmers will benefit all parties. Because if the business of farmers and collectors stops, then the supply of broiler chickens will also be hampered. If it is obstructed, the management of the supply chain formed will not run efficiently.

Consumer satisfaction gets the second percentage because supply chain management aims to meet consumer satisfaction. Broiler chicken supply chain management is formed to be able to meet the needs of consumers better, faster and cheaper. If broiler chickens from Wonogiri district can be distributed with

the right quantity, the right location and the right time, consumers can be satisfied their needs

Increasing product value is the third objective in establishing efficient broiler chicken supply chain management in Wonogiri Regency. The increase in product value is assessed from the improvement in the quality of broiler chickens and their accompanying variables, including the health of broiler chickens, supply and accuracy in delivery. If the partner company wants the value of its products to increase, it means that farmers in collaboration with collectors must take actions that encourage the increasing value of broiler chicken products. Actions to increase product value include increasing security. Another thing that is commonly done to increase the value of products is the improvement of production technology, both production technology in companies and technology transfer to farmers.

Improving the welfare of breeders gets the least priority because the level of welfare of broiler breeders in Wonogiri Regency is seen from their income is quite good. Breeders want a prosperous life and can meet their needs more than the present life. They want an increase in the value of broiler chickens from their crops. Improvement of the welfare of farmers, especially broiler breeders in Wonogiri Regency is being pursued by many parties, including collectors, partner companies and the government.

#### *D. Alternative Scenarios for Creating an Efficient Broiler Chicken Supply Chain Management in Wonogiri District*

Development of access to information technology is the highest with number 0.485 then number two Transparency of cooperation between parties with number 0.219 then number three Facilitation of farmer facilities and infrastructure at number 0.167 and finally Government policy intervention with number 0.129

The development of access to information and technology is a strategic priority in achieving efficient management of broiler chicken supply chains. Access to information that needs to be developed in this case is at the level of farmers and collectors, it is hoped that all parties can find out market conditions and prices. With this knowledge farmers and collectors are expected to have a good bargaining position in the supply chain. Concrete actions that can be taken to develop access to information include frequent discussions with members of the supply chain.

Technology development can be achieved through technology transfer from companies to farmers, so that integrated technology can be utilized for the purpose of increasing the value of products and will also improve the welfare of farmers.

In conducting collaboration, the important thing to make a shared understanding is the existence of transparency. What is meant in this case is to create transparency in a long-term agreement between supply chain members, including establishing a joint communication forum so that all members of the supply chain can know the market situation, existing rules, and most importantly, encourage honesty among the members of the supply chain in cooperation, for example cooperation between companies with collectors and breeders. With transparency, fair trade can be achieved easily. Transparency in this collaboration can be realized in the equitable distribution of information about markets and prices.

Facilitation of facilities and infrastructure for farmers is an alternative to the third scenario, this is because if production facilities and infrastructure are met in sufficient quantities, suitable types, good quality and affordable prices will be very supportive in establishing efficient broiler chicken supply chain management in the Regency Wonogiri Therefore, the availability of facilities consisting of seeds, fertilizers and medicines as well as other supporting facilities, needs to be done with appropriate planning for needs and used at the right time and place.

Although the role is considered small, government intervention is needed, especially to provide facilities and infrastructure, reduction in the cost of food imports and international trade policies, quarantine rules and so on.

The priority value is small because the role of government intervention has been lacking. Information from the company said that government intervention was felt to be lacking at the entrepreneur level, whereas the policy regarding the price of feed raw materials was expected to help entrepreneurs to expand their businesses. Because the role of the government as facilitator, regulator and motivator is very important in creating a conducive business climate.

#### IV. CONCLUSION

Supply chain in the broiler product in an independent pattern is sold to collectors, then collectors sell to large markets in traditional markets, then sell to retailers in traditional markets. Meanwhile, in the partnership pattern in accordance with the agreement, the entire production of plasma breeders broilers is fully accommodated by the core company or poultry shop. Then the core company is marketing the results.

The supply chain pattern through business partnership is relatively the same as the independent pattern, namely through collecting traders and agents or suppliers, then collecting traders sell to RPA or middle man, then most of it is aimed at market traders and retailers in traditional markets and some sold to agents or suppliers, then to RPA (cutting services), then mostly sold to wet markets and some to modern markets and institutional consumers (manufacturing industries, hotels, restaurants / restaurants, hospitals) .

The supply chain management approach through a business partnership strategy has at least four benefits, namely: (1) the quality of the resulting broiler product will be able to be maintained consistently, this is because through vertical coordination the control mechanism is easy to do; (2) through vertical coordination will be able to reduce costs per unit of output and achieve economies of scale and achieve efficiency and productivity as a source of growth; (3) vertical coordination through business partnerships will broaden the opportunity of smallholder farmers to be involved in the broiler industry, so as to expand employment and business opportunities; and (4) vertical coordination is a coordinated and efficient approach so that product integration and integration among broiler industry businesses will be built so that business continuity will be guaranteed.

An important policy implication in building integrated supply chain management is to develop forms of partnership that need each other, strengthen and benefit each other so that product and inter-agency integration is built up. Likewise with the information flow, the existence of supply chain management through a business partnership strategy the

information flow can move effectively, the product movement will be efficient in producing maximum satisfaction for consumers

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