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Potential development of poultry feed industry in Central Halmahera Regency, North Maluku Province

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Abstract. *The poultry feed industry is one of the industries that has the potential to be developed. A descriptive feasibility study was conducted to examine the development of the poultry feed industry in Central Halmahera Regency, North Maluku Province, based on socio-cultural and socio-economic conditions. This study was conducted in Central Halmahera Regency from May to October 2021. The research method consists of preparation, pre-survey, survey, SWOT analysis, and socio-economic analysis. The results showed that the development of the animal feed industry in Tilope Village, South Weda District, Central Halmahera Regency, was feasible, while production and marketing were still technically very prospective. The needs for poultry feed so far are still imported from outside North Maluku.*

I. INTRODUCTION

Fluctuations in livestock commodity prices (meat, milk, and eggs) are generally caused by changes in animal feed prices on the market. The increase in the price of feed directly will generally lead to an increase in the price of livestock commodities, this is because the largest production cost of the livestock business is the cost of feed (McAinsh et al., 2004; Utami et al., 2012).

The animal feed industry is currently still centered on the island of Java. Based on data from the Ministry of Agriculture, there are 80 feed factories spreading across Indonesia, i.e., 56 factories located on Java Island, 15 factories on Sumatra Island, 6 factories on Sulawesi Island, and 3 factories on Kalimantan Island. Based on these data, there is no animal feed factory in North Maluku. On the other hand, the livestock industry in North Maluku is growing rapidly and feed is an essential requirement for the livestock industry. In addition to the development of the livestock industry, the animal feed industry also needs to be considered, considering that these two industries are highly dependent on each other.

North Maluku Province has agricultural and fishery potential, and also a large livestock population as well as agricultural and fishery waste support which has the potential to be processed and utilized to produce quality animal feed in finished form (Sapsuha et al., 2019). According to Syamsu et al. (2014), the feed industry can develop well if it is based on local resources. Furthermore, it is said that the increasingly intensive cropping pattern of food crops has implications for the higher production of agricultural waste that can be used as feed. The fact so far shows that commercial animal feed that meets the local market is from outside the North Maluku region, especially from North Sulawesi, South Sulawesi, and Java. This fact is actually a

challenge as well as an opportunity for business development in the livestock sector by utilizing existing local resources so that the production costs of existing livestock businesses can be reduced. The existence of the poultry feed industry in this area is the answer to various problems in the availability of poultry feed in North Maluku. Therefore, a program for developing the poultry feed industry in North Maluku is needed.

The development of the poultry feed industry is important because it is paramount in supporting the development of livestock, especially broiler and laying hens. Therefore, this study aims to identify the potential for developing the poultry feed industry in North Maluku, especially in Central Halmahera Regency.

II. MATERIALS AND METHODS

This study was conducted in Central Halmahera Regency, North Maluku Province during the period of May to October 2021. Central Halmahera has an area of 8,381.48 km² (Table 1) consisting land area of 2,276.83 km² (27%) and ocean area of 6,104.65 km² (73%).

The survey was conducted at the location of the planned development of the poultry feed industry, i.e., in Tilope Village, South Weda District, Central Halmahera Regency. The location of the animal feed industry development can be seen in Figure 1.

The research data consisted of primary data and secondary data. Primary data is data obtained through surveys and socio-economic data. Secondary data is data sourced from government and private agencies, reports on the results of existing studies, and other relevant sources.

Figure 1. Location Map of the Animal Feed Industry Development Plan

Socio-economic data was collected through hearings and interviews using questionnaires/instruments to all stakeholders in the development of agribusiness and the animal feed industry. Stakeholders in question are relevant government agencies, small, medium, and large entrepreneurs as well as exporters engaged in the livestock feed sector and commercial-scale livestock business.

Variables observed include: 1. General description of activity location; 2. Socio-Economic Condition of Livestock Community; 2. Description of natural resource and socio-cultural support for the development of the poultry feed industry.

2.1. Data Analysis

Data analysis in this study includes analysis of objective conditions using SWOT analysis to formulate strategies and approaches for developing the poultry feed industry.

III. RESULTS AND DISCUSSION

3.1. General Description of the Placement Area for the Animal Feed Industry

3.1.1. Geographical Location and Regional Boundaries

The geographical location of Central Halmahera Regency is at 0° 45' North Latitude to 0° 15' South Latitude and 127° 45' East Longitude to 129° 26' West Longitude with an area of 8,381.48 km² consisting land area of 2,276.83 km2 (27%) and ocean area of 6,104.65 km2 (73%). The

administrative boundaries of Central Halmahera Regency can be described as follows:

- **To the north, it is bordered by East Halmahera Regency,**
- **To the east, it is bordered by the *Lautan Teduh* (Pacific Ocean) and Sorong Regency,**
- **To the south, it is bordered by South Halmahera Regency and Teluk Weda,**
- **To the west it is bordered by City of Tidore Islands.**

The total population in Central Halmahera Regency is 55,728 people (according to the 2019 census) spreading over 10 sub-districts (Table 1).

3.1.2. Development Area

Meanwhile, the development area in Central Halmahera Regency can be seen in Table 2.

Table 1. Area of Central Halmahera Regency by District in 2020

No	Name of District	Area Size (Km²)	District Capital
1.	Weda	253.28	Weda
2.	Weda Selatan	237.43	Wairoro
3.	Weda Utara	624.62	Sagea
4.	Weda Tengah	253.28	Lelilef Waibulan
5.	Pulau Gebe	223.85	Kapale
6.	Patani	233.36	Kipae
7.	Patani Utara	217.66	Tepeleo
8.	Patani Barat	233.36	Banemo
9	Weda Timur	312.30	Mesa
10.	Patani Timur	108.80	Damuli
	Total	8,381.48	

Data source: Central Halmahera Regency in Figures for 2020

Table 2. Development Area of Central Halmahera Regency

No.	Development Area	Area Function
1.	Development Area 1 in Veda.	1. District government center; 2. Sea and land transportation nodes ; 3. Development of food crop agriculture and horticulture; 4. Plantation Development; 5. Development of Marine Fisheries; and 6. Residential Center
2.	Development Area 2 in Lelilef Sawai.	1. Sea and air transportation nodes; 2. Mining Development; 3. Development of Marine Fisheries; 4. Plantation Development; 5. Settlement Center; and 6. Development of Food Crops Agriculture (Horticulture).
3.	Development Area 3 in Kipai.	1. District government center; 2. Sea and land transportation nodes; 3. Plantation Development; 4. Development of marine fisheries; and 5. Residential Center
4.	Development Area 4 in Kapaleo.	1. District government center; 2. Sea and air transportation nodes; 3. Mining Development; 4. Plantation Development; 5. Development of Marine Fisheries; 6. Settlement Center; and 7. Development of Food Crops and Horticulture

Data source: *Central Halmahera in Figures, 2020*

3.1.3. Animal Feed Industry Development Plan in Central Halmahera

In general, the animal feed industry is under the control of the North Maluku Provincial Agriculture Office. Therefore, the management

system and control of the animal feed industry organization as a pilot project is within the scope of the North Maluku Provincial Agriculture Office. However, in its development it is hoped that the animal feed industry can be directed as a commercial business and can become a source of locally-generated revenue. For the effectiveness of the implementation of animal feed industry production, this business should be able to become an independent and profit-oriented UPTD.

3.1.4. SWOT Analysis

The use of SWOT analysis is intended to approach the identification of internal and external factors in planning activities (Kumaresan et al., 2008; Rangkuti, 2014). This analysis can be used in the establishment of the animal feed industry in Central Halmahera Regency, North Maluku Province. Analysis of the internal and external environment is an analysis of the internal and external conditions that influence the establishment of a poultry feed industry in Central Halmahera Regency, North Maluku Province. Critical factors from internal and external analysis can be identified and formulated from the results of previous studies (research, interviews, and questionnaires filled out by respondents, as well as literature studies). Identification of internal factors includes strengths and weaknesses, and external factors include opportunities and threats, as described below.

a. Strengths

Internal factors identified as strengths in planning the establishment of a poultry feed industry in Central Halmahera Regency, North Maluku Province are as follows:

- The feed resources of agricultural plant waste and fishery waste in Central Halmahera Regency have quite abundant production. The amount of food crop and fishery waste production can be used as a source of abundant poultry feed and the amount of production is still much higher than the total livestock population.
- The location or land for the development of the poultry feed industry in Central Halmahera Regency, North Maluku Province, is very strategic because of its proximity to sources of feed raw materials and close to product marketing routes. In addition, it is also supported by a connecting road with the axis road of North Maluku Province and Sofifi City.
- Livestock business activities have developed around the planned location for the development of the poultry feed industry with an activity center in South Weda District. In addition, there are also government technical institutions, i.e., the Regional Integrated Service Unit (UPTD) of Animal Husbandry, North Maluku Province, which will provide technology transfer to farmers. and SMEs around the location of the poultry feed industry.
- Agricultural and fishery waste is not used for other needs other than as feed. This condition is favorable for livestock development where the availability of agricultural and fishery waste has a large enough potential to be developed and as much as possible can be used as feed.

b. Weaknesses

Internal factors identified as weaknesses in the utilization of agricultural and fishery waste as animal feed in Central Halmahera Regency are as follows:

- The nutritional quality of raw materials for food crop and fishery waste is low. The results showed that in general the nutritional quality of agricultural and fishery waste was characterized by high crude fiber content and low crude protein.
- Facilities and infrastructure for transportation and storage of agricultural and fishery waste raw materials are not available. It is known that the characteristics of agricultural and fishery waste are that they can easily decompose. There are difficulties in transporting large amounts of waste. Even if food crop waste can be transported, farmers do not have a storage/warehouse so that there is less amount of waste that can be transported.
- The application level of feed processing technology derived from agricultural and fishery waste is low. The low level of feed technology application is not caused by the lack of knowledge of the feed technology. However, several things are the cause of the lack of application of feed technology. The causes, among others, are feed technology is considered less effective, requires additional costs, and there is a lack of understanding that with a touch of technology the quality of waste will be better. Then, if this

technology supported waste is used as feed, it will increase livestock productivity.

- Production of agricultural and fishery waste is seasonal. The production of agricultural and fishery waste is closely related to the seasons and cropping patterns of agricultural crops and fishing seasons in an area. This condition causes the production of waste to be seasonal, where the availability of waste is only abundant during harvest and fishing activity.

c. Opportunities

External factors identified as opportunities in the establishment of a poultry feed industry in Central Halmahera Regency, North Maluku Province are as follows:

- The number of livestock population is quite high. Based on the results of this study, the total population of poultry in North Maluku Province was 1,231,043 birds, and especially in Central Halmahera Regency it reached 111,117 birds (BPS, 2021)
- Support from livestock development policies in North Maluku Province is very high. Thus, the development of livestock is expected to prioritize the use of locally owned resources without relying on external resources. Agricultural and fishery waste is one of the local feed resources that can be developed as a source of poultry feed.
- Poultry are generally kept by breeders. Poultry are generally reared by farmers with a small scale of business and a low level of livestock ownership with self-owned status.
- The pattern of raising poultry is still traditional. The pattern of livestock rearing is still based on the pattern of people's livestock business with the traditional maintenance system, which is still based on the pattern of rearing by releasing livestock, or leaving the cage open so that the quality of feed obtained by livestock does not allow the achievement of maximum body weight gain.
- Food crop farming is increasingly intensive, especially on the island of Halmahera. The increasing intensification of food crops has implications for increasing the amount of food crop waste production that can be used as feed raw materials.

d. Threats

The external factors identified as threats to the establishment of the poultry feed industry in Central Halmahera are as follows:

- Imports of eggs and chicken meat are increasing. To meet the needs of eggs and chicken meat, the government issued a policy to import chicken meat and eggs. This condition shows the limited ability of the livestock development pattern based on people's livestock business in ensuring the availability of meat to meet domestic needs.
- Poultry farming is still considered a part-time business and lacks capital. Livestock business is still considered as a sideline business so that the time spent by farmers who also work as food crop farmers is reduced. In addition, to increase the scale of business by increasing the number of livestock ownership, there are obstacles in terms of capital to buy seeds.
- The safety of poultry farming is not guaranteed. The occurrence of theft of poultry causes a decrease in public interest in raising poultry, and encourages farmers to sell their livestock. Another impact is that the poultry rearing system is not working well, because farmers think that being in a cage will make it easier for theft to occur than if it is just released.

3.2. Environmental and Socio-Cultural Aspects

3.2.1. Animal Feed Industry Development Location

The planned location for the development of the animal feed industry is in Tilope Village, South Weda District, Central Halmahera Regency. It is located at the location of the UPTD Cattle Farm, North Maluku Province Agriculture Service. Currently, the UPTD Office has been built on this assigned land. It has several cage units and has been fenced around with an area of approximately 3000 hectares, so it is still possible to build a feed factory.

3.2.2. Types of Generated Waste

Based on the survey results and by comparing several large-scale animal feed factories in other parts of Indonesia, the most likely waste generated is water discharge from the feed mill production process, air waste in the form of factory smoke, and noise pollution from machine operation.

These types of waste are part of the existing process in almost all types of built and producing industries. However, efforts to suppress generated

waste, including processing before waste is released, are an option to suppress and reduce negative access to waste generated from the animal feed production process from existing industries.

3.2.3. Impact of the Feed Industry on the Environment

All industrial development activities including the animal feed industry will have either negative or positive impact on the surrounding environment. However, the presence of the animal feed industry factory is expected to have a positive impact on economic development in North Maluku, especially around the animal feed industry development area, i.e., in North Halmahera Regency, as well as suppressing the negative impacts as much as possible. This can be done through planned, systematic impact mitigation efforts. and sustainable, especially from the environmental and socio-cultural aspects of the community around the animal feed industrial development area.

It is almost certain that the impact of feed factory construction that may occur from the animal feed production process is liquid waste and air waste. Liquid waste can come from the water left over from feed production, while air waste (air pollution) comes from the exhaust fumes of operating feed mill machines.

In order to minimize the environmental impact caused by the presence of the animal feed industry in North Maluku, especially around the location of industrial development, the feed industry must be equipped with waste water treatment facilities, so that the effluent water is released and channeled through water channels (creeks/small rivers). around the area is within the minimum threshold for water pollution, so that water can still be used for consumption and other household needs. This situation is also expected to prevent wastewater seepage that exceeds the minimum threshold which has the opportunity to seep into community wells and other water sources around the animal feed industry area.

The installation of an air Waste Screening Installation (IPAL) is also expected to suppress air pollution from existing animal feed factory machines. Therefore, the air released does not have a negative impact on air conditions around the factory area.

3.2.4. Positive Impact and Alternative Maintenance

Central Halmahera. Increasing the Positive Impact of the Poultry Feed Industry Development Project in Central Halmahera, North Maluku Province, will have a positive impact on the socio-economic life of the people in North Maluku in general and around the animal feed industry development area in Tilope Village, South Weda District, Central Halmahera Regency.

With a simple analysis, it can be stated that the presence of the animal feed industry will open up wide employment opportunities. These opportunities include the sustainable supply chain for animal feed raw materials, the growth of the household economy in the area, employment in the feed industry, and the growth of micro-enterprises that support the production process in the developed animal feed industry.

The presence of the animal feed industry in North Maluku will maintain the economic chain from the production of raw materials to the consumption of livestock commodities (eggs, milk, and meat) as a positive impact of the availability of animal feed. In addition, every increase in the production capacity of the animal feed factory on a regular basis will be followed by an increase in socio-economic activities in the community in North Maluku, starting from the level of production of raw materials, transportation, production in factories, marketing, to livestock production, especially poultry using ready-made feed and post-harvest handling from livestock products yielded.

3.2.5. Mitigating Negative Impacts on Socio-Cultural Society

Based on the survey data, it is shown that socio-culturally, the presence of the feed industry in Tilope Village, South Weda District, Central Halmahera Regency, which will be built is not expected to have a socio-cultural impact. This condition is possible, because the feed industry will be built under the control of the North Maluku Provincial Government through the North Maluku Provincial Agriculture Office, and the feed industry will be built on land owned by the North Maluku Provincial Government. In addition, the development of the animal feed industry does not intersect with Religion, Social, and Culture-related issues for the people of North Maluku, especially the people around the area where the industry will be built.

From the socio-cultural conditions, in general it can be stated that the location of the animal feed industry development does not have a negative socio-cultural impact on the community around the animal feed industry area.

IV. CONCLUSION

Based on the results of this study, the development of the animal feed industry in Tilope Village, South Weda District, Central Halmahera Regency, is feasible to do. In addition, production and marketing activities are still technically very prospective to carry out because commercial animal feed needs are still imported from outside North Maluku.

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REFERENCES

Badan Pusat Statistik. 2020. Halmahera Tengah Dalam Angka.

Kumaresan A, Bujarbaruah K.M, Pathak K.A, Chettri B, Ahmed S.K and Haunshi S. 2008. Analysis of a village chicken production system and performance of improved dual purpose chickens cnder a sub-tropical hill agro-ecosystem in India. Tropical Animal Health and Production 40: 395-402.

McAinsh C.V, Kusina J, Madsen J and Nyoni O. 2004. Traditional chicken production in Zimbabwe. World's Poultry Science Journal. 60: 233-246. https://doi.org/10.1079/WPS2OO416.

Rangkuti F. 2014. Analisis SWOT: Teknik Membedah Kasus Bisnis edisi 18. Jakarta, Indonesia, Gramedia Pustaka Utama.

Syamsu J.A, Muhammad Y and Agustina A. 2014. Characteristics of Feed Mills at Farmers Group Scale in Supporting the Development of Beef Cattle. Journal of Advanced Agricultural Technologies Vol. 1, No. 1.

Sapsuha Y, Sjafani N, Syafie Y and Ishak H. 2019. Campus Intellectual Product Business Development Program: Utilization of Herbs as Phytobiotic in Broiler Chicken. Workshop on Engineering, Education, Applied Sciences, and Technology. IOP Publishing 1364.

Utami S, Zuprizal and Supadmo. 2012. The effect of using nutmeg powder in diet (*myristica fragrans* houtt) on the broiler performance at different floor space. Buletin Peternakan, Vol. 36(1): 5-13.