Infrastructure needs to support the flow of commodity (broiler eggs) in Blitar

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Abstract. Blitar Regency is known as a centre for livestock production, especially in the commodity of broiler eggs. In the context of urban-rural linkages, one of the cities that became the orientation of Blitar Regency was Blitar City. Blitar City's egg production has not been able to meet the egg consumption target in Blitar City, therefore rural area role as a supplier of urban food ingredients is needed. However, based on the existing conditions in the field, it shows that there are problems in the provision of livestock production facilities, distribution and marketing of commodity broiler eggs in the Blitar region. The results showed the infrastructure requirements supporting the flow of commodity broiler eggs. In the context of urban-rural linkages, the provision of infrastructure to support the flow of superior commodities is needed to support the village's role as a supplier of urban foodstuffs so that urban food availability is maintained.

1. Introduction

The rural-urban linkages are clearly seen from the functional relationship between rural and urban areas. The village needs the city in marketing its products and obtaining goods and services that cannot be provided in the village. Whereas cities need production from villages to fulfill the basic needs of their inhabitants, and to optimize the function of cities as distribution centers. The success of the urban village linkage strategy is influenced by 5 (five) flows between the village and the city which consist of people flow, production flow, commodities flow, income flow and information flow (Douglass, 1998).

Blitar Regency is one of the regions in East Java that has a role in strengthening food security. At the level of East Java Province, Blitar Regency is known as a center for livestock production with superior commodity broiler eggs (FGD Bank Indonesia Kediri, 2017). The number of laying hens reaches 15 million that can produce 450 tons of eggs per day. The amount of production is able to supply 20% of the national needs (BPS East Java, 2018). In Blitar Regency, there are seven districts which are the centers for broiler eggs production namely Kademangan District, Kanigoro District, Talun District, Ponggok District Srengat District, Wonodadi District and Udanawu District. In the context of rural-urban linkages, one of the cities that becomes the orientation of Blitar Regency is Blitar City. The development of the number and density of population in the City of Blitar has caused an average decline in the availability of food in the Blitar City in the last two years. The average food availability in Blitar City has decreased from 112,500 tons in 2014 to 43,001 tons in 2015 (Statistics of Blitar City, 2016). When viewed from egg production and population in Blitar City, egg production in...
Blitar City has not been able to meet the target of egg consumption in Blitar City, therefore the role of rural areas is needed as a supplier of urban food ingredients.

The form of urban dan rural linkages that maintain the availability of urban food is the flow of commodities. In commodity flows, the availability of physical infrastructure is one of the factors supporting the success of rural-urban linkages (Rusastra, 2004). However, based on the existing conditions in the Blitar region, there are problems in providing livestock production facilities, distribution and marketing of broiler egg commodities. The results of the primary survey (2019) infrastructure problems such as livestock waste treatment plant, the availability of clean water for livestock, the condition of the warehouse is not up to standard, and the condition of damaged roads (Nurlaili, R., & Aulia, B. U., 2020). This can hamper the process of production and commodity flow of broiler eggs from villages to cities. In the context of rural-urban linkages, the availability of infrastructure will lead to a mutually beneficial relationship between villages and cities. For rural areas, infrastructure can increase farmers’ access to markets and stimulate an economy that can revive rural areas. Meanwhile, for urban areas, the availability of infrastructure can support the fulfillment of the basic needs of urban residents obtained from the production of products in villages and optimize the function of cities as distribution centers.

Based on the facts above, it can be concluded that the relationship between villages and cities between Blitar Regency and Blitar City has not been going well, especially in terms of providing infrastructure to support the flow of broiler eggs commodity. Therefore, further research is needed on the infrastructure needs to support the flow of broiler egg commodities between Blitar Regency and Blitar City as an effort to maintain the availability of urban food.

2. Methods

2.1. Qualitative Descriptive Analysis

To analyze the commodity flow of broiler eggs is using qualitative descriptive analysis. In this study, a qualitative descriptive analysis aims to describe the linkages of leading commodities in Blitar Regency (internal) and the linkages of superior commodities from villages in Blitar to cities (external) obtained from interview and questionnaire data.

2.2. Content Analysis

The next step is to analyze the infrastructure needs to support the flow of broiler eggs in the Blitar region using content analysis. At this stage, content analysis is performed using the NVivo 12 Plus software. Variables related to infrastructure supporting the flow of broiler eggs commodity will be asked to respondents, then the results of the interview will be transcribed to facilitate the analysis process. After doing the transcript, coding was done with the NVivo 12 Plus software to determine the relationship between the interview text and the research variables. From the results of the coding, problems will be obtained related to infrastructure supporting production, storage, distribution and marketing of broiler eggs in Blitar. The results are then used to determine the infrastructure needs to support the flow of leading commodities in broiler eggs in the Blitar region.

3. Result and Discussions

3.1. The Flow of Broiler Eggs Commodity

In identifying commodity flows, a qualitative descriptive analysis of the results of interviews has been conducted. The data collection process is carried out using a questionnaire that contains a list of questions as a reference to get the expected results and responses.

| Origin  | Internal Flows                  | External Flows   |
|---------|--------------------------------|------------------|
| Kademangan | Kademangan, Sanankulon, Kanigoro | Tulungagung      |
In Figure 1, it can be seen the internal flow of broiler egg commodities in Blitar Regency. This internal flow is in the form of inter-district chicken egg commodity in Blitar Regency. The internal flow of this broiler egg commodity is intertwined from the subdistricts of broiler egg production centers in Blitar Regency to other subdistricts in Blitar Regency.

Meanwhile in Figure 2, it can be seen the external flow of broiler egg commodities in the Blitar Region. This external flow is in the form of the linkage of broiler egg commodities between Blitar Regency and Blitar City. By looking at the external flow, it can be seen that the supply chain of broiler eggs between Blitar Regency is a rural area and Blitar City as an urban area. The external flow of this broiler egg commodity is intertwined from three subdistricts of broiler egg production centers in Blitar Regency namely Kanigoro District, Ponggok District and Srengat District towards Sananwetan District and Sukorejo District in Blitar City.

3.2. The Infrastructure Needs to Support the Flow of Commodity (Broiler Eggs) in Blitar

A. Farmer Level
Based on the hierarchy chat above, it can be seen what indicators and variables are often discussed by respondents. At the farmer level the indicator that is often discussed is production. Where there are problems in the management of livestock waste, feed, clean water, and electricity. In addition, another marketing problem was found in the marketing indicator but it was still related to the supply of infrastructure to support the flow of commodities, namely related to egg prices. At the farmer level, the required infrastructure is more inclined to the aspect of production to maintain the stability of production and the price of broiler eggs in the Blitar region. Based on the problems discussed above, the infrastructure needs to support the flow of broiler egg commodities at the farmer level can be seen in Table 2

**Table 2 Infrastructure Needs to Support the Flow of Broiler Egg Commodities at Farmer Level**

| Indicator       | Variable                  | Problem                                                                 | Infrastructure Needs                                                                 | Location                                                                 |
|-----------------|---------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Waste Treatment | Waste Treatment           | • There is no waste management of chicken manure                        | • Provision of livestock waste treatment units                                       | All sub-districts of broiler egg production centers in Blitar Regency   |
|                 |                           | • Intake of chicken manure is carried out 6 months to 1 year             |                                                                                       |                                                                          |
|                 | Clean Water               | • Water sources in Kademangan district have a small discharge that is less than 5 liters / second | • Clean water network addition                                                       | Kademangan district                                                     |
|                 | Electricity               | • There are no generators on some farms that are at risk of chicken seedling death (if there is a blackout) | • Increased electrical energy capacity to support farming areas                      | All sub-districts of broiler egg production centers in Blitar Regency   |
|                 | Feed                      | • Still using household electricity supply                               | • Development of the animal feed industry with raw materials supplied from local sources to maintain the availability of feed. | All sub-districts of broiler egg production centers in Blitar Regency   |
|                 |                           | • The supply of corn for animal feed is unstable                          | • Establishment of maize production land for animal feed in Bakung District            |                                                                          |
|                 |                           | • The price of feed is expensive                                          |                                                                                        |                                                                          |
|                 |                           | • The quality of maize is not good so it decreases egg production          |                                                                                        |                                                                          |
|                 |                           | • 80% of animal feed raw materials are supplied from outside the region  |                                                                                        |                                                                          |
|                 | Storage Condition         | • The egg storage shed is still mixed with the feed shed                  | • Repair and construction of egg storage warehouses in accordance with standards.      | All sub-districts of broiler egg production centers in Blitar Regency   |
|                 |                           | • There are no lighting devices in the egg storage                        |                                                                                        |                                                                          |
**B. Distributor Level**

Based on the problems discussed above, the infrastructure needs supporting the flow of broiler egg commodities at distributor level can be seen in Table 3

**Table 3 Infrastructure Needs to Support the Flow of Broiler Egg Commodities at Distributor Level**

| Indicator | Variable | Problem | Infrastructure Needs | Location |
|-----------|----------|---------|----------------------|----------|
| Distribution | Road Condition | • Passing the road in a damaged condition during the distribution process  
• Pavement in Blitar Regency around 32% is still in the form of dirt roads and 18% in the form of gravel / macadam roads (BPS, 2018) | • Increased road pavement in areas that are still with soil pavement  
• Repair of potholes | Kedemangan district and Ponggok district |

| Marketing | Egg’s Price | • There is no reference in determining egg prices at the farmer level.  
• The price received by farmers is much smaller because of the length of marketing channels and the limited information possessed by farmers  
• Large distributors are the most dominant party in determining the price of eggs | Provision of marketing facilities in the form of an Agribusiness Sub Terminal that functions as a marketing place for leading commodities and information centers to control supply and prices. | Ponggok district (Agribisinis District of Blitar Regency) |

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**Figure 3. Internal Distributor**

**Figure 4. External Distributor**
### Indicator | Variable | Problem | Infrastructure Needs | Location |
--- | --- | --- | --- | --- |
Transportation Mode | Location of gravel / macadam roads (BPS, 2018) | Transport mode capacity is limited | Provision of closed box cars as a mode of transportation used for distributing broiler egg commodities in order to maintain the quality and hygiene of eggs | All internal and external distributors |
Storage | Storage Condition | The warehouse has no lighting | Repair and construction of egg storage warehouses in accordance with standards. | All internal and external distributors |
Marketing | Pricing | Competition with other distributors in determining prices to get the market | Provision of marketing facilities in the form of an Agribusiness Sub Terminal that functions as a marketing place for leading commodities and information centers to control supply and prices. | Ponggok district (Agribisnis District of Blitar Regency) |

### C. Retailer Level

#### Figure 5. Internal Retailer

#### Figure 6. External Retailer

Based on the problems discussed above, the infrastructure needs supporting the flow of broiler egg commodities at the retailer level can be seen in Table 4

### Table 4 Infrastructure Needs to Support the Flow of Broiler Egg Commodities at Retailer Level

| Indicator | Variable | Problem | Infrastructure Needs | Location |
--- | --- | --- | --- | --- |
Distribution | Transportation Mode | Transport mode capacity is limited | Provision of closed box cars as a mode of transportation used for | Internal: Wlingi Market, Sutojayan Market |
| Indicator          | Variable                  | Problem                                                                 | Infrastructure Needs                                                                 | Location                      |
|-------------------|---------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------|
| Eggs Storage      | The eggs supply is unstable | • Egg supply from several distributors and farmer is not always available | distributing broiler egg commodities in order to maintain the quality and hygiene of eggs | Extrenal: Legi Market, Pon Market (Blitar City)                          |
|                   | Eggs Storage              | • There is no egg storage in retailer level                             | • Provision of communal egg storage in each market to maintain egg supply and quality. | Internal: Wlingi Market, Sutojaya Market                                  |
|                   |                           |                                                                        | Extrenal: Legi Market, Pon Market (Blitar City)                          |
|                   |                           |                                                                        | Internal: Wlingi Market, Sutojaya Market                                  |
|                   |                           |                                                                        | Extrenal: Legi Market, Pon Market (Blitar City)                          |

4. Conclusions

The rural-urban linkages in the form of commodity flow in the Blitar region occur in the distribution and marketing of broiler eggs. Internal linkages have been established from the sub-district of broiler egg production centers in Blitar Regency to the sub-districts in the Blitar Regency area. Meanwhile, external linkages have been established from broiler egg production centers in Kanigoro District, Ponggok District and Srengat District into Blitar City area. Overall cities that have external commodity flows with the production of broiler eggs in Blitar Regency are Blitar City, Kediri, Tulungagung, Surabaya, and Jakarta.

The infrastructure needs to support the flow of commodity broiler eggs in Blitar include:

1. Production:
   • Provision of waste management for chicken manure
   • Addition of clean water network in Kademangan District;
   • Increasing the capacity of electrical energy in the area of livestock
   • Development of the animal feed industry

2. Storage:
   • Development of egg storage in accordance with standards.
   • Provision of communal egg storage in each market to maintain egg stock and quality

3. Distribution:
   • Increased road pavement in areas that are still with soil pavement and repair the damaged road in Kademangan district and Ponggok district

4. Marketing
   • Provision of marketing facilities in the form of an Agribusiness Sub Terminal in Ponggok district that functions as a marketing place for leading commodities and information centers

5. References

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