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RURAL-URBAN LINKAGE PATTERNS THROUGH AGRIBUSINESS ACTIVITIES IN REDUCING REGIONAL DISPARITIES: A CASE STUDY OF MEKARSARI VILLAGE AND UNAAHA CITY, INDONESIA

Abstract: Various efforts to overcome the gap between rural and urban, such as the implementation of the green revolution strategy to strengthen the agricultural sector in rural areas, have not produced optimal results. One solution to overcome this gap is to strengthen the relationship pattern between rural and urban. This study aims to explore the potential of agribusiness as a basis for the relationship between rural and urban, and to analyze the relationship pattern through agribusiness activities. This study took the case of Mekarsari Village and Unaaha City, Indonesia. A total of 121 farmers were involved in this study. Primary data were obtained through surveys and interviews, while secondary data were obtained through document reviews to then be analyzed descriptively qualitatively. This analysis reveals a mutually supportive relationship between rural and urban in the agribusiness sector. Rural act as the main producers of agricultural and livestock commodities, such as food crops, vegetables, fruits, and livestock, most of which are supplied to cities to meet consumption demand. Meanwhile, urban provide essential goods for rural areas to support pro-

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duction, such as fertilizers, seeds, pest control equipment, and household needs such as staple foods, clothing, and electronics. This flow of goods reflects an interdependent relationship that not only supports the agricultural and livestock sectors but also improves the quality of life of rural communities, ensures economic sustainability, and strengthens the social fabric of both regions.

Keywords: urban supply chain, input-output flow, economic sustainability, commodity distribution, agricultural sector development

Introduction

The challenge of achieving a balance of development between urban and rural areas in Indonesia remains a major concern in regional planning and development. Although the country has an agricultural foundation, there is a significant gap between cities and villages, as seen from the significant differences in economic growth and overall living standards between the two regions. Data from the Central Bureau of Statistics shows that the gap between urban and rural areas continues to widen. For example, urban areas experienced an economic growth rate of 5.61%, while rural areas experienced a much lower growth rate of only 3.41% (Holis, 2017). In addition, the Gini Ratio, a measure of income inequality, has shown minimal fluctuation. In 2018, the ratio was 0.384, increased slightly to 0.385 in 2020, and then decreased to 0.381 in 2022 and 2024 (Central Statistics Agency, 2024, 2022, 2020, 2018).

Regional disparities occur due to several factors, one of the main reasons being the focus of development activities in urban areas that function as centers of economic, social, and cultural interaction. This focus on cities contributes to urbanization, which results in population growth in urban areas, while rural areas stagnate (Singru, 2015). According to Rostin et al., (2023); Hasddin et al, (2022a), if this disparity is not addressed in a balanced manner, it is projected that by 2025, around 65% of Indonesia's population will live in urban areas, with large cities in Java and Bali being the main population concentration centers (Hasddin et al., 2022b).

Although various efforts have been made to address this gap, such as the implementation of green revolution strategies to improve the agricultural sector in rural areas, the results have not been fully realized. Many small-scale farmers and agricultural workers have not felt the direct benefits of these initiatives, resulting in continued stagnation in rural areas. One of the main factors contributing to this problem is the inadequate linkages between the agricultural sector in rural areas and the processing and distribution sectors in urban areas, which hinders the efficient flow of goods and services between these areas (Nabillah et al., 2023; Holis, 2017).

To overcome this gap, one approach that can be applied is to strengthen the pattern of linkages between villages and cities. This approach is in line with the Network and Linkage Theory, which emphasizes the importance of the relationship between urban and rural areas through infrastructure, trade, and information flows (Yang & Yang, 2022; Lah, 2019; Milojević, 2018; Amirudin et al., 2014). Furthermore, Brokking et al., (2021); Milojevic (2021); Eräranta & Mladenović, (2021); Afzali & Ghasemsharifi (2019); and Zhang et al., (2011) stated that the integration and linkages in question (villages) not only function as resource suppliers, but are also connected to economic and technological centers in the city. This linkage can accelerate economic growth in villages, reduce disparities, and strengthen integration between regions.

In strengthening the pattern of village and city linkages, through agribusiness activities as the main basis for agricultural development, villages have an important role in providing food for consumption both at the local level and to meet food needs in urban areas (Kusuma & Ma'rif 2015; Akkoyunlu, 2015). Villages as centers of agricultural production are not only food providers, but are also integrated into a broader agribusiness ecosystem. In this ecosystem, villages function as suppliers of raw materials which are then processed in the urban industrial sector and distributed to meet market needs (Juantoro et al., 2020). Therefore, the sustainability of the agricultural sector in villages is highly dependent on a synergistic relationship with the agribusiness sector involving the processing, distribution, and marketing of agricultural products (Pawlak & Kołodziejczak, 2020).

However, to achieve better integration between villages and cities, several challenges must be overcome, such as the lack of adequate transportation infrastructure (Adam et al., 2018), limited market access (Pua et al., 2023), the lack of modern agricultural technology in villages, and limited financing (Khan et al., 2024). These limitations hinder the effectiveness of the flow of goods and services, and increase production and distribution costs which ultimately reduce the competitiveness of village agricultural products in urban markets (Syahrani et al., 2020). Wijayanti & Pratomo (2019) continued that the agribusiness sector in villages is often hampered by the lack of development of micro, small, and medium enterprises (MSMEs) that can increase production capacity and open wider market access.

Zhu et al., (2024); Cattaneo et al., (2022); and Mayer et al., (2026) emphasize the importance of building a mutually beneficial linkage system between the rural and urban agricultural sectors. Their approach highlights the need to improve supporting infrastructure, such as efficient transportation networks, and improve the quality of human resources in the agricultural sector. This approach also includes the development of technological innovations aimed at increasing productivity and ensuring the sustainability of agriculture, especially in rural areas (Roldan et al., 2023). By strengthening the linkages between rural and urban areas, the aim is to create a more inclusive agribusiness system that not only improves food security but also promotes equitable economic development across rural and urban areas.

For example, Tongauna District in Konawe Regency has great agricultural potential, with irrigated rice fields reaching 5,305 ha, making it one of the leading areas in the agricultural sector in Konawe Regency. Tongauna District, which is located about 16.6 km from Unaaha City, shows a clear link between villages in Tongauna District and Unaaha City in the agricultural sector. This potential creates opportunities to develop a model for strengthening village and city linkages through agribusiness which can be an example in reducing regional inequality.

In this context, further research on the pattern of linkages between rural and urban areas in agribusiness activities is important to be conducted, especially in Mekarsari Village and Unaaha City, Konawe Regency, Indonesia. This study aims to update existing findings and address gaps in previous studies. For example, Zhu et al., (2024); and Marshalian et al., (2023) mainly focus on urban-rural integration and agricultural innovation, while Tanjung et al., (2024) investigate the strengthening of village innovation in rural-urban linkages. Other studies, such as Mercandalli et al., (2023), analyze rural-urban relationships in territorial development, and Cattaneo et al., (2022) examine the socio-economic linkages between urban and rural areas. Setiadi et al. (2020) focus on rural-urban linkages in the context of food security, Somanje et al., (2020) discuss challenges and potential solutions

for sustainable urban-rural relationships, and Gebre & Gebremedhin (2019) explore rural-urban dependencies in ecosystem services.

On this basis, this study aims to explore the potential of agribusiness as a basis for the relationship between villages and cities, and to analyze the pattern of village-city relationships through agribusiness activities. The expected application, both conceptually and practically, is to open new insights in exploring rural potential and challenges in building a sustainable agribusiness ecosystem, which can support regional development more evenly and reduce the gap between cities and villages.

Materials and methods

This research will be conducted in Mekarsari Village and Unaaha City, Konawe Regency, Indonesia (Map presented in Figure 1). The selection of the research location was carried out purposively, considering that until now there has been no similar research conducted in the two areas, which is the main reason for conducting this research.

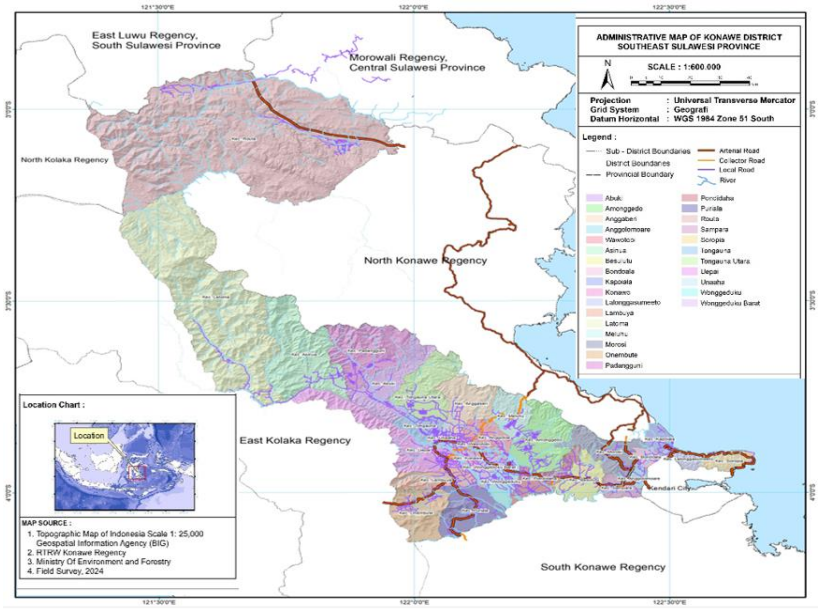

Fig. 1. Map of research locations (Tongauna District and Unaaha City) in Konawe Regency, Indonesia

The approach used in this research is qualitative. According to Rustamana et al., (2024); Moser & Korstjens (2017), qualitative research focuses on understanding and explaining socio-economic phenomena that occur. In the context of this research, the phenomenon in question is the relationship between Mekarsari Village and Unaaha City in Konawe Regency, Indonesia. The research design used is exploratory research, which aims to explore, analyze, and generalize existing phenomena or conditions through surveys and field observations (Stebbins, 2011).

The sample in this study consisted of 121 farmers in Mekarsari Village, who were selected from the entire farmer population in the village. The sample selection used the census method, namely by taking the entire existing population (Moser & Korstjens, 2018).

The data used in this study include primary and secondary data. Primary data is obtained directly through information collection in the field, while secondary data is obtained from reports or research relevant to the topic of this study. Data collection is done through surveys, interviews, and documentation. The collected data is then analyzed using qualitative descriptive techniques.

Results

Overview of agribusiness in Mekarsari Village

The people of Mekarsari Village generally work as farmers who cultivate agricultural and plantation land. Most of the land is used productively, with only a little unused. This shows that this village has sufficient natural resources and is ready to be managed. The total land area reaches 474,000 ha, which is divided into plantation/agricultural land 347,000 ha, yard/housing 103,000 ha, and others 24,000 ha (Central Statistics Agency of Konawe Regency, 2023a).

Based on the results of surveys, observations, and secondary data from the Central Statistics Agency of Konawe Regency (2023b), the agricultural sector related to agribusiness in Mekarsari Village, Tongauna District, includes the sub-sectors of food crops, horticulture, and livestock. The food crops cultivated include Paddy, Corn, Beans, and Tubers. For horticultural crops, some of them are vegetables and fruits. Meanwhile, livestock businesses include large animals and poultry.

Food crops

The types of food crops cultivated by the Mekarsari Village community include rice, corn, beans, and tubers. Based on data searches, the available information on food crops only covers the harvested area, while the amount of production cannot be obtained.

According to data from the Central Statistics Agency of Konawe Regency (2023b), in 2022, paddy rice was the most dominant crop in Mekarsari Village, with a harvested area of 163 hectares, accounting for approximately 94.22% of the total harvested area for food crops (173 hectares). This indicates that paddy rice is the main commodity cultivated by farmers in the village. Corn covered a harvested area of 2 hectares, while soybeans were harvested from 5 hectares, representing small portions of the total harvested area of food crops—1.15% for corn and 2.89% for soybeans. Cassava was grown on 3 hectares, or about 1.73% of the total harvested area for food crops. The infographic is shown in Figure 2. Overall, paddy fields dominate the agricultural sector in Mekarsari Village. While other crops such as corn, soybeans, and cassava only have a small contribution to the total harvested area.

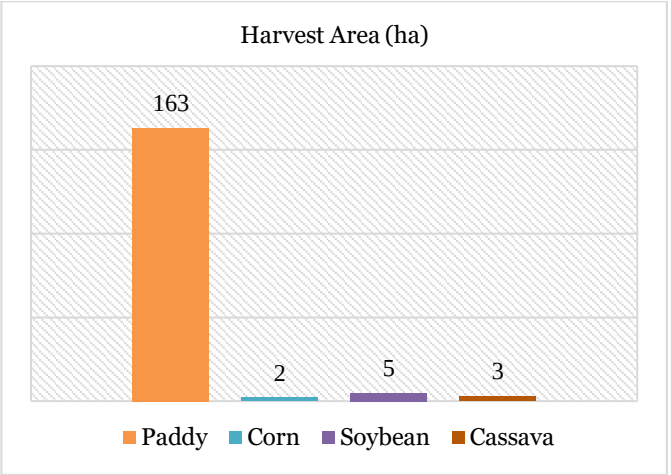

Fig. 2. Harvested area of food crops in Mekarsari Village 2020-2022 (Source: Processed from the Central Statistics Agency of Konawe Regency, 2023b)

Vegetables

The types of vegetable crops cultivated by the community in Mekarsari Village during the period of 2019-2021 (Central Statistics Agency of Konawe Regency, 2023b) include large chili, bird's eye chili, curly chili, tomatoes, and long beans. The total harvested area for these five types of vegetables over the three years (2020-2022) is 29 hectares, with the development presented in Figure 3.

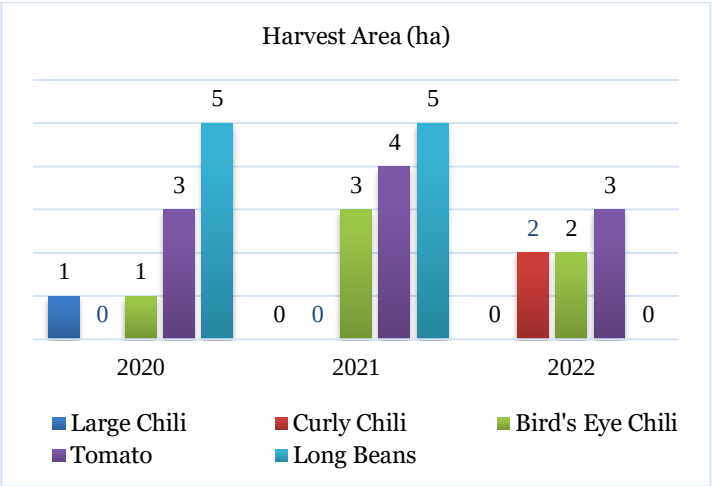

Fig. 3. Harvested area of vegetable crops in Mekarsari Village 2020-2022 (Source: Processed from the Central Statistics Agency of Konawe Regency, 2023b)

In 2020, the harvested area of Large chilies was recorded at 1 hectare, but in 2021 and 2022 there was no harvest so that the total harvested area during the three-year period was 1 hectare. Curly chilies began to be harvested in 2022 with a harvest area of 2 hectares, but in 2020 and 2021 there was no harvest so that the total harvested area of curly chilies during the three years was 2 hectares. The harvested area of Brid's eye chili fluctuated, namely in 2020 it was 1 hectare, in 2021 it was 3 hectares, and in 2022 it was 2 hectares. During

the three-year period, the total harvested area of cayenne pepper reached 6 hectares. Tomato planting was relatively consistent, with a harvest area of 3 hectares in 2020, 4 hectares in 2021, and 3 hectares in 2022, so that the total harvested area during the three years reached 10 hectares. Long beans were harvested on 5 hectares of land in 2020 and 2021, but there was no harvest in 2022, so the total harvested area of long beans for three years reached 10 hectares.

The data illustrates the variability of the harvested area of vegetables cultivated in Mekarsari Village, with some crops experiencing an increase or decrease in harvested area from year to year. Tomatoes and long beans emerged as the dominant crops in terms of harvested area, while other crops such as large chilies and curly chilies contributed less. The total production of the five vegetable crops in Mekarsari Village from 2020 to 2022 was 930 quintals (Central Statistics Agency of Konawe Regency, 2023b). The distribution of this production is shown in Figure 4.

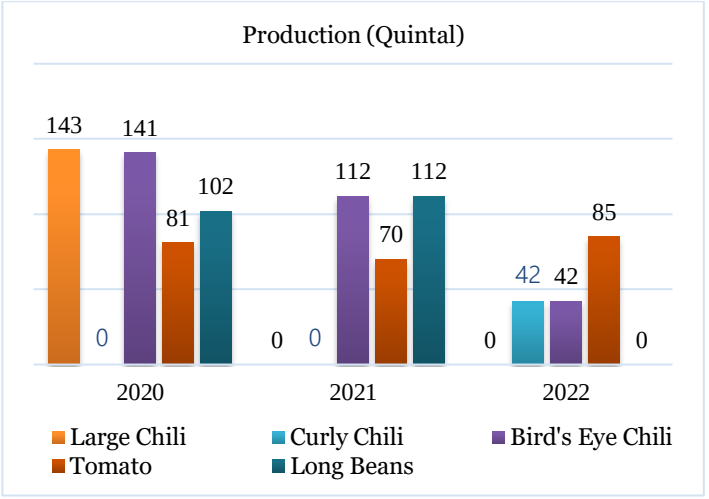

Fig. 4. Amount of vegetable crop production in Mekarsari Village 2020-2022 (Source: Processed from the Central Statistics Agency of Konawe Regency, 2023b)

The total production of Large chilies in 2020 was recorded at 143 quintals. There was no production in 2021 and 2022, so the total production of large chilies for three years was 143 quintals. Curly chilies began to be produced in 2022 with a total of 42 quintals, while there was no production in 2020 and 2021. Therefore, the total production of curly chilies for 3 years was 42 quintals.

The production of Brid's eye chili showed fluctuations in production, with 141 quintals in 2020, 112 quintals in 2021, and 42 quintals in 2022. The total production of Brid's eye chili for 3 years reached 295 quintals. Tomato production was recorded at 81 quintals in 2020, 70 quintals in 2021, and 85 quintals in 2022. Total tomato production for three years was 236 quintals. Long bean plants were recorded with a production of 102 quintals in 2020 and 112 quintals in 2021, but there was no production in 2022. Total long bean production for three years was 214 quintals.

Overall, the information in Figure 3 shows that cayenne pepper is the plant with the highest production, followed by tomatoes and long beans. Some plants, such as curly chilies and large chilies, show lower or even no production in certain years.

Fruits

The types of fruit plants cultivated by the Mekarsari Village community during the 2020-2022 period (Central Statistics Agency of Konawe Regency, 2023b) include Mango, Durian, Thai orange, Banana, and Lansium. The amount of fruit production is presented in Figure 5.

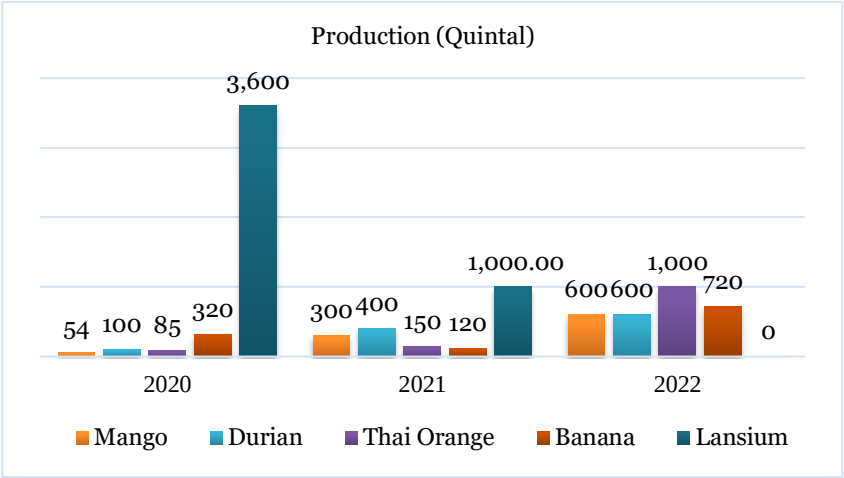

Fig. 5. Amount of fruit plant production in Mekarsari Village 2020-2022 (Source: Processed from the Central Statistics Agency of Konawe Regency, 2023b)

Mango production showed a significant increase, starting from 54 quintals in 2020, increasing to 300 quintals in 2021, and reaching 600 quintals in 2022, with a total production of 954 quintals over three years. Durian also experienced a similar increase, with production of 100 quintals in 2020, 400 quintals in 2021, and 600 quintals in 2022, resulting in a total of 1,100 quintals over three years. Thai oranges experienced a huge surge in production, from 85 quintals in 2020, 150 quintals in 2021, to 1,000 quintals in 2022, resulting in a total of 1,235 quintals in three years.

However, there was a decrease in production in Bananas, which was recorded at 320 quintals in 2020, decreased to 120 quintals in 2021, and increased again to 720 quintals in 2022, with a total of 1,160 quintals. Likewise with Lansium, which showed a drastic decline; production in 2020 was very high, reaching 3,600 quintals, but decreased to 1,000 quintals in 2021, and there was no production in 2022, resulting in a total production of 4,600 quintals for three years.

Overall, the total fruit production in Mekarsari Village for the period 2020 to 2022 reached 9,049 quintals, reflecting fluctuations in fruit production in Mekarsari Village. Several types of fruit, such as Mango, Durian, and Thai orange, experienced significant increases, while Bananas and Lansium experienced a decline or instability in production in certain years. Overall, there is an increasing trend in production for most fruit commodities.

Livestock

In 2022, the community of Mekarsari Village raised a variety of livestock, including both large animals and poultry. The village successfully categorized eight types of livestock, which are Cattle, Buffaloes, Goats, Pigs, Free-range chickens, Broiler chickens, Ducks, and Manila ducks. According to data from the Central Statistics Agency of Konawe Regency

(2023b), the total livestock population in Mekarsari Village reached 226,885 in 2022. A detailed breakdown of this livestock population is presented in Figure 6.

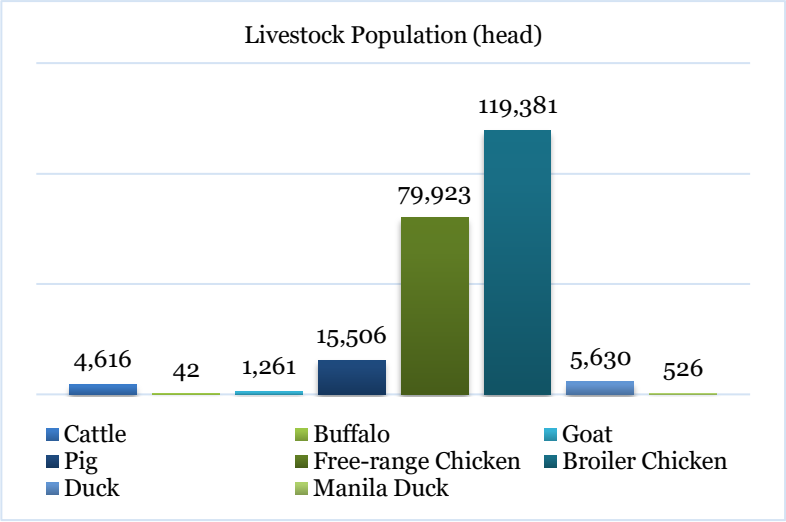

Fig. 6. Number of livestock population in Mekarsari Village in 2022 (Source: Processed from the Central Statistics Agency of Konawe Regency, 2023b)

The recorded Cattle population is 4,616, which are generally raised for meat and milk. Buffalo has a smaller population, namely 42, usually used as work animals or for meat. Goats are also quite numerous, with a total of 1,261, which are raised for meat, and skin. Pigs are one of the main livestock in this village, with a very large population, namely 15,506. For poultry, the population of Free-range chicken is recorded at 79,923, while Broiler chickens have a larger number, namely 119,381, with the main purpose of producing eggs and meat. Ducks are also cultivated with a total of 5,630, while Manila ducks are recorded at 526.

The data in the image above illustrates the composition of the varied livestock population. The distribution of numbers is dominated by broiler chickens and pigs as the most widely raised livestock in the village.

Rural-urban linkage patterns

The results of the analysis of the pattern of rural-urban linkages in agribusiness activities between Mekarsari Village and Unaaha City are presented in Table 1. It is important that the linkages presented are the result of integration of the tabulation of information provided by farmers during interviews, validated by observation.

Table 1. Rural-urban linkage patterns in agribusiness activities between Mekarsari Village and Unaaha City

Commodity	Linkage patterns		
	From rural to urban	From urban to rural	
		Related to agribusiness activities	Other
Food crops	Paddy	▪ Fertilizer ▪ Pest and disease control materials and equipment	▪ Staple household goods ▪ Building materials and carpentry tools ▪ Electronics
	Corn	▪ Seeds ▪ Pest and disease control materials and equipment	▪ Staple household goods ▪ Clothing
	Soybean	Seeds	
	Cassava		Staple household goods
Vegetables	Large chili	▪ Fertilizer ▪ Pest and disease control materials and equipment ▪ Seeds	▪ Staple household goods ▪ Animal protein (fish)
	Curly chili	Pest and disease control materials and equipment	Staple household goods
	Bird's eye chile		Clothing
	Tomato	▪ Fertilizer ▪ Pest and disease control materials and equipment ▪ Seeds	Staple household goods
	Long beans		Staple household goods
Fruits	Mango		▪ Staple household goods ▪ Building materials and carpentry tools ▪ Electronics ▪ Clothing
	Durian		▪ Building materials and carpentry tools ▪ Electronics
	Thai orange	Pest and disease control materials and equipment	
	Banana		Staple household goods
	Lansium		▪ Staple household goods ▪ Electronics
Livestock	Cattle		Motor vehicles
	Buffalo	Pest and disease control materials and equipment	Motor vehicles
	Goat		Staple household goods
	Free-range chicken	▪ Pest and disease control materials and equipment ▪ Animal feed	Clothing
	Broiler chicken	▪ Pest and disease control materials and equipment ▪ Seeds ▪ Animal feed	▪ Staple household goods ▪ Clothing
	Duck	▪ Pest and disease control materials and equipment ▪ Seeds ▪ Animal feed	
	Manila duck	▪ Pest and disease control materials and equipment ▪ Seeds ▪ Animal feed	

Note: Pigs are sold in limited quantities, mainly for personal consumption and to local residents

Food crops

As shown in Table 1 above, rice flows from villages to cities as the main agricultural product, generating important income for farmers that supports household sustainability and agricultural activities. Meanwhile, goods that support agricultural production, such as fertilizers and pest and disease control equipment, flow from cities to villages. In addition, essential household goods, building materials and carpentry tools, and electronics are shipped from cities to meet the needs of rural communities.

In the case of Corn, although produced in rural and shipped to urban, rural also receive supplies of Corn seeds and pest control equipment from urban. Furthermore, essential household goods and clothing are shipped from urban to rural. For Soybeans, the flow of goods only flows from cities to villages, consisting of Soybean seeds to support agricultural production in villages. As for Cassava, although produced mainly in rural, household staples are shipped from cities to support the daily needs of rural residents. The conceptual pattern of this relationship is illustrated in Figure 7.

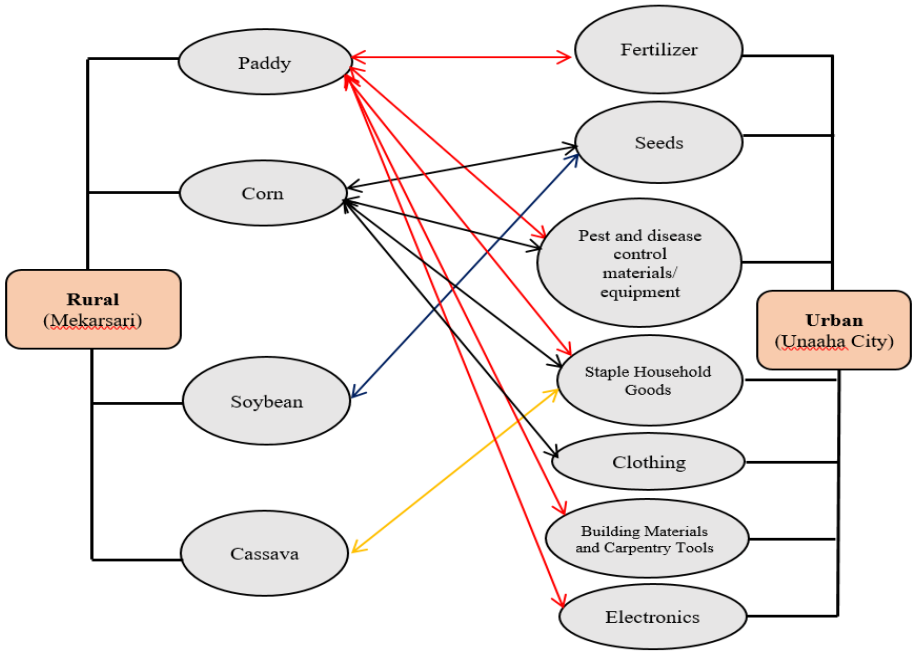

Fig. 7. Rural-urban linkage patterns in agribusiness activities for food crop commodities

These results indicate a mutually supportive relationship between rural and urban in terms of food crop commodities. Rural function as the main producers of food crops, while urban provide goods that support agricultural businesses and the daily needs of village communities. This flow of goods illustrates the strong interdependence between the two regions in supporting the sustainability of economic and social life.

The pattern of flow of goods reflected here occurs because of complementary needs. Rural need goods that support agricultural production and daily life, which are supplied by the urban, while the city needs agricultural products from the village to meet food and other economic needs.

Vegetables

The pattern of linkages between rural and urban areas in vegetable commodities as seen in Table 1, shows that large chilies flow from rural areas to urban areas to meet the needs of urban residents, as well as being a market destination that generates income. Meanwhile, from urban areas to rural areas there is a flow of goods that support agriculture, such as fertilizers, pest control tools, and seeds. In addition, urban areas also provide basic household necessities and sources of animal protein.

Chili commodities, rural production is sent to urban areas, and the results are then channeled back from the city to the village to support ongoing production, such as the purchase of materials and equipment for pest and disease control. In addition, this flow also meets basic household needs, and clothing. Tomatoes are another commodity transported from rural to urban areas. The drive for this flow to the city is driven by the need for resources that are essential to sustaining the business, such as fertilizer, pest and disease control materials, and seeds. The remaining production is used to meet household needs that are not available in rural areas. Long beans from rural areas also play an important role in meeting urban demand. The proceeds from their sales are then used to meet limited household needs in the village. The conceptual pattern of this relationship is illustrated in Figure 8.

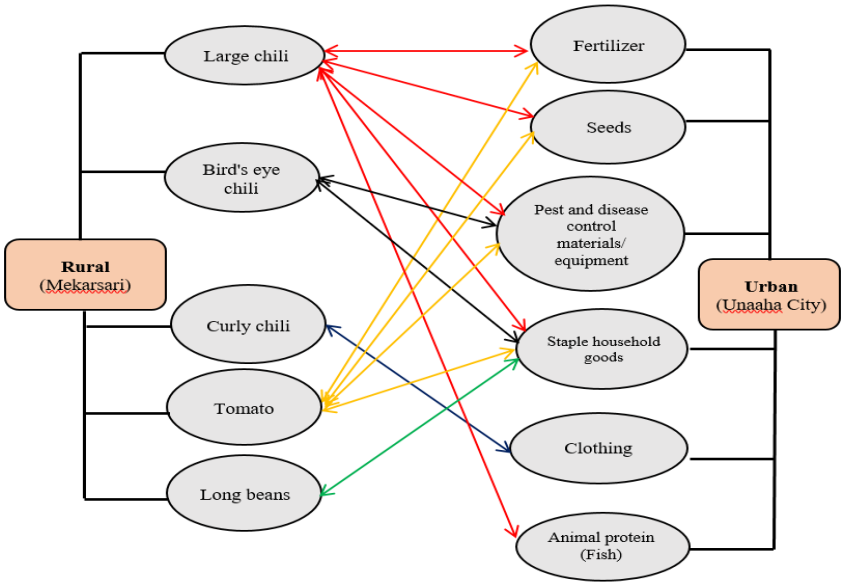

Fig. 8. Rural-urban linkage patterns in agribusiness activities for vegetable commodities

These findings indicate a strong pattern of interdependence between rural and urban areas in the agricultural sector, especially in vegetable commodities. Rural areas act as the main producers of vegetable commodities, while urban areas provide goods that support agricultural production and meet household needs that are not available in rural areas. The flow of goods from cities to villages and vice versa not only supports the sustainability of agricultural production but also strengthens the socio-economic life of rural communities.

This pattern occurs because of the complementary needs between rural and urban areas. Rural areas need inputs such as fertilizers, seeds, and pest control equipment for the sustainability of agricultural production, while urban areas need agricultural products from

rural areas to meet the food needs of urban residents. Furthermore, urban areas provide household goods that are difficult to obtain in rural areas, such as staple foods, animal protein, and other household goods. This pattern of goods flow indicates a relationship that not only supports the agricultural sector but also strengthens the economic and social structures of both regions.

Fruits

As shown in the analysis in Table 1 and Figure 9, Mangoes are not only supplied to meet local market demand in rural areas, but are also shipped to urban areas. In contrast, there does not seem to be a direct link from urban to rural areas to support agricultural activities. However, the flow of goods from urban to rural areas, driven by agribusiness, includes other essential goods such as household staples, building materials and equipment, electronic goods, and clothing, all of which support rural life and improve the quality of life of rural communities.

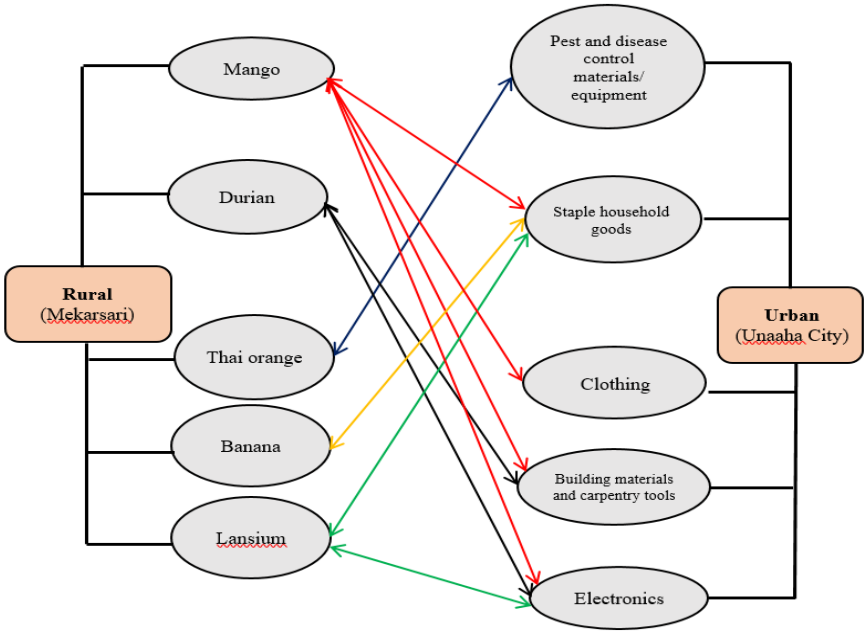

Fig. 9. Rural-urban linkage patterns in agribusiness activities for fruit commodities

Similarly, for Durian, agribusiness relationships flow from rural to urban areas to meet urban consumer demand. However, there does not appear to be a direct relationship with agricultural activities shipped from urban to rural areas. Instead, the flow involves other goods from urban areas entering the village to support rural livelihoods and agricultural activities, including building materials, equipment, and electronics.

For Thai oranges, the flow from rural to urban areas serves to meet the consumption needs of urban residents. In contrast, the flow of goods from urban to rural areas involves agricultural-related goods such as pest and disease control materials, which are important for supporting sustainable agricultural production. No direct relationship with non-agricultural goods is found.

A similar pattern occurs for bananas and langsat, where goods flow from rural to urban areas to meet urban consumption. However, no direct relationship with agricultural activities supporting business operations from urban to rural areas is found. The actual flow from urban to rural areas involves goods related to daily life (non-agricultural), such as household staples and electronics, which support the daily lives of rural communities.

These findings indicate a pattern of interconnectedness between rural and urban areas in the flow of fruit commodities, although it does not always involve a direct relationship between agricultural activities in rural areas and the flow of goods from urban areas to rural areas. This mutually supportive flow of goods illustrates how rural areas act as the main producers of fruit for urban markets, while urban areas provide goods that support the livelihoods of rural communities, both in agricultural activities and household needs.

This pattern of interconnectedness can be explained by several factors. First, the existence of complementary needs, where rural areas need agricultural materials and equipment to support their agricultural activities, while urban areas need agricultural products from rural areas to meet the food needs of urban residents. Second, improving the quality of life of rural communities. The flow of goods from urban to rural areas, such as building materials, electronics, and clothing, shows the role of cities in improving the quality of life of rural communities. This also reflects how urban areas meet needs that cannot be met by rural areas, both for daily life and for agricultural activities. Third, the role of urban markets. Cities serve as important markets for fruit commodities produced in rural areas, while rural areas remain dependent on the flow of goods from urban areas to support agricultural activities and the daily lives of rural communities.

Livestock

The pattern of interdependence between rural and urban areas related to livestock businesses, other than pigs (which are traded in limited quantities and consumed by themselves or by local residents), shows interdependence. Referring to the pattern of interdependence in Table 1, it illustrates the interdependence between rural and urban areas in supporting livestock businesses, both in the form of providing livestock from rural areas to urban areas and providing goods that support the sustainability of livestock businesses, which are supplied from urban areas to rural areas. Conceptually, the pattern of interdependence is presented in Figure 10.

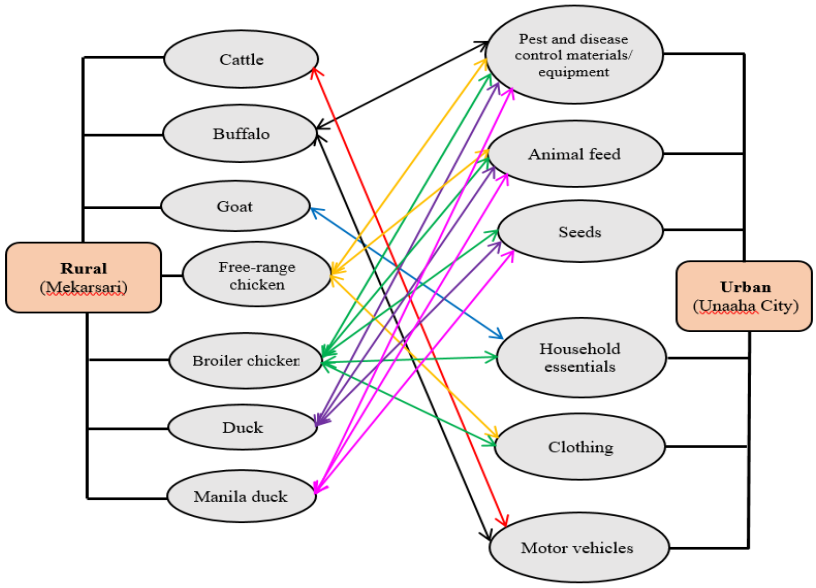

Fig. 10. Rural-Urban Linkage Patterns in Agribusiness Activities for Livestock Commodities

It can be explained that for Cattle production in rural areas, livestock are sent to urban areas to meet consumer demand. The interconnection pattern shown by the flow of goods from urban to rural areas does not directly support agricultural activities, meaning there is no direct relationship. What is revealed is that goods from urban to rural areas are intended to complement transportation resources, such as motor vehicles, both for personal needs and other operational needs.

On the other hand, for Buffalo, in addition to meeting the demand for meat in urban areas, the interconnection found is the flow of goods from urban to rural areas. These goods are intended to support livestock activities and other agricultural businesses, such as pest and disease control materials that are often used in livestock businesses. In addition, motor vehicles are also sent to support the operational transportation needs of these businesses.

Like other livestock commodities, Goat farming is marketed in urban areas to meet consumer demand. However, the flow of goods from urban to rural areas is not directly related to agricultural activities, but rather to meet household needs that are very important to support rural households.

The interconnection pattern for poultry is closely related to urban areas. From rural to urban areas, Free-range chickens are marketed as livestock commodities with economic value. From urban to rural areas, the flow of goods is related to agricultural support activities, such as pest and disease control materials needed for Free-range chicken farming, and chicken feed which is very important for livestock farming. In addition, there are also goods that are not related to agriculture, such as clothing, which is important for farmers.

Similarly, for Broiler chickens, the flow of goods from rural to urban areas functions as an economically valuable market for farmers in rural areas. Direct urban-rural linkages

support agricultural activities, with goods such as pest and disease control materials, seeds, and chicken feed-limited resources in rural areas. Household needs and clothing are other goods obtained from the city.

The pattern of linkages for Ducks and Manila ducks is similar. The flow from rural to urban areas is to meet urban demand, while also providing important income for farmers to support their households and livestock businesses. The flow from urban to rural areas is more focused on business continuity, including materials and equipment for pest and disease control, seeds, and feed.

These findings indicate a mutually supportive relationship between rural and urban areas in the livestock sector. Rural areas as the main producers of livestock (cows, buffaloes, goats, poultry, ducks) supply livestock to urban areas to meet urban consumption needs. Conversely, urban areas provide goods that support the sustainability of livestock businesses in rural areas, such as pest control materials, animal feed, and other goods that support the social and economic life of rural communities.

There are several reasons that explain how this pattern occurs. First, there is interdependence in the livestock sector, where rural areas need goods from urban areas to support their livestock business activities, such as pest control equipment, feed, and seeds. On the other hand, urban areas need livestock products from rural areas to meet the consumption demands of urban residents. Second, the need for transportation and logistics. The flow of goods, including motorized vehicles from urban areas to rural areas for operational purposes, such as transporting livestock and agricultural products, highlights the importance of logistics relationships that facilitate livestock business activities. Third, the provision of household needs in rural areas. The flow of goods from urban to rural areas also includes essential household goods that are essential to the daily lives of rural communities, such as staple foods, clothing, and electronic goods.

Discussion

The pattern of mutually supportive relationships between rural and urban in terms of agribusiness activities in each commodity that has been reviewed is very much in line with the Network and Linkage Theory, where there is a mutually dependent relationship (Mladenović, 2021) in this case between rural and urban in order to support agriculture and the socio-economic needs of both regions. Through the flow of complementary goods, this theory can explain how this network of relationships creates a sustainable and mutually beneficial system for both regions.

Within the framework of Network and Linkage Theory (Brokking et al., 2021), this finding is consistent with the fact that the relationship between various entities—whether in the form of exchange of goods, information, or resources—creates a network that strengthens each other. In the context of rural and urban, rural as producers of food sources and urban as providers of goods that support agriculture form a mutually supportive network. Rural flow various agricultural commodities to urban, while cities flow goods needed to support agriculture in rural (such as fertilizers, seeds, and agricultural tools), as well as the household needs of village communities. This illustrates a structured interaction in the form of a network between rural and urban.

From the Linkage perspective, it refers to the relationship or interdependence between various elements or actors in an economic or social system (Brokking et al., 2021). In this case, the relationship between rural and urban illustrates a strong interdependence pattern, where both regions need each other to survive and thrive. The same emphasis was reported by Su et al., (2022) that villages need inputs from cities to support agricultural production and daily life, while urban depend on agricultural products from rural to meet food and other economic needs. This is an example of mutually supportive linkages, which allow both regions to develop together.

Finally, it is important to maintain a complementary relationship between connected actors or regions. In the context of this finding, the relationship between rural and urban is reflected in the pattern of complementary flows of goods—rural provide agricultural products needed by urban, while cities provide inputs that are essential for agriculture and the daily life of rural communities. The synergy created between these two regions leads to greater welfare, both at the social and economic levels, which is in accordance with the basic principles of network and linkage theory.

Network and linkage in the rural-urban network also create mutually beneficial economic value. As Akkoyunlu (2015) said, in relation to this finding, the flow of goods between rural and urban—both in the form of agricultural products and goods that support village life—creates sustainable economic value. Villages earn income from selling agricultural products in the urban, while urbans strengthen the rural economy by providing goods that support agricultural activities and daily life. This illustrates how relationships in this network can strengthen the economies of both regions.

Conclusion

Villages (rural areas) provide important agricultural resources for urban communities. Mekarsari Village has significant agricultural and livestock potential. Most of the land is used for agriculture, with food crops fields being the main commodity, followed by horticultural crops such as chilies, tomatoes, and long beans. Fruit production, such as mangoes and durians, has also shown rapid growth. In the livestock sector, the village has a large livestock population, with broiler chickens and pigs as the main commodities. Although there are fluctuations in the production of some commodities, overall the village has sufficient natural resources to support agricultural and livestock activities, and has the potential to improve the economic welfare of its people.

The analysis results found that there is a pattern of mutually supportive relationships between villages and cities in the agribusiness sector. Villages function as the main producers of agricultural and livestock commodities, such as food crops, vegetables, fruits, and livestock, most of which are supplied to cities to meet consumption needs. Meanwhile, cities supply goods needed by villages to support production continuity, such as fertilizers, seeds, pest control equipment, and household needs such as staple foods, clothing, and electronics. This pattern of goods flow reflects the interdependent relationship between villages and cities that not only supports the agricultural and livestock sectors, but also improves the quality of life of rural communities, ensures economic sustainability, and strengthens the social life of both regions.

This study has several limitations that should be acknowledged. First, the analysis relies primarily on harvested area and production volume data, without incorporating other

influential factors such as weather conditions, agricultural practices, or government policies, all of which can significantly affect agricultural and livestock yields. Second, although the study highlights the flow of goods between rural and urban areas, it does not delve deeply into the socio-economic impacts on rural communities—such as farmer welfare, household resilience, or broader social transformations. Third, the study offers a snapshot of rural-urban linkages at a particular point in time, and does not adequately capture the dynamic nature of these linkages, which may evolve due to market shifts, climate variability, or policy interventions.

Future research should consider integrating more comprehensive datasets that include environmental variables, policy frameworks, and innovations in agricultural techniques. Additionally, further studies are recommended to explore the socio-economic dimensions in greater depth, such as the well-being of farmers, shifts in rural lifestyles, and the implications of changing market conditions on social structures. Longitudinal studies are also essential to track how patterns of goods flow and rural-urban linkages transform over time, offering valuable insights into the resilience, adaptability, and sustainability of these interconnected systems.

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