Implementation of Klassen Typology in Mapping of Superior Commodities of Food Crops in The Malolo Agropolitan Area

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Abstract. The Malolo agropolitan area is a strategic food crop production center in Takalar. The implementation of klassen tipology is used to identify superior commodities with export value from food plants cultivated by farmers in the area. This study aims to determine the superior commodities of food crops using klassen typology and to map these superior commodities in the Malolo Agropolitan Area. The analytical methods used were klassen typology and Ar-GIS mapping. The results showed that the implementation of klassen typology on food commodities in the Agropolitan Malolo area resulted in maize as the only superior commodity out of 4 other food commodities. Maize is a leading commodity in 4 areas, that is Massamaturu, Timbuseng, Barugaya, and Towata. Mapping results show that 4 areas are superior commodity development, 11 areas for mainstay commodity development, 37 areas for prospective commodity development, and 38 areas for slow commodity development. The number of areas for slow commodity development shows that the production of food commodities in the Malolo agropolitan area is less able to compete with food commodity production in other areas in a larger area.

Keywords: klassen tipology, superior commodity, agropolitan malolo

1. Introduction

The Malolo Agropolitan area is a strategic food crop production center in Takalar. The Government of Takalar Regency in the Regional Spatial Plan (RTRW) has determined the Malolo area as a Strategic and Fast-Growing Agropolitan Area in North Polongbangkeng District for the period of regional development in 2012-2031 [1]. Malolo's agropolitan development policies have not been widely reported to be able to improve community welfare and optimize the potential of their natural resources. Some of the obstacles that can slow down regional growth are the lack of utilization and development of regional superior commodities. Identification of superior commodities with export value from crops cultivated by farmers in the area needs to be done. According to Balirante et al. [2] the determination of superior commodities is very important, because with the knowledge of superior commodities, the focus of development on these commodities becomes a priority. The existence of superior commodities in an area can facilitate agribusiness development efforts.

The implementation of the Klassen typology in the production of the agricultural sector will reveal the types of agricultural products that have the potential to be exported [3]. The mapping application functions to process spatial data and statistical data as a basis for making decisions to determine the area...
of food crop commodities [4]. Based on this, it is necessary to implement Klassen typology and use mapping to identify superior commodities with export value from food crops cultivated by farmers in the area. The purpose of this study is to determine the superior commodities in the Malolo Agropolitan Area that have the potential to be exported and produce a mapping of the superior commodities in the Malolo Agropolitan Region.

2. Data and Methods

2.1 Area of Study

The study was conducted in 18 villages as area in the Malolo Agropolitan Area in Takalar Regency. Administratively, the research location is in North Polongbangkeng District, Takalar Regency. The research was conducted from May to September 2020.

2.2 Research Material and Tools

To achieve the research objectives, quantitative descriptive and qualitative descriptive methods were used. The data in this study are in the form of primary data and secondary data. Primary data collection from field observations. Secondary data collection from literature study.

2.3 Data Analisys

To find out the superior commodities in the region, a comparison of the LQ and SSA values in the Klassen typology was carried out. If a certain commodity has a value of LQ > 1 and SSA > 0 then the commodity is classified as a superior commodity. The following is a matrix of commodity types based on LQ and SSA values, which can be seen in Table 1.

| Criteria | LQ > 1                      | LQ < 1                      |
|----------|-----------------------------|----------------------------|
| SSA > 0  | Superior Commodity          | Mainstay Commodity         |
| SSA < 0  | Prospective Commodity       | Slow Commodity             |

For the mapping of superior commodities using the results of the implementation of the Klassen typology which is described by mapping using a Geographic Information System (GIS) application. The results of the mapping describe the classification of each commodity in the Malolo agropolitan area.

3. Results and Discussion

Superior commodity is an economic sector that has a very dominant value and has advantages in contributing to production, both sectoral and spatial, with a strong distribution and degree, and has a strong economic base. Various agricultural programs for commodity development can be implemented on lands that are physically suitable and the existing agro-climatic conditions in the planning area as a government policy. According to Susilawati et al. [5] the determination of superior commodities is carried out as an effort to utilize the potential of the region so that it can provide added value for the region.

Table 2 shows that maize is the only superior commodity in the Malolo Agropolitan area. Maize is the superior commodity in 4 areas, that is Massamaturu, Timbuseng, Barugaya, and Towata. These four area have land suitability suitable for maize cultivation and the majority of the community culture cultivates maize. While the implementation of the klassen typology shows that the typology of the
The prospective commodity is mostly paddy and sweet potato and the typology of the slow commodity is mostly green beans and cassava. According to Cipta et al. [6] the determination of the main superior commodities in each food crop group is based on each value of the criteria for determining the LQ value and SSA (PB) value.

Table 2. The results of the Klassen typology analysis in the Malolo Agropolitan Area

| No  | Area               | Paddy  | Maize  | Green Bean | Cassava | Sweet Potato |
|-----|--------------------|--------|--------|------------|---------|--------------|
| 1   | Panrannuangku      | Prospective | Mainstay | Prospective | Mainstay | Prospective  |
| 2   | Mannongkoki        | Prospective | Prospective | Slow | Slow | Prospective  |
| 3   | Malewang           | Prospective | Prospective | Slow | Slow | Slow         |
| 4   | Palleko            | Prospective | Slow | Prospective | Prospective | Prospective |
| 5   | Mattopodalle       | Prospective | Slow | Prospective | Slow | Prospective  |
| 6   | Parang Luara       | Prospective | Slow | Prospective | Slow | Prospective  |
| 7   | Parappunganta      | Prospective | Mainstay | Prospective | Slow | Prospective  |
| 8   | Massamaturu        | Slow | Superior | Slow | Prospective | Prospective |
| 9   | Timbuseng          | Slow | Superior | Slow | Slow | Slow |
| 10  | Ko’mara            | Prospective | Mainstay | Slow | Slow | Slow |
| 11  | Barugaya           | Slow | Superior | Mainstay | Slow | Slow |
| 12  | Towata             | Slow | Superior | Slow | Mainstay | Prospective |
| 13  | Kampung Beru       | Prospective | Mainstay | Slow | Mainstay | Prospective |
| 14  | Lassang            | Prospective | Slow | Slow | Slow | Prospective |
| 15  | Parangbado         | Prospective | Mainstay | Slow | Prospective | Prospective |
| 16  | Lassang Barat      | Prospective | Mainstay | Slow | Slow | Prospective |
| 17  | Balangtanaya       | Slow | Mainstay | Slow | Prospective | Prospective |
| 18  | Kale Ko’mara       | Slow | prospective | Slow | Slow | Slow |

Table 3. Recapitulation of superior, mainstay, prospective, and slow commodity development areas

| Commodity | Superior (area) | Mainstay (area) | Prospective (area) | Slow (area) |
|-----------|----------------|-----------------|--------------------|-------------|
| Paddy     | 0              | 0               | 12                 | 6           |
| Maize     | 4              | 7               | 3                  | 4           |
| Green Bean| 0              | 1               | 5                  | 12          |
| Cassava   | 0              | 3               | 4                  | 11          |
| Sweet Potato| 0            | 0               | 13                 | 5           |
| Total     | 4              | 11              | 37                 | 38          |

Table 3 shows that the implementation of the Klassen typology on superior commodities is in 4 areas dominated by maize. The mainstay commodity typology is found in 11 with maize in 7 areas, cassava in 3 areas, and green beans in 1 area. The typology of prospective commodities was found in 37 areas with the order of sweet potato in 13 areas, paddy in 12 areas, green beans in 5 areas, cassava in 4 areas and maize in 3 areas. The typology of slow commodities was found in 38 areas with the order of green beans in 12 areas, cassava in 11 areas, paddy in 6 areas, sweet potato in 5 areas and maize in 4 areas. In general, the typology of slow commodities and prospective commodities dominates the
majority of areas in the Malolo agropolitan area. The number of slow commodities indicates that the production of food commodities in the Malolo agropolitan area is less able to compete with the production of food commodities in other areas in a larger area. It was also conveyed by Pratama [7] that the growth of a sector at the first regional level was slower than the growth of the sector in the comparison area, where the growth of sweet potato and peanut products in Kebumen Regency was slower than the growth of sweet potato and peanut products in Kebumen Regency, Province of Central Java.

One of the efforts to see the distribution of the implementation Klassen typology on food crops is by mapping each food commodity. According to Susilawati et al. [5] mapping the potential of each commodity is expected to better utilize the potential of natural resources owned. According to Nowar et al. [8] the direction of superior commodities is analyzed spatially using geographical information system software. In the following, the implementation of the Klassen typology is mapped based on each food commodity in the Malolo agropolitan area.

3.1 Paddy Commodity

Paddy is one of the important commodities. Paddy is an important commodity because it is a staple food for the community. Based on Figure 1, paddy commodity is not a superior commodity and a mainstay commodity. Paddy is a prospective commodity in 12 areas and a slow commodity in 6 areas. The majority of the workforce used in this farm comes from families. According to [9] labor is the second factor of production after land. The use of labor is expressed in the number of working days, namely the number of working days of the effective workforce used. Sources of labor come from the family and outside the family. According to [10] the government makes policies as an effort to optimize the use of paddy fields and increase the application of land intensification and issue policies to increase paddy production.

Figure 1. Mapping the results of the Klassen typology of paddy commodities in the Malolo Agropolitan Area
Paddy commodities in the Malolo agropolitan area as prospective commodities are found in the Panranuangku, Manongkoki, Malewang, Palleko, Mattopodalle, Parangluara, Pa'rappunganta, Ko'mara, Beru, Lassang, Parangbado, and West Lassang areas. Prospective commodities are commodities that have the prospect of comparative advantage, high economic value, and potential for added value. According to Paramartha et al. [11] stated that paddy commodity, although including slow commodities, have a large contribution. Furthermore, Abidin [12] states that the paddy commodity is a strategic commodity for the government and its production shows a significant average growth rate. This is spurred by a government program with a focus on increasing the planted area which will ultimately encourage production growth.

3.2 Maize Commodity

Maize is one of the most important carbohydrate-producing food crops in the world, besides wheat and paddy. Some regions in Indonesia make maize as a staple food. At present, maize has also become an important component of animal feed. Another use is as a source of food oil and cornstarch base material. Various maize derivative products are used as raw materials for various pharmaceutical, cosmetic, and chemical industrial products. According to Alatas et al. [13] maize is a horticultural commodity that is widely cultivated because it has a sweet taste and fast harvest age. Based on Figure 2, maize is the superior commodity in 4 areas, mainstay commodity in 7 areas, prospective commodity in 3 areas and slow commodity in 4 areas.

![Figure 2. Mapping the results of the Klassen typology of maize commodities in the Malolo Agropolitan Area](image)

Maize commodity in the Malolo agropolitan area as a superior commodity is found in Massamaturu, Timbuseng, Barugaya, and Towata. Superior commodities are commodities with comparative and competitive advantages with similar commodities from other regions, generating a large economy from exports. This is in line with Susanto [14] that maize is a food crop commodity which is included in the classification of prime (superior) commodities. Maize commodity is said to be
a superior commodity because the commodity grows fast and has a large contribution. Commodity growth is said to be fast because the growth rate of each commodity is greater than the GDP growth rate. Furthermore, Lestari and Widayanti [15] stated that to increase the amount of production and harvested area of maize, efforts and strategies are needed to maintain and increase production yields to become a superior sector so that they have competitiveness at both the provincial and national levels.

3.3 Green Bean Commodity

Green bean is a type of secondary crop whose economic value is in the seeds. The Green bean commodity belongs to the legume tribe that has many benefits in everyday life as a source of high protein vegetable food. Based on Figure 3, green bean is not a superior commodity. Green beans are the mainstay commodity in 1 area, prospective commodity in 5 areas and slow commodity in 12 areas. According to Nganji et al. [16] green bean is the main food commodity, but in terms of harvested area and production, green bean production is smaller than some other commodities.

![Figure 3. Mapping the results of the Klassen typology of green bean commodities in the Malolo Agropolitan Area](image)

Green bean in the Malolo agropolitan area as a mainstay commodity is found in Barugaya and as a prospective commodity in Panannuargku, Palleko, Mattopodalle, Parangluara and Pa'rappunganta. Mainstay commodities are potential commodities that are considered to be comparable with similar products in other areas. According to Susanto [14] the contribution of the green bean commodity is not supported by a fast growth rate. Green bean commodity has a slow growth rate to GDP Regional.

3.4 Cassava Commodity

Cassava is currently an important food crop commodity in Indonesia after paddy, maize, soybeans, peanuts and green beans, that is as food, feed and industrial raw materials both upstream and downstream. In the past, cassava was considered a less valuable product, viewed with one eye in the commodity business, so that cassava farmers remained relatively in their welfare aspect. The economic
benefits of cassava are still many in the range of middle actors, that is traders and upstream players. Based on Figure 4, cassava is not a superior commodity, but a mainstay commodity in 3 areas, prospective commodity in 4 areas and slow commodity in 11 areas.

Cassava commodity in the Malolo agropolitan area as a mainstay commodity is found in Panranuangku, Towata, and Kampung Beru, and as a prospective commodity in Palleko, Massamaturu, Parangbado, and Balangtanaya. Mainstay commodities are potential commodities that are seen as comparable with similar products in other regions. According to Susanto [14] that the cassava commodity is included in the mainstay commodity because it has fast commodity growth but on the other hand its contribution is still small. Furthermore, Zakaria et al. [17] stated that although cassava farming looks profitable at the macro level, cassava farming faces problems such as limited mastery of production technology, limited farming capital, inefficient cultivation management, lack of market guarantees that cause low productivity, the price received by farmers, the lower the level of soil fertility which causes lower cassava productivity and the greater the input needs and costs incurred in cassava farming.

Figure 4. Mapping the results of the Klassen typology of cassava commodities in the Malolo Agropolitan Area.

3.5 Sweet Potato Commodity

Sweet potato is a food plant that has long been known and cultivated by the community. Based on Figure 5, sweet potato commodity is not a superior commodity and a mainstay commodity. Sweet potato is a prospective commodity in 13 areas and a slow commodity in 5 areas. According to Malik and Cempaka [18] the commodity of sweet potato is a food source that has important values in socio-cultural life. In Papua, sweet potato is even a staple food instead of paddy.

Sweet potato commodities in the Malolo agropolitan area as prospective commodities are found in Panranuangku, Manongkoki, Palleko, Mattopodalle, Parangluara, Pa'rappunganta, Massamaturu, Towata, Kampung Beru, Lassang, Parangbado, West Lassang, Balangtanaya. According to Balirante et al. [2] agricultural food commodities such as sweet potatoes are the leading commodities in West
Tompaso District because the tendency of production to increase is influenced by the commodity harvested area. However, in other regions, sweet potato commodities such as Izzati and Nugraha [3] stated that sweet potato commodities can become non-basic commodities and only meet local needs.

![Figure 5](image-url)  
*Figure 5. Mapping the results of the Klassen typology of sweet potato commodities in the Malolo Agropolitan Area.*

### 4. Conclusion

The implementation of Klassen typology on food commodities in the Malolo Agropolitan area shows that maize is the only one superior commodity of the other four food commodities. Maize is the leading commodity in 4 areas, that is Massamaturu, Timbuseng, Barugaya, and Towata. The mapping results show that there are 4 areas for developing superior commodities, 11 areas for developing mainstay commodities, 37 areas for developing prospective commodities, and 38 areas for developing slow commodities. The number of areas for slow commodity development shows that the production of food commodities in the Malolo agropolitan area is less able to compete with food commodity production in other areas in a larger area.

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