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DETERMINATION OF SUPERIOR COMMODITIES FOR THE DEVELOPMENT OF SMALL AND MEDIUM INDUSTRIES IN KAMPAR REGENCY

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ABSTRACT
The small and medium industries based on superior commodities potentially developed in Kampar Regency, as of its second-largest share contribution of GDP after the agriculture sector. The problem faced in developing small and medium industries is the diverse and varied nature of these enterprises, both in terms of quantity and scope, which leads to unfocused management of potential commodities and types of businesses. A technopark is one of the alternative strategies to develop small and medium industries based on superior commodities. Determining superior commodities is an initial step in developing small and medium industries through technoparks. The purpose of this study is to identify the superior commodities that will be developed in small and medium industries through technoparks in Kampar Regency, Riau Province. Data collection techniques were conducted through literature studies and expert interviews, using purposive sampling. The determination of commodities was done through LQ and SSA. The data used were horticultural crop production from 2017-2021. The study results indicate that pineapples are a superior commodity due to their extensive distribution in five sub-districts, boasting the largest harvest areas, abundant raw materials, and regional potential with LQ >1 and SSA > 0. The development of small and medium industries based on pineapple as a superior commodity through technopark can create economic value in the Kampar Regency.
***Keywords**: Superior Commodity, LQ (Location Quotient), SSA (Shift Share Analysis), Small and Medium Industries, Technopark*

1. Introduction

Economic growth can be influenced by innovation, which significantly impacts economic expansion and production levels (Gherghina et al., 2020; Pradhan et al., 2018; Saleem et al., 2019). Innovation and creativity are the primary sources of a competitive regional economy (Ženka et al., 2014). The regional economy is generally supported by small and medium-sized economic activities (Ayandibu & Houghton, 2017). Further, economic growth in a nation is positively impacted by the growth of small and medium-sized businesses, which are the primary engine of economic development, including job creation (Etuk et al., 2014; Gaikwad & Dhokare, 2020; Luo et al., 2016; Maksum et al., 2020; Obi et al., 2018). Small and medium-sized businesses are regarded as the foundation of the economy (Yoshino & Taghizadeh-Hesary, 2019) since they play an important role in reducing poverty, job creation, swift adjustment to novel circumstances due to their adaptability, promoting entrepreneurship, and functioning as a small industry inside big businesses, conducting promotions foreign trading, and generating innovation (Erdin & Ozkaya, 2020a; Luo et al., 2016; Maksimov et al., 2017).

The early 2020 Covid-19 pandemic had an effect on politics, society, and the economy. It has affected every country in the world, not just the major ones (Feinberg et al., 2022). Indonesia, a country where Micro, Small, and Medium-Sized Enterprises (MSMEs) predominate, ought to give particular attention to this sector given the sizeable economic contribution made by MSMEs. The small and medium industry is a business unit that includes

the MSMEs category and demonstrates a decent developmental pattern before the COVID-19 outbreak hit (Fitriasari, 2020). In the national economy, small and medium-sized industries also play a significant and strategic role (Ahmedova, 2015; Bayarçelik et al., 2014). Kampar Regency is a regency located in the province of Riau, which is located right next to Pekanbaru City, the Capital City of Riau Province, and has the potential to develop small and medium industries because it has a relatively large number of small and medium industries and has reached 59,837 units. The food industry group is the largest with 29,136 units (BPS Riau 2022, n.d.).

The development and facilitation of small and medium industries are necessarily conducted in the context of improving people's economy, encouraging economic growth, and improving the regional economy (Wahyudi 2018; Opoku and Yan 2019; Stoica *et al.* 2020; Epede and Wang 2022). A variety and range of businesses, both in terms of total and scope, are present in small and medium industries, which present challenges to their development. It causes the management of small and medium industries not to focus on commodities and potential business types (Siregar and Novita 2016). Riau Province has superior commodities such as palm oil, rubber, food crops, and horticulture. This commodity plays an essential role in the regional and national economy. However, the added value of these commodities remains low for their producing areas due to the underdevelopment of processing industries. Determining the suitable superior commodities is essential to encourage industrial growth and economic development. The development of superior commodities in small and medium industries can increase the added value of agricultural products and improve farmers' welfare. (Gunawan et al., 2018; Syahza et al., 2020).

Availability of resources is the primary component in selecting superior commodities to serve as the foundation for manufacturing industry development activities, especially in small and medium industries (Sudarwati et al., 2020). Kampar Regency, being the third largest area in Riau Province, has become the third largest Regional GDP contribution for the agricultural sector (BPS Riau 2022, n.d.). This great agricultural potential can be used as industrial raw materials, but due to less optimization of the use of appropriate technology in industrial development and the best agricultural raw materials, small and medium-sized industries have not been able to utilize it to its full potential (Hermanuadi et al., 2018). In general, planning for the development of superior commodity-based industries has not been optimally developed by every region in Indonesia, including in Kampar Regency. The outcomes of interviews with the Manpower Service and Industry, and Regional Development Planning Agency of Kampar Regency, The agency or institution responsible for industrial and regional development stated that a review of the progress made in developing superior commodities, with a particular focus on the horticulture sub-sector, which is used as the basis for the development of small and medium industries, have not been conducted, while Kampar Regency's 2017-2022 Regional Medium-Term Development Plan contains a plan for developing competitive small and medium industrial estates and increasing the marketing of superior agricultural commodities.

Agricultural development by determining the superior commodities, which is employed as the foundation for small-and medium-sized industry development should be performed so that the management is more focused and the total of produced products is higher and can compete in local and international markets (Maqin and Sidharta 2017). In business and industry, local government plays a critical role in providing the infrastructure needed by small and medium industries and enhancing the quality of people's lives (Muda et al., 2018). Small and medium industries significantly contribute to the improvement and use of new technologies due to their flexible and innovative structure. (Erdin & Ozkaya, 2020a). Technology advancement can be used to create a competitive small medium-sized industry estate in Indonesia (Aldianto et al., 2018; Muhammad et al., 2017).

Technopark is one of the strategies to develop small and medium-sized industries based on superior commodities (Muliarto et al., 2017). Industrial competitiveness can be increased through technopark as business incubators facilitating the transfer of knowledge, technology, and innovation to industry (Albahari et al., 2019; Cadorin et al., 2021; Steruska et al., 2019).

Technopark facilitates the realization of an innovative environment in knowledge-based economic development and strategic partnerships between large enterprises and small industries by acting as a bridge between academic, research, business, government, society, and the environment (Faria et al., 2019; Hasche et al., 2020; Kang, 2017; Machado et al., 2018; K. Miller et al., 2018). Research and development activities are essential in developing technology and creating value-added products (Erdin & Ozkaya, 2020b). Technopark can be a catalyst in local economic growth and development (Henriques et al., 2018) by driving innovation and competitiveness for small and medium industries by focusing on certain superior commodities (Hansson et al., 2005).

The existence of technoparks can positively impact their industries, including expanding market distribution, creating innovation, and transferring knowledge, technology (Henriques et al., 2018), and financial support (Mansour et al., 2018). The success factors of technopark development are determined by effective and efficient resource management (Mansour et al., 2018), competent management (Alpenidze et al., 2019), provision of adequate infrastructure and technology (Nargesi et al., 2014), availability of energy and capital to encourage innovation and business development, extensive business networks, scientific publications, collaboration with universities, and industrial support (Mansour et al., 2018). Some countries have succeeded in the development of technoparks, but not a few countries have experienced failures in the development of technoparks. One of the countries that has succeeded in developing technoparks is Korea. The Korean government has established 18 technoparks spread throughout the Republic of Korea, one of which is Daedeok Science Park in South Korea, which acts as a medium and catalyst for developing local industries (Cho et al., 2017).

The discussion about the success rate of technopark is still a discussion today because the achievement of success from technopark development takes a long time, the impact on economic growth is still relatively low both regionally and nationally, and the failure rate is high due to funding problems, government policies, lack of expertise, constraints on the commercialization of research results and ineffective infrastructure (Henriques et al., 2018). The development of technoparks in Indonesia has challenges and obstacles because there is no standard model of technopark that can be applied in all regions (Hamdan et al., n.d.; Henriques et al., 2018). The reach and impact of existing technoparks in Indonesia are still limited; technoparks that have been developed only consist of coaching small and medium industries and workforce training centers, so they have not met the overall component standards in technoparks (Muhammad et al., 2017; Widharetno & Cahyati, n.d.).

The development of technoparks in Kampar Regency will undoubtedly face obstacles and challenges. Based on an interview conducted with the Head of the Local Government Planning Agency, Kampar Regency said several obstacles and challenges would be faced in developing technoparks, including limited funds for infrastructure development and providing facilities and technopark operations. In addition, the limited ability and expertise of human resources in technology absorption will be a challenge, so it can slow down the process of creating innovation and downstream technology. Promotion is also a challenge in developing technoparks due to the need for more public knowledge and understanding about technoparks and their benefits and potential. Efforts to introduce technoparks are needed to attract the interest of various interested parties and encourage the development and growth of technoparks.

Studies related to technopark have been carried out, focusing on the information and communication technology sub-sector. Studies on developing technoparks based on superior commodities for developing small and medium industries are rarely conducted. The development of a leading commodity-based technopark in Kampar Regency can be a strategic step in advancing the commodity industry by utilizing technology for product development and quality and can increase production efficiency and product-added value. This is the strategic contribution of this study. The development of technopark in this study is approached from a different perspective, particularly in the context of small and medium-sized industry development. The determination of superior commodities is the first step that can be taken to build agriculture based on the concept of efficiency to achieve comparative and competitive

advantages in the face of trade and industry globalization (Kurniawan et al., 2019). Based on these conditions, this study aims to determine superior commodities that will be used as a basis for developing small and medium industries through a technopark container in Kampar Regency, Riau Province.

2. Literature Review

The development of small and medium industries is essential because it contributes to development and economic welfare, especially in developing countries (Chaichana et al., 2024; Rodríguez-reb et al., 2024). The role of small and medium industries in job creation reaches 70 percent of the total existing jobs (Gao, 2024). Small and medium industries can encourage the birth of innovations to increase competitiveness and high-added value. Investment in innovation provides small and medium industries with opportunities to gain a comparative advantage by increasing knowledge, the ability to adapt quickly and apply new knowledge (Garrido-prada, 2024). Research related to the development of small and medium industries has been carried out to see the obstacles and challenges faced by small and medium industries so that appropriate strategies and policies can be formulated to encourage the progress of small and medium industries. The study conducted by Wang (2016) on the obstacles to the growth of small and medium industries in developing countries shows that there are five significant obstacles in the process of small and medium industrial growth, including access to capital, competition, tax rates, and political factors. Difficulties in funding or access to capital are the biggest obstacles in the growth and development of small and medium industries.

Arza dan Emanuel (2021) conducted a study on barriers that can affect innovation in small and medium industries; the results showed that cost barriers, limited market access, and weak institutions are inhibiting factors in encouraging innovation in small and medium industries. This study also found that knowledge is not a barrier to innovation but will be an obstacle when companies strive to develop further innovation. Efficient supply chain, skilled human resources, reporting, and financial management, as well as practical managerial accounting, are among the factors that significantly influence the development of small and medium industrial (Swatdikun et al., 2024). Small and medium industries can also be developed by focusing on potential local commodities, such as superior commodities in the region. Superior commodities are the commodities with a strategic position to develop in a region. Its determination is based on technical considerations, such as soil and climate conditions, as well as socioeconomic and institutional aspects, including the use of technology, human resource capacity, infrastructure, and local socio-cultural conditions (BALITBANG, 2003).

Superior commodities are regional local commodities that can show competitiveness and agroecological suitability and compete within their regions and other regions, including regional and international scope (Setiyanto, 2013). The concept and definition of superior commodities can be understood from two perspectives, namely, the supply side and the demand side. The concept and definition of superior commodities from the supply side refer to commodities that stand out in their growth in the context of farmers' bio-physical, technological, and socioeconomic conditions in a particular region. This socioeconomic factor includes technological proficiency, the capacity of human resources, and infrastructure like local farmers' markets and practices. Superior commodities from the demand side have high demand in domestic and international markets and competitive advantages (Gunawan et al., 2018). The first step towards agricultural development based on the concept of efficiency is the selection of base commodities at the national and regional levels, which will enable the achievement of comparatives and competitive advantages in the face of trade (Sjafrizal, 2012).

The existence of superior commodities positively impacts the welfare of the community and the local economy. It is the initial foundation for agricultural development based on efficiency (Khairati et al., 2018). The availability and suitability of land are taken into consideration in the development of superior commodities because, through land evaluation, suitable locations can be found for commodity growth to increase production (Sebayang, 2019). A commodity is considered superior in the widest distribution compared to other commodities

(Zakiah et al., 2015) and meets superior criteria (Sukmawani et al., 2014). Superior commodities have several criteria (Tolinggi et al., 2018): a) possess strong market competition, such as uniqueness or characteristics, good quality, and affordable prices; b) take advantage of the potential of the developed local resources; c) offer the community a high level of added value; d) provide economic benefits and contribute to the improvement of income and human resource capabilities; (e) deserve support through capital assistance or credit.

Location Quotient (LQ) and Shift-Share Analysis (SSA) can be used to identify superior commodities. The LQ method is commonly used in base economic models promoting thriving. LQ employs a comparative method to quantify the relative level of specialization or concentration of economic activity (M. M. Miller et al., 1991). Hendayana, (2003) has tried identifying superior commodities nationally, and the results show that the LQ method is one of the relevant and practical base economic model approaches un identifying superior commodities. SSA is an additional method for determining superior commodities by categorizing commodities based on progressive or slow growth. The result of the SSA analysis describes the competitive ability of specific activities within a region dynamically or changes in activities within a broader geographical scope (Ardhana & Qirom, 2017).

The use of LQ and SSA methods has been widely practiced. The selection of LQ and SSA methods was used in this study because it was by the objective conditions of the research focus, namely identifying sectors that have the potential to be superior based on geographical conditions or regional contexts, location, and availability of the amount of horticultural commodity production in Kampar Regency. Thus, these two methods can choose superior commodities with the most significant economic potential. The strategy of developing superior commodities in small and medium industries can be done through technopark. Technopark is a forum to facilitate the transfer of knowledge and technology as well as innovation that will strengthen the competitiveness of the industry according to its potential (Albahari et al., 2019; Cadorin et al., 2021; Steruska et al., 2019). Technopark can support the development of small and medium industries that focus on the local potential of a region. Studies related to technopark have been carried out both at home and abroad. The Republic of Korea has built technoparks as one of the strategies for developing local industries and encouraging balanced land development. Technoparks in Korea have given birth to local industries that can develop ideas, create innovations, and compete in the global market. Technopark, designed in Korea, has obtained good results in supporting and guiding startups effectively and efficiently (Cho et al., 2017).

Pan *et al.* (2023) identified characteristics and factors affecting economic resilience in industrial parks. This study selected 12 planned industrial parks in the Southern Taiwan region. The results showed that industrial estates built in a planned manner and designed with industrial structures based on specific varieties and have substantial knowledge and innovation for research and development will benefit industrial estates and strengthen their economic resilience. Excellent and effective infrastructure planning and governance are essential for achieving this resilience. Studies related to technopark development have also been carried out in Indonesia. Hamdan *et al.* (2021) examined the structural model of developing a coffee-based sustainable agrotechnology park in Kepahiang Regency. The study results show that managing resource and social dimensions is the main structure in developing a coffee-based sustainable agrotechnology park in Kepahiang Regency. Supply chain improvement can be done in resource management, from cultivation to product management. Training and hands-on practice in processing units are needed to increase resource capacity. Equitable dissemination of technology is needed to manage the social dimension and reduce regional inequality. The impact of mastering technology will increase the productivity of coffee plants and human resources and create expanded employment opportunities and labor wages.

3. Research Methods

This study's method was quantitatively descriptive. The site of the research was in Kampar Regency, Riau Province. Data collection was carried out for six months, from June

2022 until November 2022. Primary data include the current condition of small and medium industries and an analysis of horticultural commodities in Kampar District, which were obtained through field observations and in-depth interviews. Respondents in in-depth interviews were selected using purposive sampling techniques to collect comprehensive information and initial understanding related to superior commodities in small and medium industrial development. The purposive sampling technique was chosen in this study because it is based on research objectives with criteria in the form of policymakers, stakeholders, small and medium industrial business actors, and experts in their fields who have an essential role in determining superior commodities for the development of small and medium industries. Details of informants and the number of interviewees, as shown in Table 1.

A series of in-depth interviews were conducted using a semi-structured questionnaire (Adams, 2018) with topics related to determining superior commodities in the development of small and medium industries through technoparks, including (1) the latest conditions and developments of small and medium industries in Kampar Regency, (2) the potential that exists in Kampar Regency related to the development of superior commodities in small and medium industries through technoparks, (3) potential commodities based on geographical conditions and the availability of resources exist in Kampar Regency to develop small and medium industrial through technopark (4) challenges and obstacles that will be faced in the implementation of technopark with focus the superior commodity development in Kampar Regency, (5) policies and regulations related to small and medium industrial development through technopark.

Table 1 Informants of in-depth interviews

Actors	Number of interviewees
Department of Agriculture, Food Crops and Horticulture, Kampar Regency	2 informants
Regional Development Planning Agency, Kampar Regency	2 informants
Department of Trade, Cooperatives and Small Medium Enterprises of Kampar Regency	1 informant
Local Government Planning Agency Development Research Riau Province	2 informants
Department of Industry and Trade, Riau Province	1 informant
Academics	2 informants
SMEs	2 SMEs
Farmer group	2 groups

Secondary data were collected through a literature review to obtain information related to superior commodities for developing small and medium industries, including commodity production potential, geographical conditions/regional characteristics, natural resources, socio-economic conditions, and related policies and regulations. These data are obtained from Kampar Regency agricultural statistics, farmer group reports, processors, Kampar Regency government, statistical data related to small and medium industries and superior commodities, previous studies, and other relevant documents. The small and medium industries category in this study is based on the number of workers and investment value criteria, namely small industries with a maximum workforce of 19 people and an investment value of less than IDR 1,000,000,000 excluding land and buildings for business premises by the criteria of small and medium industries based on the regulation of the Minister of Industry of the Republic of Indonesia Number 64 / M-IND / PER / 7/2016. The determination of superior commodities for developing small and medium industries in Kampar Regency is then analyzed using the Location Quotient (LQ) and Shift Share Analysis (SSA) methods. The stages of analysis carried out on determining superior commodities for the development of small and medium industries in Kampar Regency consist of:

3.1 Location Quotient (LQ)

This study uses LQ analysis to determine super horticultural commodities (fruit) in the Kampar Regency. The extent to which a region can produce a particular commodity will be shown in the LQ value. The data used is the total production of fruit horticultural commodities from 2017 to 2021 of 21 sub-districts in Kampar Regency. Based on the studies conducted by Isserman (1977), the LQ formula in this study can be written as follows:

$$LQ = \frac{X_{ij}}{X_j} / \frac{Y_i}{Y} \quad (1)$$

where:
LQ = Location Quotient Index or Coefficient
X_{ij} = District-level total production of commodity-i
X_j = Total district-level production of fruits horticultural commodities
Y_i = Regency-level total production of commodity-i
Y = Total regency-level production of fruits horticultural commodities

If the LQ calculation, the results yielded an LQ value greater than 1, indicating the comparative advantage of the commodity as a basis or source of growth. Subsequently, the outcomes may satisfy the needs in Kampar Regency and also be exported outside the area of Kampar Regency. Conversely, if a LQ value was less than 1, it displayed that the commodity was not superior (non-basic) (Luckyardi et al., 2022).

3.2 Shift Share Analysis (SSA)

SSA was used to calculate the degree of competitive advantage based on a region's local sector performance (Sjafrizal, 2012). In this study, SSA is a further analysis of LQ, which only produced basic potency. Also, this type of analysis was performed to determine the sub-sector of horticultural commodities (fruits), which had progressive growth. The formulation can be described as follows (Sapratama & Erli, 2013):

$$SSA = \left(\frac{Y_i' - Y_i}{Y_i} - \frac{Y' - Y}{Y_{..}}\right) Y_{ij} + \left(\frac{Y_{ij}' - Y_{ij}}{Y_{ij}} - \frac{Y_i' - Y_i}{Y_i}\right) Y_{ij} \quad (2)$$

where:
SSA = Net shift of commodity-i in region-j
Y.. = Total of commodity production of regency level in the basic year (2017)
Y'.. = Total of commodity production of regency level in the final year (2021)
Yi = Commodity-i production at the basic year's regency level (2017)
Y'i = Commodity-i production at the final year's regency level (2021)
Yij = Commodity-i production at the basic year's district level (2017)
Y'ij = Commodity-i production at the final year's district level (2021)

The SSA calculation's outcomes, if formulated, produced SSA values > 0, indicating the progressive growth and competitive advantage of commodities in the region (Manullang et al., 2019). The outcomes of the recapitulation and comparison of the LQ and SSA values served as the basis for identifying the superior commodities. The commodities that had LQ values > 1 and SSA > 0, were classified as the superior commodity group (Siradjuddin et al., 2021). The process of selecting superior commodities for development also involves analyzing the added value that each economically valuable commodity possesses as an industrial raw material.

4. Results and Discussions

4.1 Analysis of Regional Potential and Commodity Development

Riau Province is one of the provinces in Indonesia that is entirely developed because it is a cross-trade international (Mirza et al., 2017). Riau Province is the second largest contributor to GDP outside Java, reaching 843 trillion Rupiah (STATISTIK INDONESIA 2022, n.d.). With the opening of numerous public and private universities, the education sector in the Province of Riau is expanding. There were 79 public and private universities in existence in 2018 (BPS Riau 2022, n.d.). Small micro-enterprises still hold a dominant position in Riau's business community today. In 2018, there were 77,876 business units and 351 business units were in the large and medium industries (BPS Riau 2021, n.d.). One of the largest regencies in the province of Riau is Kampar with 11,289.28 km2 and a population of 854,738 people. Kampar Regency occupies the second position after Pekanbaru City, with the highest production value (BPS Riau,

2020). Kampar Regency is strategically located because it borders West Sumatra Province and is the Riau-West Sumatra direct and borders Pekanbaru City as the capital of Riau Province.

Geographical location affects climate and seasons. The influence of the season can cause an influence on the pattern of community business activities in the form of businesses in agriculture. Good agriculture will develop swiftly and produce many foodstuffs such as rice, corn, vegetables, fruits, rubber, palm oil, coffee, sugar, and other items vital to the community's sustainability and well-being. The tropical climate in Kampar Regency was influenced by two seasons, namely, the rainy and dry seasons. These climatic conditions were ideal for developing various agricultural commodities, animal husbandry, fisheries, and plantation commodities. The soil conditions are relatively fertile, and in general, the soil structure is organosol, glei humus, alluvial, gray hydromorphic, podzolic red-yellow, lithosol, and regosol. Arganosol soil type is widespread in swampy lowlands and associated with humus. The area of horticulture is 8,806,527 Ha, with a total production of 25,696.12 tons (Kominfo Kabupaten Kampar, 2019). This horticultural crop is a commodity that has the potential to be developed in Kampar Regency. Small and medium-sized businesses and small and medium-sized industries in the area mainly use it as processed production material.

Kampar Regency has the potential for developing small and medium industries based on superior commodities through Technopark because it has diverse superior commodities so small and medium industries can be focused on these commodities. The distribution of Kampar Regency is quite broad, consisting of 21 districts, 8 sub-districts, and 242 villages, so that to maximize the use of the existing land and resources for technopark development which would increase production scale and industrial sustainability. The availability of infrastructure owned by Kampar regency, such as transportation networks and storage facilities, can support the distribution and marketing of processed products of small industries, facilitating market access and increasing industrial competitiveness. Technopark can encourage local economic growth and support business actors to optimize the potential of these superior commodities. Technopark has the potential to create an innovation environment in small and medium industries to process and derivative products from superior commodities developed.

4.2 Identification of the Superior Commodities

The process of identifying superior commodities in Kampar Regency was to analyze the overall production of fruit horticultural commodities from 2017 to 2021. The total of fruit horticultural commodities in Kampar Regency was 23 commodities in 21 districts. From these 23 commodities, six commodities were selected because they had the highest total production and produced an average total production of above 10,000 tons in five years, such as from 2017 to 2021. Data on the total production of fruit horticultural commodities (Tonnage) in Kampar Regency for the 6 highest commodities can be seen in Fig. 1.

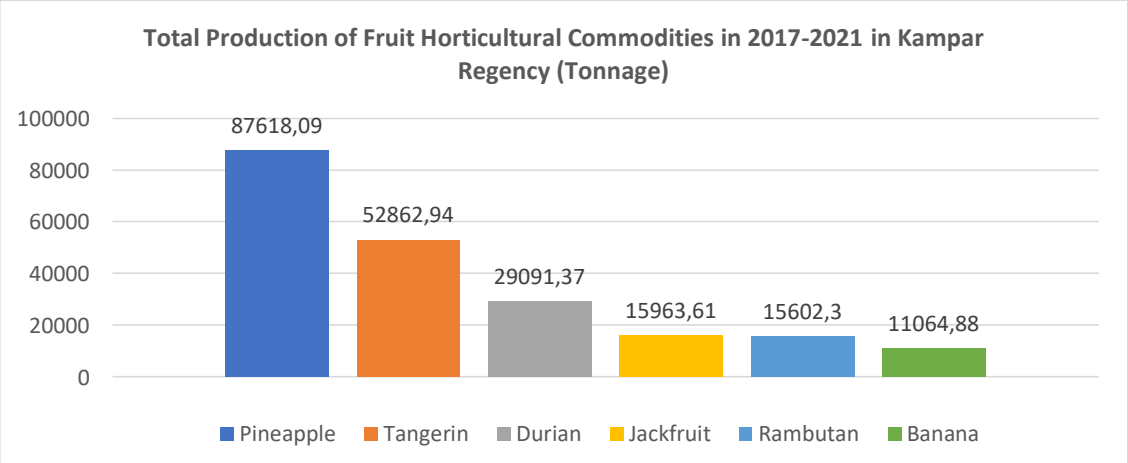

Fig. 1. Total Production of Fruit Horticultural Commodities in 2017-2021
Sources: Department of Agriculture, Food Crops and Horticulture, Kampar Regency

Fig. 1 shows that there were 6 (six) fruit horticultural commodities in Kampar Regency which had the highest total production from 2017 to 2021, such as pineapples, Siamese orange/tangerine, durian, jackfruit, rambutan, and bananas. The results of interviews with the Industry, Trade, Small and Medium Enterprises Cooperatives Service of Riau Province and small and medium industrial business actors in the processing of local commodities in Kampar Regency display that, from the six fruit horticultural commodities, the highest total productions were pineapple, durian, jackfruit, and banana. These fruits had potency as raw materials for industrial processing, especially in small and medium industries. In this study, pineapple, durian, jackfruit, and banana commodities were analyzed using LQ and SSA in determining the superior commodities. The selected superior commodities would have added value and product variety as well as production concentration and leading locations that could be developed by small and medium industries. Added value to commodities could occur because of the manufacturing, storage, and transportation aspects of a production process (Hayami et al., 1987).

4.3 Location Quotient (LQ)

In this study, time series data from the total production of four commodities is used in the LQ analysis (pineapple, durian, jackfruit, and banana), which were calculated from 2017, 2018, 2019, 2020, and 2021. Table 2 shows the LQ calculation's results.

Table 2 – The LQ Calculation of Fruit Horticultural Commodities

District	LQ value			
	Pineapple	Durian	Jackfruit	Banana
Kampar Kiri	0.0001	1.0343	0.5703	0.2840
Kampar Kiri Hulu	0.0003	0.1858	0.0839	0.0145
Kampar Kiri Hilir	0.0068	1.5572	2.5415	0.8841
Gunung Sahilan	0.0036	1.4307	3.3111	2.5540
Kampar Kiri Tengah	0.6508	0.6508	6.0530	0.5012
XIII Koto Kampar	0.0018	2.8626	3.3904	1.7322
Koto Kampar Hulu	0.0034	2.3911	1.8711	0.9030
Kuok	0.0003	0.1117	0.8302	0.1258
Salo	0.0042	1.1867	3.3542	1.3361
Tapung	1.0010	1.5628	1.2736	0.5806
Tapung Hulu	0.0096	0.9032	0.4707	2.9048
Tapung Hilir	1.0050	0.7562	4.5586	1.7872
Bangkinang Kota	0.0001	1.1800	2.2731	1.2228
Bangkinang	0.0000	0.9001	1.2279	0.3065
Kampar	0.0002	1.4860	0.9439	0.9092
Kampar Timur	0.0000	3.7289	0.5899	8.1999
Rumbio Jaya	0.0000	1.4551	0.9875	1.2917
Kampar Utara	0.0021	0.4488	0.7296	1.5161
Tambang	2.4173	0.4830	0.0719	0.1102
Siak Hulu	1.0012	1.1311	6.6519	0.1558
Perhentian Raja	1.0020	0.4341	2.2634	2.9469

Table 2 shows that the results of the LQ calculation state that each District had its basic commodities, consisting of pineapple, durian, jackfruit, and banana. Commodities that had an LQ > 1 value indicated the concentration of commodities in an area that had a comparative advantage and potential to be strategically developed commodities.

4.4 Shift Share Analysis (SSA)

SSA was a follow-up stage from the LQ analysis outcomes, which were used to identify the superior commodities. SSA in this study, used the ratio of the total production of pineapple, durian, jackfruit, and banana commodities for 2017-2021. It was to see a comparison of the total production of these commodities. SSA > 0 value from the calculation results could be classified as a fast-growing commodity and had a competitive advantage within the area. Table 3 shows the outcomes of the SSA computation.

Table 3 – The Outcome of the SSA Computation of Fruit Horticultural Commodities

District	LQ value

	Pineapple	Durian	Jackfruit	Banana
Kampar Kiri	SSA = 0	SSA > 0	SSA < 0	SSA < 0
Kampar Kiri Hulu	SSA < 0	SSA > 0	SSA < 0	SSA < 0
Kampar Kiri Hilir	SSA < 0	SSA < 0	SSA < 0	SSA < 0
Gunung Sahilan	SSA < 0	SSA < 0	SSA < 0	SSA < 0
Kampar Kiri Tengah	SSA < 0	SSA < 0	SSA < 0	SSA < 0
XIII Koto Kampar	SSA < 0	SSA < 0	SSA < 0	SSA < 0
Koto Kampar Hulu	SSA < 0	SSA > 0	SSA < 0	SSA > 0
Kuok	SSA > 0	SSA > 0	SSA < 0	SSA > 0
Salo	SSA < 0	SSA > 0	SSA < 0	SSA > 0
Tapung	SSA > 0	SSA > 0	SSA = 0	SSA = 0
Tapung Hulu	SSA < 0	SSA < 0	SSA < 0	SSA < 0
Tapung Hilir	SSA > 0	SSA < 0	SSA < 0	SSA < 0
Bangkinang Kota	SSA = 0	SSA < 0	SSA < 0	SSA < 0
Bangkinang	SSA = 0	SSA < 0	SSA < 0	SSA < 0
Kampar	SSA < 0	SSA < 0	SSA < 0	SSA < 0
Kampar Timur	SSA = 0	SSA < 0	SSA < 0	SSA > 0
Rumbio Jaya	SSA=0	SSA < 0	SSA < 0	SSA < 0
Kampar Utara	SSA < 0	SSA < 0	SSA < 0	SSA > 0
Tambang	SSA > 0	SSA < 0	SSA < 0	SSA > 0
Siak Hulu	SSA > 0	SSA < 0	SSA < 0	SSA < 0
Perhentian Raja	SSA > 0	SSA < 0	SSA < 0	SSA < 0

Table 3 of the SSA computation outcome shows that pineapple, durian, and banana commodities produced SSA>0 value while jackfruit commodities did not produce SSA>0 value. The commodities with an SSA>0 value could be classified as having progressive growth rates and competitive advantages. Moreover, these commodities had competitiveness from the quality and quantity aspects and sustainability and price aspects. It was because they could be produced effectively and efficiently. The commodities developed in a region greatly affected competitiveness in that region so the selection of commodities in determining competitiveness was highly important (Malysheva et al., 2016). The process of identifying superior commodities was conducted by comparing the calculation results of the value of LQ with SSA. If commodities had LQ>1 value, the value of this commodity was compared with the value of the commodity by SSA>0. The results of the comparison of the values of LQ>1 and SSA>0 could be classified into the superior commodities that had comparative advantages and competitive advantages. Table 4 shows the outcome of that analysis of the superior commodities with values of SSA>0 and LQ>1.

Table 4 - The Superior Commodities with LQ>1 and SSA>0 analysis results

District	LQ	SSA	Superior Commodities
Kampar Kiri	Durian	Durian	Durian
Kampar Kiri Hulu	-	Durian	-
Kampar Kiri Hilir	Durian, Jackfruit	-	-
Gunung Sahilan	Durian, Jackfruit, Banana	-	-
Kampar Kiri Tengah	Jackfruit	-	-
XIII Koto Kampar	Durian, Jackfruit, Banana	-	-
Koto Kampar Hulu	Durian, Jackfruit	Durian	Durian
Kuok	-	Pineapple, Durian, Banana	-
Salo	Durian, Jackfruit, Banana	Durian	Durian
Tapung	Pineapple, Durian, Jackfruit	Pineapple, Durian	Pineapple, Durian
Tapung Hulu	Banana	-	-
Tapung Hilir	Pineapple, Jackfruit, Banana	Pineapple	Pineapple
Bangkinang Kota	Durian, Jackfruit, Banana	-	-
Bangkinang	Jackfruit	-	-
Kampar	Durian	-	-
Kampar Timur	Durians, Bananas	Banana	Banana
Rumbio Jaya	Durians, Bananas	-	-
Kampar Utara	Banana	Banana	Banana

Tambang	Pineapple	Pineapple, Banana	Pineapple
Siak Hulu	Pineapple, Durian, Jackfruit	Pineapple	Pineapple
Perhentian Raja	Pineapple, Jackfruit, Banana	Pineapple	Pineapple

Table 4 summarizes the results of LQ and SSA for superior commodities in Kampar Regency. The distribution of superior commodities by the Kampar Regency sub-district is shown in Figure 2.

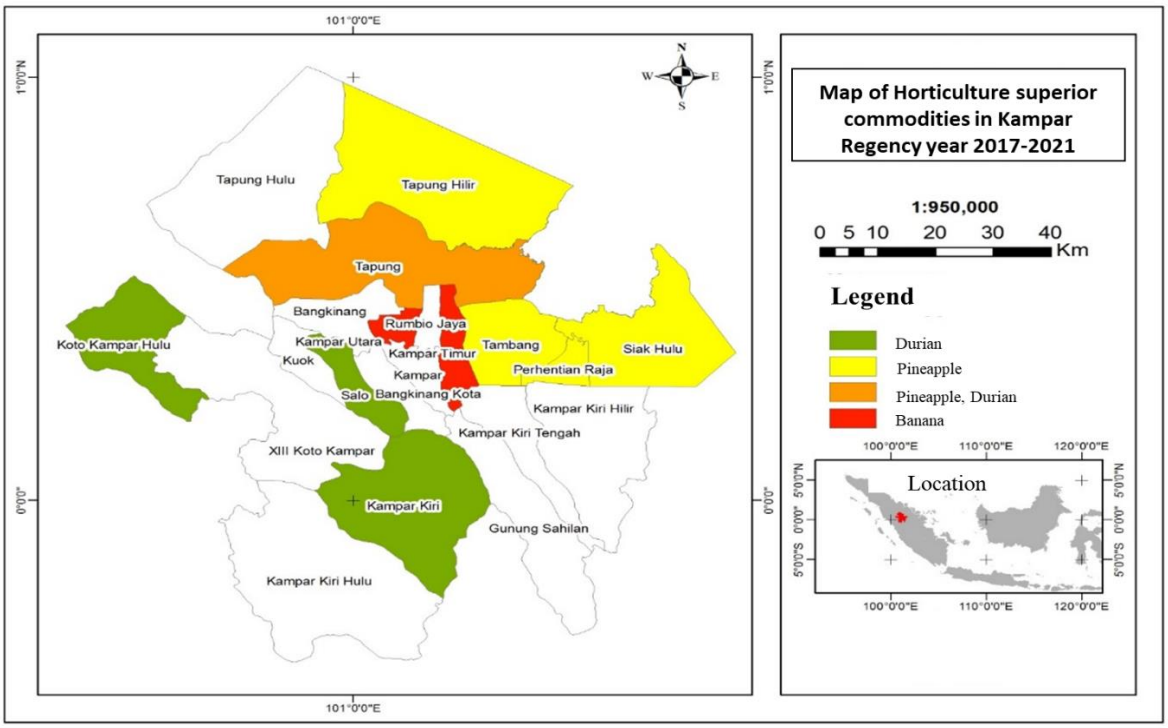

Fig. 2. Map Distribution of Superior Commodity in Kampar Regency

Based on Table 4 and Fig. 2 it can be seen that the fruit horticultural commodities that could be classified as the superior commodities in Kampar Regency were pineapple, durian, and banana. Pineapple was classified as the most superior because it was across five districts in Kampar Regency, The use of LQ and SSA methods in determining superior commodities has limitations, where secondary data input in LQ and SSA calculations uses past data or historical data so that the analysis does not always describe current or future conditions. In addition, the LQ and SSA methods did not consider outside factors such as policy changes, technological changes, and overall economic conditions. Thus, in this study, the validation of LQ and SSA calculation results is carried out by validating the results of secondary data input based on expert validation and geographically objective conditions that support the idea that pineapple is superior to other commodities. Pineapple commodities are spread across five districts in Kampar Regency, namely in Tapung, Tapung Hilir, Tambang, Siak Hulu, and Perhentian Raja Districts.

Durian was in second because it flourished across four districts, such as Kampar Kiri, Koto Kampar Hulu, Salo, and Tapung. The third superior commodity was bananas because this fruit was across two districts, such as Kampar Timur and Kampar Utara. Pineapple is one of the superior commodities because the fruit had the widest distribution and higher total production than other sub-sectors of fruit horticulture commodities in the Kampar Regency. The largest harvested area for pineapple was in Tambang District. It was 1,550 hectares (GUSWANDI, 2021). The pineapple commodity in Indonesia also had potential with the total pineapple production in 2021 was 2.89 million tonnages, increasing 17.95% from 2020. The export and import values of pineapple also increased by 22.90% and 11.23%, respectively. Also, the largest pineapple production is in Lampung, South Sumatra, and Riau regions (Statistik Hortikultura 2021, n.d.).

Pineapple is a tropical fruit with economic value and is widely consumed worldwide. It has a unique taste, nutritional value, and health benefits (Hossain et al., 2015; Mohd Ali, Hashim, Abd Aziz, et al., 2020; Semyalo et al., 2024). Development of small and medium-sized pineapple-based industries in Kampar Regency had potential contributions to improve the regional economy and

expand job opportunities. It was because of the availability of raw materials and regional potency. The pineapple also had added value from its products and economic value as an industrially processed material (Barretto et al., 2013; Reinhardt & Rodriguez, 2009). The variety of processed pineapple products was greater because pineapple, a horticultural commodity plant, had many benefits, starting from its fruit, skin, and leaves. This fruit can be transformed into different products with added value, like chips, syrup, jam, and jelly, in addition to being consumed directly (Abraham et al., 2023; Barretto et al., 2013; Mohd Ali, Hashim, Abd Aziz, et al., 2020). In addition, pineapple fruit is good for health because it contains bioactive compounds, vitamins, antioxidants, minerals, bromelain, nutrients, and dietary fibre, (Freitas et al., 2015; Lobo & Paull, 2017; Martínez et al., 2012; Mohd Ali, Hashim, Abd Aziz, et al., 2020; Morais et al., 2015, 2017).

It is possible to develop pineapple commodities using the by-products from pineapple processing. Pineapple by-products have been used to create a variety of value-added product. Potential energy sources, including sucrose, glucose, fructose, cellulose, fibre, bromelain and other nutrients, were present in pineapple waste. These materials could be processed to create value-added goods like ethanol, biodiesel, lactic acid, bio-methane, and antioxidants (Hemalatha & Anbuselvi, 2013). The waste produced lactic acid, which could be utilized as a pH regulator (solvent) as well as raw materials on behalf of the production of biodegradable polymers in the chemical industry (Abdullah & Mat, 2008). Meanwhile, pineapple skin has the potential to be used in both industrial and medical settings and to produce helpful antibiotics (Lubaina et al., 2019). In detail, pineapple contained the enzyme bromelain, which was processed and used extensively as an anti-browning agent, meat tenderizer, and to make formula milk for infants in the food, pharmaceutical, and textile industries (Ataide et al., 2018). Pineapple leaves are high in cellulose and fiber, they can be used in variety of engineering applications as a solid dielectric material (Karim et al., 2023).

Durian was the superior commodity of fruit horticulture after pineapple in Kampar Regency. The prospects for the development of durian business in the agricultural industry are promising, as the selling price of durian is high at both the farmer and consumer levels. Moreover, durian production, marketing, and intake in the commercial market have been rising (Nafsi, 2007; Paull & Ketsa, 2014). Despite the high demand and selling prices of durian, the productivity of its production in Indonesia has yet to meet domestic needs. In 2017, the total amount of durian exported was merely 240 tons, while the amount imported reached 764 tons, which resulted in a trade balance deficit of 524 tons (BPS, 2017). Durian was a seasonal tropical fruit. On average, it only bears fruit once a year (Mohd Ali, Hashim, Aziz, et al., 2020). Durian contains valuable nutrients and abundant bioactive compounds, so numerous health advantages (Nordin et al., 2017). Durian was a rich fiber, protein, fat, and carbohydrate source. In addition, it is rich in antioxidants, a vitamin complex, and vitamin C, which aid digestion and overall health (Chua et al., 2023; Contreras-Calderón et al., 2011; Gorinstein et al., 2011; Li et al., 2012; Safari et al., 2018).

Durian has a high potassium content, which can cause several diseases if consumed too much, including digestive disorders, allergies (anaphylaxis) and even hyperkalemia (Ho & Bhat, 2015; Olivieri & Hauser, n.d.; Payus et al., 2021; Safari et al., 2018). Durian was generally consumed directly. Durian can be used as a food and non-food processing ingredient because only 30 percent of durian can be eaten, and the rest is waste (Baraheng & Karrila, 2019; Chua et al., 2023; X. Yan et al., 2024). Various products that can be produced from processed durian fruit include chips, cakes, flour, pasta, juice and others (Charoensuk et al., 2018; Niponsak et al., 2020; Udomkun et al., 2019). Durian produce waste in the form of skin, seeds and husks, which can be processed into value-added products (Ho & Bhat, 2015; Manshor et al., 2014). Durian peel can be processed into various products such as flour, fertilizer, biochar, and edible film. It also has the potential to produce renewable energy, such as bioethanol and biodiesel, because it is a lignocellulosic waste material (X. Yan et al., 2024).

The LQ and SSA results show that bananas are the third superior commodity in Kampar Regency after pineapple and durian. Bananas have a delicious taste and soft texture so that it can be suitable for consumption by almost all ages and have a high nutritional content (Das et al., 2023; Dou et al., 2020; Lau et al., 2020; Lu et al., 2023; Yang et al., 2022). Bananas are a great source of carbohydrates for the body and are loaded with important vitamins and minerals (Dotto et al., 2019; Medhi & Deb, 2022). Moreover, bananas contain bioactive compounds, which make them a great source of antioxidants, anti-inflammatory (Mahloko et al., 2019; Waghmare & Kurhade, 2014), anti-bacterial, antifungal effects (Loyaga-Castillo et al., 2020; Vu et al., 2018). Bananas have great

potential to be developed in the processed food industry. Banana chips, jam, jelly, syrup, banana cakes, bread, pancakes, and other food and beverage products can be made from processed bananas (Girotto et al., 2015; Nik Yusuf et al., 2016; Salazar et al., 2021).

Banana peels are among the waste products bananas produce. However, these peels are very beneficial as they contain a lot of nutrients like fiber, potassium, phenolics, protein, antioxidants, anti-bacterial, and anti-biotic, essential amino acids, and also contain polyunsaturated fatty acids (Aboul-Enein et al., 2016; Fidrianny et al., 2014; Gómez Montaño et al., 2019; Khawas & Deka, 2016; Mohd Zaini et al., 2022; Ndarubu et al., 2021; Padam et al., 2014; Pereira & Maraschin, 2015; Vu et al., 2019). There are various ways in which banana peels can be utilized, such as in animal feed production (Gómez Montaño et al., 2019; Hassan et al., 2018; Ssonko & Muranga, 2020), the material of ecologically favorable plastic packaging (Chandrasekar et al., 2023; Karne et al., 2023; B. Yan et al., 2023), or the food industry (Eshak, 2016; Mohd Zaini et al., 2022; Segura-Badilla et al., 2022). Banana peels is possibly converted to flour and added to pastry and meat products to increase the dietary fiber content (Mohd Zaini et al., 2022). Banana waste can be used to produce nanocellulose, which is an excellent biocomposite material for innovative food packaging. However, further investigation is needed to determine the safety of nanocellulose from banana biomass for industrial use (Zaini et al., 2023).

Based on the results of the analysis, pineapple commodities have the most potential to be developed by small and medium industries through technoparks in Kampar Regency. The amount of pineapple supply or production has increased on average. The amount of pineapple production from 2017 to 2021 fluctuated, averaging 29,172.12 tons each year. The highest pineapple production was in 2019, with a total of 32,926.83 tons, and the lowest production in 2017, with a total of 19,117.66 tons. When viewed from the availability of pineapple supply, pineapple commodities in Kampar Regency can meet the needs of small and medium industries to ensure the sustainability of the technopark designed. The development of pineapple commodities can encourage innovation in the processing and production of derivative products, ranging from fruit to waste products such as leaves, skin, and weevils. This will ultimately create products with added value. The development of a pineapple-based technopark promotes transitioning small and medium industries' existing conditions in Kampar Regency into small and medium industries with increasing value creation capability. The condition of small and medium industries in Kampar Regency is stagnant and needs derivative product development. Specifically, small and medium industries in Kampar Regency are characterized by low ecomomic value-added, poorly managed, low marketing capacity, lack of investment, low capability of technology adoption, and lack of innovation. This condition induces small and medium industries to face many obstacles in creating economic value.

In this case study, developing a pineapple-based technopark promotes transitions of small and medium industries into more innovative ways of creating added economic value. Fig. 3 depicts the potential development of technopark in Kampar Regency. The selection of pineapple as a superior commodity is pivotal in focusing on technopark development.

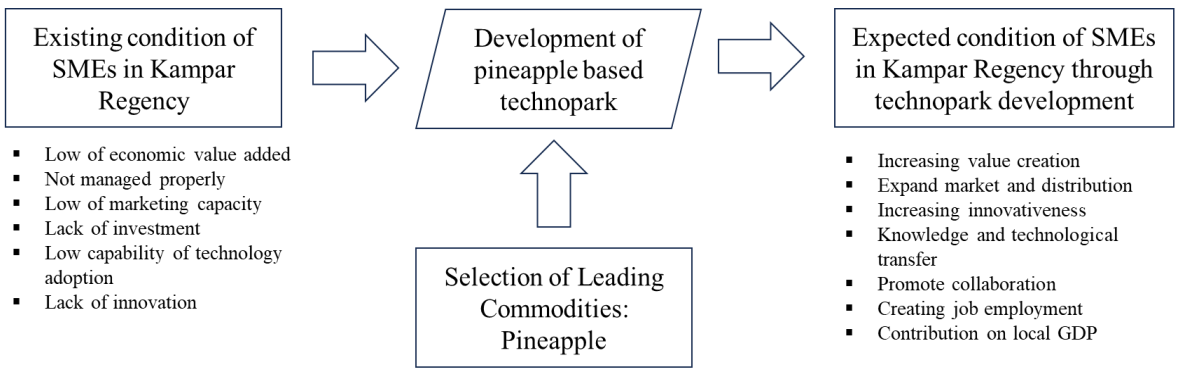

Fig. 3. Potential development of Technopark in Kampar Regency

Fig. 3 shows the expected condition of small and medium industries in Kampar regency through technopark development, potentially resulting in increasing value creation (Erdin & Ozkaya, 2020b), expended market and distribution (Löfsten & Lindelöf, 2003), increasing

innovativeness (Fukugawa, 2006), knowledge and technological transfer (Fukugawa, 2006), promote collaboration (Sun et al., 2007), creating job employment (Ferraro et al., 2023), contribution on local GDP (Oanh et al., 2021). The local government can implement Technopark's initial development for the development of pineapple-based small and medium industries in Kampar Regency by providing support related to policies and infrastructure support as well as the availability of skilled human resources. The government can improve supporting infrastructure, such as access to transportation, communication, and information technology, to facilitate the growth and connectivity of small and medium industries. Training and human resource development are needed to improve the competence of the local workforce in order to adopt new technologies in agriculture and pineapple processing.

The government plays a role in conducting cooperation and collaboration and building extensive networks with universities, companies, business actors, and local communities to support the transfer of technology and science, providing supporting facilities in the form of research laboratories and resources that can increase the competitiveness of pineapple-based small and medium industries. The government can also establish cooperation and partnerships with investors to accelerate the development of technoparks. The government can create a mentoring program by empowering pineapple farmers and business actors to develop new and superior varieties and more innovative pineapple processing technology. In addition, environmentally friendly pineapple packaging technology can be achieved by making a packing house during the initial development of technoparks to improve product quality and selling value. It can facilitate the distribution of pineapple products because they are safer and hygienic. Technopark must be used as a center for innovation, research, and development to provide facilities and resources for SMEs.

5. Conclusion

Superior commodities in Kampar regency have the potential to be developed in small and medium industries through technoparks. The region has ample resources, including natural, human, and sufficient infrastructure. This study shows that the pineapple commodity is the superior commodity in Kampar regency, based on an analysis of its LQ and SSA values. Pineapple has the most significant distribution and dominance in five sub-districts, making it an ideal crop for further development. Pineapples' characteristics strengthen this study's results as a superior commodity with the most significant harvest area, availability of raw materials, and regional potential. As a superior commodity, pineapple has the potential to support the economic value-creation process through the expansion of Kampar Regency's small and medium-sized industries. Government policies, infrastructure, and competent human resources must support developing commodities pineapple in small and medium-sized industries through technoparks. The determination of superior commodities in this study is the initial stage of technopark design for the development of SMEs. This study does not include the implementation plan of the proposed technopark development model, so recommendations for future studies include determining the location and enabling factors of technopark development.

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