Development of Processed Products for Siamese Orange Commodities in Bontomatene District, Selayar Islands Regency Based on the Local Economic Development (LED) Concept

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Abstract. The purpose of this research is to develop a local economy based on superior commodities, so as to produce a processed product of chayote commodity in Bontomatene District, Selayar Islands Regency, South Sulawesi Province. To achieve the research objectives, four stages of analysis were carried out, namely first, determining the criteria in determining the derivative products of citrus commodities using the delphi analysis method. Second, determining the processed products of citrus commodities using the exponential comparison method. Third, determine the development factors of processed products of citrus commodities based on the concept of local economic development using the Content Analysis method. Then the last is to formulate the development of processed products of citrus commodities in Bontomatene District through the Local Economic Development (LED) approach using the triangulation analysis method. The development of processed citrus commodity products based on the LED concept is to conduct training, coaching to supervision and partnerships with the private-community, create groups from a collection of Micro, Small and Medium Enterprises (MSMEs) actors as a form of forum media, increase the role of the private sector through Corporate Social Responsibility (CSR) with various forms of assistance, and use technology that is friendly/easy to use.

Keywords: Citrus, Local Economic Development (LED), delphi analysis, Analytical Hierarchy Process (AHP)

1 Introduction

Local Economic Development (LED) is a partnership process between local governments, community-based groups, and businesses in an area that relies on local strengths, namely natural resources, labour, capital, facilities and infrastructure, technology, markets and management to create jobs and stimulate economic growth in an area [1]. Factors that influence local economic development are natural resources, labour, capital, facilities and infrastructure, technology, markets, and management [2]. LED also requires supporting aspects that support the processing performance of a regional commodity. These supporting aspects include aspects of capital, technology, information, investment, market promotion and the availability of labour and infrastructure so that commodities become superior. The availability of physical infrastructure is also important to encourage business growth. However, the provision of physical

ICEEES 2023, October 30-31, Pekanbaru, Indonesia

DOI 10.4108/eai.30-10-2023.2343081

infrastructure that runs alone without improving the supporting aspects of LED, the business will be in vain [3].

Selayar Islands Regency is an area with potential in the agricultural sector. Data from the 2022 Gross Regional Domestic Product (GRDP) of the Selayar Islands Regency shows that the agricultural sector is the sector that has the highest GRDP in the Selayar Islands Regency. The majority of the agricultural sector in the Selayar Islands Regency is horticulture. This is because according to farmers, the profit prospects of horticultural planting are higher than food crops. One type of horticultural crop is siam oranges [4].

Siamese oranges are one of the fruits that have the highest dominance of fruit cultivation in Indonesia. This type of citrus can grow in lowlands to highlands. Siamese oranges are among the most widely developed local citrus species in Indonesia at 80% due to their easy maintenance. Selayar Islands Regency is one of the regions in Indonesia that cultivates oranges in South Sulawesi Province. Selayar oranges are one of the leading horticultural commodities. This crop has long been cultivated by farmers with high farming profits. Selayar orange is a favourite commodity for local farmers. Citrus plantations are spread across the mainland of Selayar Island in Bontomatene District with a production of 34,065 tonnes, in Buki District with a production of 26 tonnes, and in Bontoharu District with a production of 11 tonnes [5].

The local government has set citrus as one of the mainstay commodities and developed on an agribusiness scale, but with the existing level of agricultural production of citrus has not been able to lift the economy of the surrounding community. As a result, the economy of the community, especially chayote farmers in Bontomatene sub-district, is still lagging behind and not developing [6].

Based on observations in the study area, it is difficult to find any processing of siam oranges in Bontomatene Sub-district, even throughout Selayar Islands Regency. Generally, farmers only sell fresh fruit directly out of town. This means that there is not much profit for local farmers. According to the Selayar Islands Regency Agriculture Office, 90% of fresh chayote is taken out of town and only 10% is processed within the Selayar Islands Regency. However, these processed products are very difficult to find in Bontomatene sub-district and even throughout the Selayar Islands region. As stated in the "Roadmap for the Fruit Processing Industry", the main types of fruit produced by Indonesia and have the potential to be developed into processed products, such as canned fruit, juice drinks, candied fruit, jam and other processed fruit products are mangoes, oranges, pineapples and passion fruit [7]. Based on the potential of fruit (orange, mango, pineapple and passion fruit) and export opportunities, the development of the fruit processing industry is a priority to be developed as an effort to increase added value and employment. The criteria that are considered to determine a processed product are the level of ease in meeting the quality requirements of quantity and continuity of raw materials, the availability of human resources needed, the availability of processing technology to be used, the market absorption of the products produced and the fulfilment of business capital needs and the ease of fulfilling the professional needs of the management [8].

Based on existing conditions, it is necessary to make efforts to develop processed products of citrus commodities. The lack of public knowledge about the diversification of chayote requires research related to what products are the priority / most potential to be developed by the community of Bontomatene District. The development of these products can be done through the Local Economic Development (LED) approach in order to create a sustainable economy by utilising local resources carried out by local communities, government and the private sector. The purpose of this research is to conduct local economic development of processed citrus commodities through the direction of the development of processed citrus

commodity products in Bontomatene District, Selayar Islands Regency so that it can affect economic growth for the community.

2 Research Methods

2.1 Data Collection Method

Data collection was carried out by conducting primary and secondary data surveys. Secondary data collection is done by institutional survey and literature review related to the research. And primary data collection is done in 2 ways, namely interviews to respondents and observations to find out the condition of citrus development, the condition of infrastructure. This observation aims to harmonise the data from the secondary survey results with the factual conditions of the field.

2.2 Analysis Method

To determine the direction of development of processed citrus commodity products in Bontomatene District based on the concept of local economic development using 4 stages of analysis, namely:

A. Determining Criteria for Determining Processed Products of Siamese Orange Commodities in Bontomatene District

To fulfil the first objective, the Delphi method was used. Criteria were analysed with the Delphi method to stakeholders. Delphi technique as a process to collect opinions among experts about social phenomena that will affect the situation of the institution [9]. Determination of criteria is done by interview. These criteria were previously obtained from the synthesis of literature which was then confirmed in the research area to determine the priority processed products for citrus commodities in Bontomatene District.

B. Determining Potential Processed Products for Siamese Orange Commodities in Bontomatene District

To be able to achieve the second goal of determining potential products using the Exponential Comparison Method (ECM). The Exponential Comparison Method (ECM) is one method for determining the priority order of alternative decisions with multiple criteria. This technique is used as a helper for individual decision-makers to use a well-defined model design at the process stage. This analysis was conducted to determine the priority of processed products that can be applied at the farm level. The Exponential Comparison Method (ECM) is one of the methods of the Decision Support System (DSS) used to determine the priority order of alternative decisions with multiple criteria [10].

C. Determining Local Economic Development Factors for Processed Products of the Siamese Orange Commodity in Bontomatene District.

This analysis aims to determine the factors that support the local economic development of processed products of chayote commodities in Bontomatene District. To identify influential factors used content analysis techniques (Content analysis). Content analysis is an analysis conducted to determine the tendency of communication content.

As for the steps taken in this analysis, the first is to create categories and coding guidelines. The second is to collect the data needed to be analysed. The third is to transcribe the results of

interviews with informants. The fourth is coding data based on interview transcripts. The fifth is processing the coded data. The last is presenting the data and interpreting.

D. Direction of Development of Processed Products of Siamese Orange Commodities in Bontomatene District Based on the Concept of Local Economic Development

The analysis technique used in formulating directions for the development of processed products of chayote commodities in Bontomatene District, Selayar Islands Regency through a local economic development approach is using triangulation analysis. The triangulation method is defined as a data collection technique that combines data from various data collection techniques and existing data sources [11]. The triangulation technique in this research takes into account the characteristics of the LED based on the results of the descriptive-qualitative analysis in target 3 and compares the existing conditions related to the siamese orange commodity from the results of secondary and primary surveys through interviews with respondents.

3 Results and Discussion

3.1 Determining Criteria for Determining Processed Products of Siamese Orange Commodities in Bontomatene District

From the stages of delphi analysis above, it can be obtained criteria for determining processed products of siamese orange commodities in Bontomatene District, namely: 1) Availability of Raw Materials; 2) Quality of Raw Materials; 3) Market Demand; 4) Market Strategy; 5) Availability of Capital; 6) Availability of technology; 7) Availability of human resources; 8) Quality of Human Resources

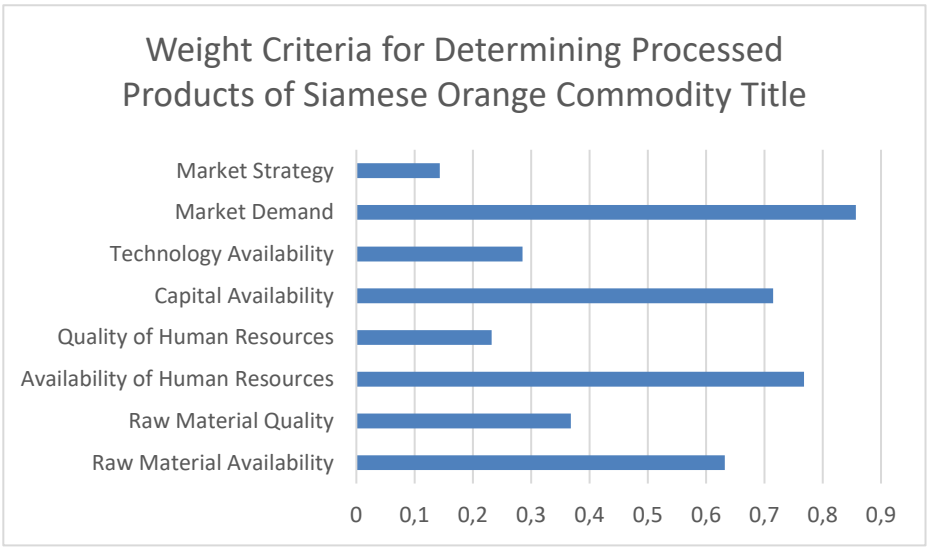

Figure 1. Graph of the Weight of Criteria for Determining Processed Products of Citrus Commodities

3.2 Determining Potential Processed Products for the Siamese Orange Commodity in Bontomatene District

From the AHP analysis, it is known that the weight of each criterion is the criteria for the availability of raw materials with a value of 0.632, the criteria for the quality of raw materials with a value of 0.368, the criteria for the availability of human resources with a value of 0.768, the quality of human resources with a value of 0.232, the criteria for capital availability with a value of 0.715, the availability of technology with a value of 0.285, the criteria for market demand with a value of 0.857, the market strategy with a total value of 0.143.

Market demand is the highest criterion in determining processed products of citrus commodities, a product must meet market needs and be produced based on market demand. A product must also be able to meet market needs in local, regional and national areas. So that the selection of a product must be determined based on market demand.

After determining the weight on each criterion, then enter step 4, which is to conduct a 1-9 assessment to 8 respondents on 9 processed products to certain criteria. Finally, step 5 is to calculate the total score or value of each alternative processed product, and determine the priority order of processed products based on the total score or value of each alternative. Table 1 is the result of the total calculation of each alternative processed product.

Table 1. Calculation Results of Alternative Processed Products

Alternative	R1	R2	R3	R4	R5
Dried Sweets	26.788	26.788	27.332	26.616	25.620
Flour	8.703	11.493	10.711	11.594	15.575
Jam	25.393	25.759	25.686	26.616	27.575
Candied	27.800	27.800	27.737	27.083	27.664
Fruit Juice	26.788	26.788	27.332	26.616	27.800
Pectin	8.703	11.493	10.711	11.594	18.176
Canned Fruit	25.393	25.759	25.686	26.616	12.060
Syrup	27.800	27.800	27.737	27.083	27.800
Pickled	26.788	26.788	27.332	26.616	25.014

Alternative	R6	R7	R8	Average
Dried Sweets	26.415	27.800	26.554	26.739
Flour	8.000	14.737	12.799	11.702
Jam	27.146	26.478	27.010	26.458
Candied	27.146	27.800	26.415	27.431
Fruit Juice	27.800	27.800	27.800	27.814
Pectin	8.000	9.325	16.015	13.852
Canned Fruit	8.000	9.325	8.703	11.010
Syrup	27.800	26.471	27.083	27.558
Pickled	23.713	24.459	24.294	24.486

Description:
R1 : Selayar Cooperative, MSME and Trade Office
R2 : Department of Labour Industry and Transmigration
R3 : Agriculture Office
R4 : MSME owner
R5 : Bontomatene sub-district
R6 : Chairman of GAPOKTAN Bontomatene sub-district
R7 : PKK Group of Siamese Orange Processors

R8 : Middleman

Table 2. Decision prioritisation results for processed products

Priority	Selected Alternative	ECM Value
Potential Product 1	Fruit Juice	27,814
Potential Product 2	Syrup	27,558
Potential Product 3	Candied	27,431
Potential Product 4	Candied Dried Skin	26,739
Potential Product 5	Jam	26,458
Potential Product 6	Pickles	24,486
Potential Product 7	Pectin	13,852
Potential Product 8	Flour	11,702
Potential Product 9	Canned Fruit	11,010

From the calculation table of the exponential comparison method, the results show that fruit juice is the first potential product with a value of 27.814. Followed by syrup ranked 2nd with a value of 27.558, sweets ranked 3rd with a value of 27.413.

Fruit juice ranked first as the most potential alternative product to be developed in Bontomatene Sub-district because oranges have a high water content, making them very suitable for fruit juice drinks. The potential market demand of Selayar Islands Regency as a tourism city increases the need for tourists for souvenir products or one-time drinks while travelling. In addition, the capital required in the processing process is not too large, the technology is also not too complicated and the product does not really require the availability of very abundant raw materials. So it is very suitable to be developed by groups of micro, small and medium enterprises.

The second priority is syrup. Syrup, which is a beverage product, is very suitable to be developed considering its high water content, and the potential for high market demand because Selayar Islands Regency is a tourism city, making it very suitable as a souvenir for tourists. Similar to fruit juice, the technology used is not complicated, the capital does not require large capital and the product does not require abundant availability of raw materials. So it is very suitable as an alternative product developed by micro, small and medium enterprise groups.

The third priority is candied products. Sweets are a very suitable product due to market demand as a tourism city. Just like syrup products, the technology used is not complicated, the capital is not large, so it is very suitable to be developed by MSME actors. However, candied products are ranked third because not all people consume processed products that taste very sweet.

The 4th priority is candied dried peels. Candied dried peel is a processed product made from orange peel. This product is also very good if developed in Bontomatene Sub-district because in its processing, it does not require large capital and the product does not require abundant raw materials, technology is not too complicated. The same with jam as the 5th priority product. Thus, this product is also suitable if developed by MSMEs and community groups. Furthermore, for the 6th priority product, namely pickles, this is a product that uses uncomplicated technology, requires the availability of raw materials that are not large, capital is not large, the availability of adequate human resources. However, the assessment of marketing criteria for this product is very low.

While the last priority is the existence of canned fruit, it is difficult to be developed because in terms of market demand there is no, besides that the costs that must be incurred are higher than other products. There is no market demand for canned fruit because in the Selayar Islands

Regency, chayote commodities are so abundant that they do not need to be canned. This is also followed by flour and pectin products which both require abundant raw materials, complex technology, large capital and qualified human resources so that the processing process is considered to be very difficult for MSMEs.

However, when viewed with the criteria that need to be optimised for the most potential products, products 1 2 and 3. It is known that the quality of human resources is a criterion that needs to be optimised in the development of potential derivative products, so the method used to optimise the criteria for the quality of human resources for the running of a production by conducting training for the people of Bontomatene District. In addition, products can also be reduced to other diversifications. Such as sweets can be reduced to dodol products, chocolate orange sweets and so on, following market developments and public purchasing power.

3.3 Determining Local Economic Development Factors for Processed Products of Siamese Orange Commodities in Bontomatene District

In determining local economic development factors using the Content Analysis method. The analysis process is carried out after obtaining indicators and variables from the synthesis of literature related to local economic development and then determining the factors that influence the development of chayote commodities in Bontomatene District, Selayar Islands Regency. The purpose of using the Content Analysis method is to make conclusions by identifying the characteristics of certain messages from different respondents objectively and systematically.

Furthermore, in this research, namely conducting interview transcripts, where researchers at the same time understand the contents of the In Depth Interview process that has been carried out. The interview transcript in target 2 contains the determination of influential factors in the development of citrus commodities based on the concept of local economic development. The interview transcript text is then coded by highlighting based on the variables that have been synthesised in the literature review.

In the results of coding confirmation obtained from the results of the understanding step in the Content Analysis technique that all variables are factors determining the local economic development of processed products of citrus commodities in Bontomatene District. In addition, there are also additional factors, namely the continuity of raw materials which are considered important factors in the development of processed products of citrus commodities. So that the local economic development factors of processed citrus commodity products in Bontomatene District consist of: (1) Raw material factors include raw material continuity, raw material quantity, and raw material quality; (2) Labour factors include labour availability, and labour quality; (3) Marketing factors include market demand, and marketing strategies; (4) Capital factors include ease of finding capital, and capital institutions; (5) Production process factors include production scale, and processing technology; (6) Partnership factors include community roles, government roles, and private roles; (7) Infrastructure factors include electricity infrastructure, road infrastructure, and clean water infrastructure for production and distribution processes.

3.4 Development of Processed Products of Siamese Orange Commodities in Bontomatene District Based on the Concept of Local Economic Development

From the results of this analysis, directions are obtained on influential factors to support processed products of citrus commodities. Some development directions include (1) the quality of raw materials, namely processing grade C and D citrus, (2) the quantity of raw materials, namely processing the citrus commodity to increase added value, (3) the continuity of raw materials, namely creating partnerships in the assistance of the availability of citrus raw materials, (4) the availability of labour, namely providing assistance to the community so that they want to carry out processing activities, (5) quality of labour related to utilising training centres and village centres to carry out training, (6) capital institutions, namely improving BUMDES services as a provider of capital, (7) ease of finding capital, namely facilitating capital lending procedures in banks, (8) the role of government, namely conducting training, coaching to supervision and partnerships with the private-society, (9) the role of the community, namely creating groups of MSME actors as a form of media forum, (10) the role of the private sector, namely increasing the role of the private sector through CSR with various forms of assistance, (11) the use of technology, namely providing technology that is friendly / easy to use, (12) the scale of production, namely creating a scale of processed citrus production into an MSME scale business, (13) marketing strategies, namely increasing marketing through more efficient online media, (14) market demand, namely building cooperation with souvenir shops, (15) Clean water supply, namely improving the quality of clean water and using guaranteed bottled water in the production process, (16) road infrastructure, namely increasing maintenance / rehabilitation of roads to facilitate distribution, and (17) electricity infrastructure, namely improving electricity services to MSME actors.

In developing potential processed products such as juice, syrup and candied siam oranges, the directions that are the result of this research can be a guide in their development. To carry out these directions, various parties are needed, namely the private sector, the community and the government. Thus, the processing of citrus products can run and improve the economy of the local community.

4 Conclusion

The conclusions consist of; (1) Criteria that influence the determination of processed products of citrus commodities in Bontomatene District, namely Availability of Raw Materials, Quality of Raw Materials, Availability of Capital, Availability of Technology, Market Demand, Market Strategy, Quantity of Human Resources, and Quality of Human Resources; (2) Potential products of citrus commodities that are very suitable to be developed are juice beverage products, syrup beverage products and candied orange food products; (3) Factors that influence the development of processed products of citrus commodities consist of 17 factors, namely the quality of raw materials, quantity of raw materials, continuity of raw materials, availability of labour, quality of labour, capital institutions, ease of seeking capital, the role of government, the role of the private sector, the role of the community, processing technology, production scale, market strategy, market demand, roads, electricity and clean water for production activities.

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