Smart Economy Policy Strategy For Coastal Areas Through Economic Base Analysis

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***Abstrak*— Smart economy is intended to improve the business cycle, a flexible economy, able to compete globally, generate added value, knowledge, innovation, entrepreneurship, social responsibility, and green economic growth. The implementation of a smart economy is important, supported by the development of the basic economic sector that already exists in an area. The existence of a basic sector shows that the region can meet the needs of its own sector. A strategic and intelligent effort is needed in developing the economic potential of the base. Aesesa District as a coastal area in Nagekeo Regency has many basic sectors that can be developed. This study aims to identify the basic economy as a smart economy policy strategy for coastal Aesesa District. The research method used is descriptive quantitative-qualitative, with Location-Quotient analysis techniques, Klassen Tipology and Process hierarchy analysis (PHA). Primary data collection is done by documentation and interviews with selected respondents, while secondary data is obtained from the relevant agencies. The results showed that the agricultural sector, electricity & clean water and communication, and food crops, livestock, fisheries, electricity, clean water, hotels and restaurants, sea transportation, transportation support services, banks, corporate services, entertainment, and cultural services were the base sector with a value of LQ>1. Classification Klassen typology shows as fast-growing & fast-growing areas and developed but depressed areas. Thus, the implications of the policies carried out for the development of the leading sub-sectors are to carry out various innovations in the existing base sector, increase the value of the existing base sector so as not to decrease and always promote the base sector so that it has high added value.**

Keywords—Aesesa District, Coastal area, Economic Base Sector, Klassen Tipology, Smart Economy

I. INTRODUCTION

THE economic activities of a region or a city are divided into base and non-base economies. The economic base or base sector is the activity of the region and city that has the capacity to export goods, services, and labour outside the area. Basic economy or basic economic activity is the activity of producing goods and services which can be an activity of non-basis economic activity which is the activity of producing goods and services which are only able to meet the needs of the local market [1]. From these two activities, it can be seen that each region has the capability of each to meet its market needs. If a region has a strong base sector, it will become a source of regional income and there will be economic cooperation with other regions that need this base sector. The economic base is related to the need in predicting the impact of new economic activity on the city or region [2]. Empirical based studies divide economic activities into two sector areas, exports and local. Exports serve to the external requests and local service to the internal requests. Local activities are able to respond to the challenges in export activities, which will be announced as nonbasic and basic, and are proportional to export activities [3]. The determination of the economic base is the crucial first step required in the planning of regional economic development strategies [4].

Base and non-base economic activities can be calculated using several methods. One of the most popular methods uses the gross regional domestic product (GRDP) data. GRDP is an important indicator to determine the economic conditions of a region or area [1]. Gross Regional Domestic Product or PDRB is the amount of added value generated by all business units in a certain area. GRDP can also be defined as the total value of the final (net) goods and services produced by all economic units [4], [5]. By calculating the economic base using GRDP, the region or city can be identified with its potential advantages both comparatively and competitively. The second method most widely used calculates the bases and non-base economic activities using Location Quotients (LQ). Location Quotients are ratios of economic activities, for example, industries divided by those parts of the industry from other economies, and we can assume that the study area is the region (r), a country (n), and employment (E) this is referred as a measure of economic activity [1], [6]. This research was conducted in the coastal area Aesesa sub-district. Aesesa is one of the sub-districts in Nagekeo Regions located around the coastal area. It has the most base sector compared to other sub-districts. The base economic sector is based on the value of GRDP produced every year. The Aesesa coastal region is one of the region with the highest marine resources in Nagekeo District. Based on RTRW Local Regulation No. 01 of 2011 regarding the Nagekeo District Spatial Plan for 2011-2031, Aesesa District has a high economic function, which is developed as a tourism area, industrial area, and port. Besides, Nangadhero Village that is located in the Aesea Sub-District, labelled as a fisheries development area and the leading resource for planning of the minnapolitan area.

The diverse economic functions need to be supported by the direction of good economic development plans and on target. Suning and Darmanto in their study explained that coastal economic potential would develop well if there was participation from the community in terms of information on prices and supporting marketing capacity, so that fish catches obtained by fishermen were not only sold to middlemen at low prices, but could be sold on the market at an expensive price [7]. The development of coastal areas should be broadly aimed at growth/efficiency, equity/social, and ecosystem/environment hencethe ultimate objective goes beyond the pursuit of regional growth or revenue [8]. The gap in infrastructure services between cities and coastal areas has caused a disparity in urban and coastal economic growth. This gap indeed requires the efforts of various parties to jointly develop the economic potential of the region so that the city and the coast are not too distinctive. Therefore coastal economic development can adopt economic development in the city, one of which is the concept of a smart economy model.

The smart economy model can be developed in coastal areas by identifying potential economic bases. The concept of

this model aims to stimulate coastal communities to increase their economic income, so that the lives of coastal communities are better and more prosperous [9]. Many experts define smart economy, including; Schaffers et al explains that smart economy tries to combine the company's economy and innovation starting from the use of capital, human knowledge, skills, creativity, and transforming ideas into a valuable process, producing products and services [10]. The smart economy also emphasizes the promotion of the use of renewable energy sources, increasing energy efficiency, based on needs and reducing costs. Anttiroiko explains that smart economy is an economic network that develops a new model of cooperation in production, distribution and consumption [11]. Hollands, RG states that smart economy comprises of economic activity that creating a profitable business environment for a city with the aim of attracting new businesses while maintaining existing businesses. This activity is an important role for a city for the long term, and it requires high technology, the availability of creative industries, infrastructure, knowledge networks, voluntary organizations and a conducive environment [12].

Smart economy is one of the indicators to achieve a smart city. The essential components of the smart city (or the implications of smart economy), includes: 1) how the technology of smart city can change urban trade; 2) smart cities as economic drivers; and 3) smart cities as efficient market gaps. The objective of the smart economy is to improve the business cycle, to achieve a flexible economy, to be able to compete globally, to generate high added value, knowledge, innovation, entrepreneurship, social responsibility and green economic growth [13]. Therefore smart economy is built on the basis of 1) innovative thinking and acting; 2) comprehensive understanding for the long-term in creating social, environmental and territorial values; 3) connection of all economic stakeholders on a local scale in the urban business community; 4) consideration of local potential with a broader spatial approach; and 5) finding of the right solution to balance the impact of globalization on the use of smart technology. Smart economy as a concept of the present and the future, sinceit refers to policies that stimulate innovation and creativity based on scientific research, superior technology, caring for the environment, and sustainable that still consider the conditions of space, time and action [14]. This study focused on identifying coastal economic base potential to support smart economy.

II. RESEARCH METHODS

A. Data

Secondary data were obtained from related agencies, including regional development agencies [15], data from the Aesesa District Office in 2012 - 2013 and the Nagekeo District Statistics Agency (CSA, 2013). Primary data collection aims to determine the existing economic potential of the existing economic base in the coastal areas of Aesesa to get an overview of the smart economic development model. Primary data collection is carried out by documentation and interviews with selected respondents. The analytical method used is descriptive quantitative-qualitative. The analysis techniques used are Loqation-Quotient (LQ), Geographical Information System (GIS) and Analytical Hierarchy Process (AHP).

B. Location-Quotient (LQ) Analysis

Location Quotients are the result of the division or ratio of certain economic activities, for example, industries divided by those parts of the industry from other economies, and we can assume that the study area is the region (r), a country (n), and employment (E) this is referred as a measure of economic activity [1], [16]. LQ Formula can be written:

$$LQ = \frac{vi / vt}{Vi / Vt}$$

Information:
vi = regional level i income
vt = total regional income
Vi = National sector level income
Vt = national level total income
LQ ≥ 1 = Base Sector
LQ <1 = Non-Base Sector

The LQ value obtained will be in a range 1> LQ> 1. The magnitude of the LQ value indicates the degree of specialization or concentration of the commodity in the relevant region relative to the reference area, shows that the greater the LQ value in a region, the greater the degree of concentration in the region.

C. Geographic Information Systems

GIS was used to organise, proccesse, and to display spatial data specifically to the characteristic and variables desired by researches accordingly for example location points, infrastructures, paths, and polygon [17]. Maps was made by Geographic Information System (GIS) as a database and Surfer software as an analytical tool [18]. GIS in this study was used to inform spatial data about the existing conditions of supporting infrastructure for economic activities, with a SHP (Shapefile) base map obtained from Nagekeo District Bappeda. The GIS displayed in this study is a photo mapping of infrastructure as a support for economic base activities.

D. Klassen Tipology Analysis

[19], explain the pattern of economic growth and the structure of regional economic growth based on Klassen's typology can be classified into four (4) that is; (1) Rapid Growth Region, (2) Retarted Region, (3) Growth Region, (4) Relatively Backward Region.

E. Process hierarchy analysis (PHA)

Saaty and Vargas proposed AHP as a multi-criteria, multi-objective decision analysis using participation in paired criteria on a preference scale to find an alternative [21]. The application of this method was done by arranging unstructured

problems decomposed into a hierarchical structure. The comparison scale consists of values ranging from 1 to 9 which describe the intensity of importance, where the value 1 states is equally important and the value of 9 given to those factors has extreme importance over other factors (Table 1). Saaty also gives an explanation about the magnitude of index numbers used to check the consistency of the value of the matrix pair comparison called the consistency ratio (CR). CR is the result of a comparison between consistency index (CI) and random index (RI). When the consistency rasio is less than or equal to 10% it means that the user's answer is consistent enough for the resulting solution to be optimal, formulated:

$$CR = \frac{CI}{RI}$$

PHA application in this study uses expert choice 11 software. PHA analysis data obtained from distributing questionnaires to selected respondents who have experts and understand the basic economic conditions on the Aesesa coast. The number of respondents was 22 people consisting of 18 village officials in Aesesa District, and 4 people from Regional Planning Agency, Marine and Fisheries Service, Agriculture Service, and the Bureau of Economic Development of Nagekeo Regency.

III. RESULT AND DISCUSSION

A. Location-Quotient (LQ) Analysis Results

The data used for the calculation of LQ is data from the Gross Regional Domestic Product (GRDP) sector and sub-sector of Nagekeo Regency compared to the Aesesa District GRDP data. The LQ calculation results presented in this study are only LQ with a base economic category, which is, the LQ value is more than 1 (LQ> 1). The economic base that has been identified from the LQ results is then analyzed qualitative and quantitative with AHP and GIS. Aesesa sub-district has the most significant number of base sectors compared to other sub-districts in Nagekeo Regency. The economic sector was marked as the base sector if the LQ value is > 1, and if the LQ value < 1 then the sector is not a base sector. The results of the calculation of the base sector in the Aesesa Sub-District are presented in Table 1.

Table 1. Location-Quotient (LQ) Analysis Results Sector & Sub-Sector Based on Constant Prices in Aesesa District in 2018-2019

No	Sector/Sub-sector	Aesesa District			
		LQ Value Year 2018	LQ Value Year 2019	Category Year 2018	Category Year 2019
I	Agriculture	1.09	1.09	SB	SB
	1.1. Crops	1.33	1.34	SB	SB
	1.2. Plantation crops	0.00	0.00	BSB	BSB
	1.3. Farm	1.10	1.11	SB	SB
	1.4. Forestry	0.00	0.00	BSB	BSB
	1.5. Fishery	1.50	1.51	SB	SB
II	Mining & Quarry	0.85	0.84	BSB	BSB
III	Processing industry	0.48	0.48	BSB	BSB
IV	Electricity & Clean Water	1.42	1.43	SB	SB
	4.1. Electricity	1.43	1.44	SB	SB
	4.2. Clean water	1.36	1.38	SB	SB
V	Building/Construction	0.74	0.76	BSB	BSB
VI	Trade, Hotel & Restaurant	0.76	0.77	BSB	BSB
	6.1. Trading	0.75	0.76	BSB	BSB
	6.2. Hotel	2.17	2.18	SB	SB
	6.3. Restaurant	1.09	1.13	SB	SB
VII	Transport & Communication	0.92	0.93	BSB	BSB
	a. Transport	0.92	0.92	BSB	BSB
	7a.2. Highway transportation	0.79	0.79	BSB	BSB
	7a.3. sea transport	2.60	2.61	SB	SB
	7a.4. Cross transportation			BSB	BSB
	7a.5. Air Freight	0.00	0.00	BSB	BSB
	7a.6. Transportation Support Services	2.56	2.60	SB	SB
	b. Communication	1.19	1.20	SB	SB
VIII	Finance, Leasing & Services Peru.	0.96	0.97	BSB	BSB
	8.1. Bank	1.55	1.57	SB	SB
	8.2. Non-Bank Financial Institution	0.73	0.74	BSB	BSB
	8.4. Building Rental	0.90	0.93	BSB	BSB
	8.5. Company Services	1.42	1.43	SB	SB
IX	Services	0.78	0.78	BSB	BSB
	a. General Administration	0.76	0.76	BSB	BSB
	b. Private	0.92	0.93	BSB	BSB
	1. Social services	0.91	0.92	BSB	BSB
	2. Entertainment and cultural services	1.19	1.19	SB	SB
	3. Personal and household services	0.84	0.88	BSB	BSB

Note: BSB = Not base sector
SB = Base sector

In Table 1, the value of LQ > 1 means that the economic sector is the base sector. There were 3 sectors , namely agriculture, electricity and clean water, and communications, and 12 sub-sectors which were the base sectors in Aesesa Sub-district. The sub-sectors are crops, livestock, fisheries, electricity, clean water, hotels, restaurants, sea transportation, transportation support services, bank, company services, entertainment and cultural services. Supporting facilities and infrastructure are needed to develop basic sectors and sub-sectors. The existing condition of existing infrastructure is far from quality and quantity to support the development of the base sector. The highest LQ value is the hotel sub-sector of 2.18, Marine transportation of 2.61 and transportation support services of 2.60. The three highest sub-sectors are a smart economy policy strategy that will be developed in the Aessesa coastal area. Photographs mapping of infrastructure facilities using GIS are shown in (Figure. 1, 2, and 3).

Figure 1. Photo Mapping of the Hotel Sub-sector, 2020

Figure 1 explains that the Hotel Sub-sector is a sub-sector that is rapidly developing in Aesesa District. The rapid development of the sub-sector influences the magnitude of the LQ value. Based on the Aesesa District GRDP data for 2018-2019, the LQ value of the hotel sub-sector is 2.18. The development of this sub-sector is due to the increasing number of tourist visits, both domestic and foreign, every year. In 2018, the total number of visits was 5672 people, increasing in 2019 to 6740 people, but at the end of 2019 until 2021 it decreased due to covid-19. A technical strategy is needed to improve the business cycle in the post-covid-19 hospitality sector, one of which is to develop the attractiveness of coastal areas into tourist areas.

Figure 2. Photo Mapping of Marine Transportation Supporting Facilitiess, 2020

Figure. 2 explains that the Sea Transportation Sub-sector became one of the largest contributory sectors to the GRDP of Aesesa District in 2013. So, this sector became the base sector in Aesesa District with an LQ value of 2.61. Sea transportation activities in Nagekeo Regency are fully served by Marapokot Port, which is in Marapokot Village, Aesesa District. Sea transportation activities in Nagekeo Regency are served by Marapokot Port, where the sea transportation fleet owned by residents in Nagekeo is in the form of boats/Jungkung, while seaport activities are generally served by the Indonesian National Shipping (PELNI) fleet. The condition of Marapokot Port itself consists of; 1 (one) commercial port, 1 (one) ferry port under construction, 1 (one) fish landing port, and 3 public ports.

Figure 3. Photo Mapping Supporting Infrastructure for the Transport Supporting Services SectoR, 2020

Figure 3 explains that the Transportation Support Services Sub-Sector includes activities that support and facilitate transportation activities in the Aesesa coastal area such as airport, sea, river, land (terminal and parking) services, loading and unloading services for land and sea goods, expedition services, roads, bridges, warehousing, and other supporting services. Transportation supporting infrastructure in Aesesa District is one of the basic sectors with an LQ value of 2.60. Aesesa District is the only district in Nagekeo Regency which has quite complete port facilities and other supporting services.

B. Klassen Tipology Analysis Results

The electricity, restaurants, transportation support services, communications, and banking sectors in Aesesa sub-district are included in the classification of fast-growing and fast-growing sectors. This shows that the sector has a sector contribution that is greater than the GRDP growth rate of Nagekeo Regency. As a rapidly advancing sector, these sectors have more advantages and an important role in the economic development of Aesesa District and are sectors that are superior to other economic sectors. The development of this sector needs special attention.

The fast-developing but depressed economic sector is an economic sector that has experienced a decline in its growth rate over the past few years. Economic sectors that fall into this category include the agricultural sector (food crops agriculture, livestock, fisheries, clean water, hotels, sea transportation, corporate services, entertainment and cultural services. These ten sectors are the basic sectors based on LQ calculations. There are obstacles that cause these economic sectors are not developing fast and are classified as developed but depressed. The agricultural sector is the basic sector in Aesesa District, but this sector has decreased in recent years. This is due to the location of Aesesa District which is on the north coast of the District Nagekeo so that there is an increase in salt levels in agricultural land. Several other problems that cause a decrease in the role of the agricultural sector in the GRDP of Aesesa District are pests such as weeds and walang sangit. The fishery sector is also experiencing obstacles,

including the use of traditional fishing gear which affects the quality of life. catches, lack of assistance and socialization and guidance to fishermen which ultimately affects human resources.

Economic sectors included in the fast growing regional classification include the building sector, trade, non-bank financial institutions, building rentals, general government, and community social services. The economic sector can still continue to develop forward by developing its potential. The economic sector in classification III is not a basic sector in Aesesa District, but is a sector with the potential for rapid development and high competitiveness. The added value of this classification sector in the PDRB of Aesesa District has increased rapidly compared to other economic sectors.

Based on the classification of topology analysis, the economic sectors included in classification IV are sectors that have a lower growth rate and average per capita income in the Aesesa District GRDP compared to Nagekeo District. The existing economic sectors that fall into this category are indeed less prominent than other economic sectors. Economic sectors that are classified as relatively lagging regions include plantation crops, forestry, mining & quarrying, management industry, road transportation, crossing transportation, air transportation, individual and household services.

A. Process hierarchy analysis (PHA) results

The purpose of the AHP analysis is to obtain a smart economy policy strategy obtained from the base sector. The basic sector is the basis for development to achieve a smart economy strategy. Smart economy which is an important variable in this study is value added, innovation and green economic growth [13], this is studied because these variables allow it to be applied in the Aesesa coast based on the resulting base sector. The smart economy policy strategy was obtained based on the expectations of stakeholders who were representatives of respondents who were considered experts in understanding the potential for the development of the existing Aesesa coast, The number of respondents was 22 people consisting of 18 village officials in Aesesa District, and 4 people from Regional Planning Agency, Marine and Fisheries Service, Agriculture Service, and the Bureau of Economic Development of Nagekeo Regency. The results of the PHA are shown in Figure 4.

Figure 4 can be explained that the most important innovation variable for respondents to achieve a smart economy policy strategy based on the base sector is 73.1%, then the green growth variable is 15.3%, the value added variable is 11.6%. Furthermore, the order of priority of the first strategy is strategy 5, namely Base sector innovation by 37.2%, strategy 6 is to increase in the value of the base sector by 34.6%, strategy 4, namely base sector promotion by 13.3%, strategy 1 namely Development of coastal tourism potential of 6.7%, strategy 2 namely Improved accessibility to coastal areas of 4.7% and strategy 3 namely Improvement of sea transportation facilities and infrastructure of 3.6%. The priority value of the strategy is used to make a decision on the importance of a smart economy policy strategy based on the highest value in the base sector, namely the hotel, sea transportation and transportation support services sub-sector. Thus, the implications of the policies carried out for the development of the leading sub-sectors are to carry out various innovations in the existing base sector, increase the value of the existing base sector so as not to decrease and always promote the base sector so that it has high added value.

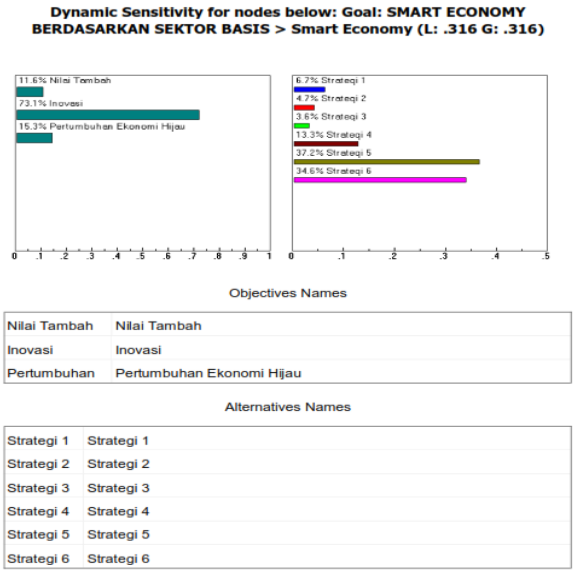

Figure 4. Smart Economy Variable PHA Results with Base Sector, 2020

Information:
Strategy 1= Development of coastal tourism potential
Strategy 2= Improved accessibility to coastal areas
Strategy 3= Improvement of sea transportation facilities and infrastructure
Strategy 4= Base sector promotion
Strategy 5= Base sector innovation
Strategy 6= Increase in the value of the base sector

V. CONCLUSION

There were 3 sectors , namely agriculture, electricity and clean water, and communications, and 12 sub-sectors which were the base sectors in Aesesa Sub-district. The sub-sectors are crops, livestock, fisheries, electricity, clean water, hotels, restaurants, sea transportation, transportation support services, bank, company services, entertainment and cultural services. Supporting facilities and infrastructure are needed to develop basic sectors and sub-sectors. The existing condition of existing infrastructure is far from quality and quantity to support the development of the base sector. The highest LQ value is the hotel sub-sector of 2.18, Marine transportation of 2.61 and transportation support services of 2.60. Classification Klassen typology shows as fast-growing & fast-growing areas and developed but depressed areas. The three highest sub-sectors are a smart economy policy strategy that will be developed in the Aessesa coastal area, namely the hotel, sea transportation and transportation support services sub-sector. Thus, the implications of the policies carried out for the development of the leading sub-sectors are to carry out various innovations in the existing base sector, increase the value of the existing base sector so as not to decrease and always promote the base sector so that it has high added value.

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