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Effective Industrialization Strategy Analysis in Accelerating Economic Growth in an Archipelago Area: Study in North Maluku Province

Amran Husen [1,*] Prince Charles Heston Runtunuwu [2,] and Muhammad Hasnin [2]

[1] Department of Economics, Postgraduate Program, Faculty of Economics and Business, Universitas Khairun, 97719, Ternate, North Maluku Province, Indonesia
[2] Department of Development Economics, Faculty of Economics and Business, Universitas Khairun, 97719, Ternate, North Maluku Province, Indonesia
* Corresponding Author: amran.husen@yahoo.co.id

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ABSTRACT

Investigating structural relations between sectors is important from a policy point of view. A clear perspective on cross-sectoral relations can be useful in formulating profitable and appropriate development strategies. This study compares Agricultural Demand Led Industrialization (ADLI) and Export-Led Industrialization (ELI) strategies. In making a comparison, the two strategies are used; multiplier matrix that describes the impact on endogenous variables due to changes in exogenous variables. Impact analysis with a simulation of the investment amount to see the impact on the formation of output, creation of gross value added, absorption of labor, income, and taxes. Cluster analysis aims to classify objects based on the characteristics of the observed object. The One Way Anova test is useful to determine whether there are differences in the investment simulation of each category, ADLI and ELI. The results of this study indicate that the sectors in the ADLI category have advantages in creating gross added value. In contrast, the sectors in the ELI category have advantages in creating output, income, taxes and employment. Furthermore, using the One-Way ANOVA test, it can be concluded that statistically, there is no average difference between ADLI and ELI in the output, labor, income, and tax variables.

Keywords: *ADLI; Archipelago; ELI; Strategy*

1. Introduction

Economic development and structural change were known to go hand in hand. The development and economic growth expected through industrialization did not always provide the desired reality (Elhiraika & Mbate, 2014). Global economic development requires every country to industrialize and be involved in high-value-added product manufacturing. Empirically, diversification from traditional sectors generates a reduction in poverty rates and a continuous increase in technology accumulation and international competitiveness (Rodrik, 2013; Jarreau & Poncet, 2012; McMillan & Rodrik, 2011; UNCTAD & UNIDO, 2011).

The theoretical justification for industrial policy is strong; its practicality poses many challenges. Supporters of industrial policy argue for the failure of markets and coordination, knowledge transfer, and economies of scale dynamic (Stiglitz et al., 2013; Rodrik, 2009; Pack & Saggi, 2006). While this idea is receiving considerable support, at least in theory, criticism has also pointed to the government's inability to precisely identify the sectors or companies that industrial policy should target. The following problems are corruption and rent-seeking caused by government interference and a lack of transparency and accountability in state policies. As a result, industrial policy is postulated to reduce allocative efficiency in the economy by disrupting the price mechanism (Altenburg, 2011).

North Maluku Province, one of the archipelagic provinces of eight (8) archipelago provinces in Indonesia, has shown encouraging development progress since it was established in 1999. The economic growth rate of North Maluku Province grew above the national economic growth average (Bank Indonesia, 2019). In 2014, the economic growth of North Maluku Province was 5.49%, which increased in 2017 by 7.67%, and in 2018, the economic growth of North Maluku Province reached 7.92%. North Maluku Province's economic growth rate is accompanied by slow economic structure transformation. In 2014 the agricultural sector and others contributed 25.77% to the Gross Regional Domestic Product of North Maluku Province, which decreased to 22.60% in 2018. Meanwhile, the industrial sector in 2014 contributed 5.23% to the Gross Regional Domestic Product of North Maluku Province and increased to 7.45% in 2018. This means that there has been a transformation in the economic structure of North Maluku Province that is running slowly (Badan Pusat Statistik Provinsi Maluku Utara, 2019).

The development and economic growth expected through industrialization did not always provide the desired reality (Elhiraica & Mbate, 2014). The industrialization carried out in several regions has not been able to provide high, stable and sustainable economic growth and has high economic resilience to various threats (Stiglitz al., 2013; Mkandawire, 2015; Chang, 2013). Therefore, it is necessary to determine a more effective industrialization strategy in the economic structure of North Maluku.

This research examines the comparison between the ADLI industrialization strategy and the ELI strategy. A simulation of the investment amount is used in comparing the two strategies. Researchers limit the use of the economic sector in the economy of North Maluku, which only includes sectors related to agricultural, forestry and fishery business fields (excluding agricultural and hunting services) and processing industry business fields (excluding oil and gas refineries). Simulations are carried out on sectors belonging to the ADLI and ELI categories, which are categorized according to several variables with the help of cluster analysis. The simulation with an investment-induced approach that is carried out will analyze the impact on the economic sector in terms of output creation, gross value added, labor, income and taxes. With the impact of these five variables, it is expected to be able to explain the right industrial strategy in North Maluku Province.

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2. Literature Review

2.1. Reference to the Industrialization Strategy of Export-Led Industrialization (ELI)

Trade and economic policies that aim to accelerate the process of the transformation of industrialization in a country by exporting goods and services to the country's goal have a comparative advantage. Export-driven growth implies opening domestic markets to foreign competition in exchange for market access in other countries (Goldstein & Pevehouse, 2008). However, this may not apply to all domestic markets, as the government may aim to protect nascent industries so that they grow and can exploit their future comparative advantage. In practice, the reverse can occur. For example, many countries in East Asia had quite strong barriers to imports from the 1960s to the 1980s.

Reducing barriers and tariffs, floating exchange rates(devaluation currencies national are often used to facilitate exports), and government support for the export sector are examples of policies adopted to promote EOI and economic development. Export-oriented industrialization is the hallmark of the national economic development Tigers of Asia: Hong Kong, South Korea, Taiwan, and Singapore in the post-WWII period.

Export-driven growth is an economic strategy used by several developing. This strategy seeks to find a niche in the world economy for certain types of exports. Industries that produce these exports can receive subsidies government and better access to local markets. By implementing this strategy, countries hope to find enough hard currency to import is produced cheaper elsewhere (Goldstein & Pevehouse, 2008).

Additionally, a recent mathematical study suggests that export-led growth is where wage growth is suppressed and is associated with the productivity of non-tradable goods in a country with an undervalued currency. In such a country, the productivity growth of exported goods is greater than the proportional wage growth, and the productivity growth of non-tradable export prices declines in an export-led growth country and makes them more competitive in international trade (Unal, 2016);

2.2. Agricultural Demand-Led Industrialization (ADLI)

The import substitution strategy and the export promotion strategy are considered failures as a development strategy approach in developing countries. This is based on two factors, 1) industrialization is not integrated with the agricultural sector, which is the source of livelihood for most people, and 2) this strategy results in a redistribution of income which tends to benefit the owners of capital.

The essence of the ADLI strategy is a shift in the share of a larger investment to the agricultural sector to increase agricultural productivity with an emphasis on food production over export crops and on small and medium-scale agriculture rather than large-scale. Small and medium-scale agriculture has a greater relationship with domestic industry than large-scale agriculture, with productivity at least the same as large-scale agriculture. Large-scale agriculture generally uses capital-intensive and imported agricultural equipment such as tractors, harvesting machines, etc. In contrast, small and medium-scale agriculture is more labor-intensive and uses agricultural equipment that can be produced domestically. Likewise, from the consumption side, the linkage between domestic consumption and industry is stronger than that of large-scale agriculture. Small-scale agriculture has a larger Marginal Propensity to Consume (MPC) than large-scale agriculture and has a larger marginal share of consumption for domestic industrial production such as textiles, textile materials, and other household goods. In addition, small-scale farming and the medium tend to invest additional income in education (as supported by human resources is greater) so that it is the foundation

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for the creation of an increase in paraconductivity, both in agriculture and industry, which is greater in the future.

2.3. Basics Thinking of Industrial Policy in Encouraging Structural Change

According to the theory of the "New Structural Economics", although the market is the basic and first-best mechanism for effectively allocating resources, the state must create conditions conducive to enterprises (Stiglitz et al., 2013; Lin, 2010; Lin & Monga, 2010). By accelerating the transfer of resources (capital, labor and knowledge) from low to high-productive sectors, industrial policy has the potential to promote and sustain inclusive economic growth.

The traditional view in economics is that market efficiency, and state intervention should not affect the cross-sectoral allocation of resources. However, there is a growing consensus that markets do not have to lead to efficient or desirable outcomes, and the state has a role to play in this (UNCTAD & UNIDO, 2011). According to Hausmann & Rodrik (2003), information on externalities prevents companies from exploring new economic activities, especially in developing countries where property rights are not enforced. Since this problem is freeriding, investment is minimal because no company can find new products. Industry policy can thus promote entrepreneurial entry, survival, and compensation for innovation through patent rights and copyright law (Lin & Chang, 2009).

A cross-country study by Yasar et al. (2011) provides empirical evidence that supports a strong and positive relationship between firm performance and property rights. The institutions that secure property rights and promote sound legal systems are prerequisites for improving the performance and productivity of developing countries.

Green technology and production processes that are environmentally friendly, resource-efficient, and low-carbon intensive are developed to generate environmental benefits (Hallegatte et al., 2013). In a study on industrial waste management in Taiwan, Tsai & Chou (2004) empirically demonstrated the effectiveness of industrial policies in addressing air pollution. The next need for industrial policy arises because of a failure of coordination (Pack & Saggi, 2006). Therefore, the state is responsible for promoting and coordinating the collective investment decisions of independent actors; and companies (Altenburg, 2011). In the analysis of manufacturing companies in Ethiopia, Gebreeyesus & Mohnen (2013) provide evidence supporting the importance of corporate coordination and networking in driving technological innovation. Local business relationships are the main channel through which firms acquire knowledge of market opportunities, new products, competitors and production techniques. In a case study of the flower sector in Ecuador, Hernandez et al. (2007) highlight how industrial policy fosters coordination between production on the one hand and reduced transportation to foreign markets on the other.

Research and innovation by ensuring strong patent and copyright laws that secures property rights (Stiglitz et al., 2013). Empirical evidence tends to confirm that the convergence of some East Asian countries with developed countries is accelerated by industrial policies that promote constant learning and knowledge accumulation among firms (Rodrik, 2009). This is in line with firm-level evidence showing that patent rights positively and significantly impact a firm's ability to allocate its investment resources for research to develop new production techniques (Allred & Park, 2007).

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2.4. The Evolution of Industrial Policy in Indonesia

What is needed, and what needs to be done in the future? First, on the conception side, grouping various thoughts about industrial clusters developed so far is not simple. One of the factors is the relationship between one concept/theory and another (UNCTAD & UNIDO, 2011). So, an adequate understanding of industrial clusters is very important because this is one of the bases for the success or failure of cluster development practices.

Second, on the empirical-practice side, the development or steps of industrial cluster development are not rigidly based on a single concept. The capital of a good conceptual understanding of industrial clusters needs to be adapted to the context (UNCTAD & UNIDO, 2011). Countries were required to liberalize their trading markets, regulate interest rates, devalue their currencies and privatize state institutions. Mohamed et al. (2011) found the same thing in the case of Sudan, while Grosen & Coflkun (2010) argue that a decade of SAP implementation in Tanzania does not address the structural factors that hinder industrial development.

Third, the system viewpoint becomes a medium for dialogue across stakeholders to build a holistic mutual understanding of a particular industrial cluster, a common understanding of their respective roles and roles, and build synergistic collaboration for the development of the industry cluster concerned. From here, the partial work, fragmented with respective sectoral egos, the barriers of fragmented efforts that result in the incoherence of action are removed or minimized. However, the Poverty Reduction Strategy Paper (PRSP) does not translate to industrial development because the emphasis is placed on providing basic education and health without clear linkages to develop industrial skills for high value- and value-added sectors such as manufacturing (UNECA & AUC, 2013). Fourth, the stakeholders must be willing to undergo a collective learning process, including the relevant regulator.

2.5. Challenges of Industrial Policy in Indonesia

Free Trade Liberalization requires the main challenges of the industrial sector, including a decline in the performance of the industrial sector, an exchange rate crisis, and investment barriers and problems (Sitepu, 2013). Almost all industries are dependent on imported raw materials. This dependence on imported raw materials is one of the challenges of the industrial sector in Indonesia in facing the era of free trade (Sitepu, 2013). This has resulted in high production costs, excessive reliance on government support, inefficient production structures and a lack of competitiveness (Lin & Chang, 2009). Empirical evidence from Mendes et al. (2014) shows that sub-Saharan Africa failed to spark industrialization because of support for production processes that exceeded its human and financial capacities.

Indonesia must be smart in dealing with Free Trade Agreement (FTA). The Free Trade Agreement (FTA) should benefit Indonesia. The Ministry of Finance of the Republic of Indonesia considers the FTA agreements detrimental to Indonesia. Therefore, there needs to be a review of this bilateral and multilateral agreement (Okezone.com, 2011).

Market failures and coordination, new structural theories and new trade theories lay the groundwork for state intervention to overcome these failures. Murphy (2007) examined the ability of the government to increase its industrial production capacity in rural Tanzania. Based on empirical analysis, government support in building the capability of local companies through skill building can encourage industrial development. McCormick (1999) presents an analysis of industrial clusters in Ghana, Kenya, and South Africa. Differences in effective clustering and industrialization can be attributed to state intervention. Successful cases illustrate the role of government support in providing the infrastructure and policy

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environment that supports business and corporate activities. Similarly, Rijkers et al. (2010) supported firms by expanding access to capital.

Furthermore, this will lead to increased investment, market share, and competitiveness in the domestic, regional and international markets (Stiglitz al., 2013). Muchie (2000) examined the drivers of industrial development in Ethiopia. The success of the leather sector depends on the country's comparative advantage in livestock resources and government initiatives to encourage skill-building and technology adoption.

The institutions responsible for industrial policy are characterized by competing, and conflicting objectives and industrial policy decisions are captured by interest groups and political elites (UNECA & AUC, 2014). Duru (2012) presents the challenge of Nigeria's experience in industrial policy, arguing that political interference and rent-seeking practices have limited its effectiveness. Instead, the successful experience of industrialization in developed and developing countries underlined the importance of bureaucracy visionary and highly skilled as well as government agencies that incorporate the private sector in the design and implementation of industrial policy (Hosono, 2015; Wade, 2009).

Loewe (2013) presented a case study of industrial policy in Egypt. The lack of effectivity can partly be attributed to minimal consultation with the private sector and state interventions tailored just for large and well-established companies. Analysis showed that industrial policies are not formulated and transparent and are not based on creating incentives for companies to produce high-value-added products.

Chang (2013) examined four general industrial policy challenges considered most binding in the African context. This includes that African countries need a deeper understanding of how to get industrial policies right by implementing timely government intervention. Therefore, these arguments should shape the design and form of industrial policy but do not negate their importance in accelerating the structural transformation process of a country.

3. Research Methodology

3.1. Multiplier Matrix

In a macroeconomic model, a term known as a multiplier describes the impact on endogenous variables due to changes in exogenous variables. The multiplier matrix is used to carry out impact analysis, such as output impact analysis, gross value-added impact analysis, labor impact analysis, income impact analysis, tax impact analysis, and linkage analysis (spreadability and degree of sensitivity). The stages in calculating the multiplier matrix are as follows:

1) Calculating the input coefficient

$$a_{ij} = X_{ij} / X_j$$

Where:

a_{ij} = input coefficient of sector i by sector j
X_{ij} = use of input sector i by sector j
X_j = sector output to j

The input coefficient matrix, a collection of various input coefficients, is known as the Ad matrix.

Matrix $(I - A^d)$

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3.2. Impact Analysis

In this study, a simulation of the investment amount will be conducted to see the impact on output formation, gross value-added, labor absorption, income creation, and taxes creation. The formula used is as follows:

1) Impact on the formation of output $X_{303} = (I - A^d)^{-1} F_{303}$
2) Impact on the creation of Gross Value-Added (GVA)
   $V_{303} = V X_{303,}$ with $v = GVA_i/Output_i$
3) Impact on labor absorption
   $L_{303} = LX_{303}$, where $l = labor/Output_i$
4) Impact on income creation
   $W_{303} = WX_{303}$, where $w = income/Output_i$
5) Impact on tax creation
   $T_{303} = TX_{303}$, where $t = tax_i/Output_i$

Description:

- X_{303} = output formed due to investment impact
- F_{303} = investment or Gross Fixed Capital Formation (GFCF)
- V_{303} = gross value-added formed due to investment impact
- L_{303} = labor formed due to investment impact
- W_{303} = income or labor compensation formed as a result of investment impact
- T_{303} = other taxes on net production formed as a result of investment impact

3.3. Cluster Analysis

Cluster analysis is a statistical technique that aims to classify objects by providing the characteristics of the object of observation. Grouping is based on the similarities and dissimilarities of the grouped objects. From this grouping, the objects in a cluster are relatively homogeneous, and objects between clusters are relatively heterogeneous. The desired number of clusters is two clusters, namely the ELI and ADLI clusters. The variables used in grouping sectors into the two clusters are the Gross Value-Added (GVA) coefficient, contribution to Gross Regional Domestic Product (GRDP), exports, imports, and investment.

3.4. One-Way Analysis of Variance (ANOVA) Test

To find out whether there are differences in the investment simulations carried out for each category, ADLI and ELI, the average similarity test is carried out with a One-Way Analysis of Variance (ANOVA). To carry out this test, several assumptions must be met, consisting of the populations to be tested being normally distributed, the variance of these populations being the same, and the samples are not related to one another. Levene's test can be used to determine whether the population's variance is the same. The significance of this test can be seen from the significance value contained in the test of homogeneity of variances at the SPSS Statistics output. If the value of sig. more than 0.05 (significant), it can be concluded that the variance equality assumption is fulfilled.

Furthermore, to test the average similarity, the hypothesis can be formed first:

H0 : $\mu 1 = \mu 2 = \ldots = \mu n$

H1 : there is at least one unequal μi, i = 1, 2,...,n

To test the hypothesis, the test statistics used are F test, with the following equation:

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$$F = \frac{MSTr}{MSE} = \frac{(SSTr/k\text{-}1)}{(SSN/(KN)}$$

The decision-making rule with a significance level of α is as follows:
If F ≤ F table (1-α, k-1, Nk) then H_0 is accepted
If F ≤ F table (1-α, k-1, Nk) then H_0 is rejected

Where k is the number of sub-samples and N is the number of units of study. In addition, the rejection of H_0 can also be done based on the significant value of the output of SPSS Statistics (ANOVA), i.e., if the significance value is smaller than the value α, then H_0 is rejected.

4. Results and Discussion

4.1. Demand Structure

The structure of demand for goods and services in North Maluku Province consists of intermediate demand, final domestic demand (aggregate demand), and export demand to other provinces. In 2019, the total demand in North Maluku Province was IDR 46.10 trillion, consisting of intermediate demand of IDR 13.71 trillion and final demand of IDR 32.39 trillion. This figure shows that most of the demand is used to meet the final demand (70.27%), or it can be said that most of the consumption is not intended for the production process.

Table 1. Demand Structure for North Maluku Province, 2019

No	Sector	Demand Between		Final Domestic		Export		Demand Total Demand	
		Value Billions IDR	Proportion (%)	Value IDR Billions	Proportion (%)	Value IDR Billions	Proportion (%)	Value IDR Billions	Proportion (%)
1	Food Crop	1,879.98	13.72	446.63	1.67	2,670.20	74.06	4,998.55	10.84
2	Horticulture and Plantation Crops	641.31	4.70	1,155.31	4.30	209.92	4.40	2,042.09	4.24
3	Agriculture and Hunting Services	315.21	2.30	394.98	1.42	212.91	3.22	912.887	2.01
4	Agriculture and Plantation Services	315.21	2.30	394.98	0.00	0.02	0.00	211.90	0.32
5	Forestry and Logging	222.31	1.61	28.27	0.12	14.27	0.24	266.83	0.51
6	Fishery	325.20	2.13	494.18	1, 43	782.16	13.47	2,281.16	5.03
7	Coal and Oil and Gas Refining Industry	1,329.91	8.27	481.71	1.86				
8	Food and Beverage Industry	1,096.38	8.12	3,251.90	12.14	757, 21	13.34	5.098.04	11.06
9	Textile and Apparel Industry	107.14	0.78	619.10	3.15	6.14	1.04	681.19	1.44

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No	Sector	Demand Between		Final Domestic		Export		Demand Total Demand	
		Value Billions IDR	Proportion (%)	Value IDR Billions	Proportion (%)	Value IDR Billions	Proportion (%)	Value IDR Billions	Proportion (%)
10	Wood Industry, Wood Products and Cork and Goods	342.70	2.91	29.33	1.12	1.18	0.16	372.11	1.10
11	Non-Metal Industry	Mineral 391.19	2.90	36.01	0.17	0.16	0, 01	431.18	0.95
12	Furniture Industry	3.59	0.03	244.49	0.91	0.04	0.00	248.11	0.54
13	Other Processing Industry, Repair and Installation Services for Machinery and Equipment	1,137.17	9, 3,018,224.518,20		12.10	0.42	0.06	53	9.62
14	Other	4757.40	32.01	17.51	69.32	1316.12	18.93	42 641,	25 45.21
	TOTAL	**15.705.29**	**100.00**	**28,681.11**	**100.00**	**6,542**	**100.00**	**47,791.62**	**100.00**

Source: Table IO 2019 (Processed)

4.2. Supply Structure

From the supply side, the amount of supply consisting of domestic output and imports will equal the amount of demand. Domestic output has a value of IDR 36.75 trillion, while imports have a value of IDR 11.16 trillion or only about 25.59 percent of the total supply in North Maluku Province. It shows that about one-fifth of the value of goods and services circulating in the province is imported commodities.

Table 2. Structure Offers North Maluku Province, 2019

No	Sector	Demand Between		Final Domestic		Export		Demand Total Demand	
		Value Billions IDR	Proportion (%)	Value IDR Billions	Proportion (%)	Value IDR Billions	Proportion (%)	Value IDR Billions	Proportion (%)
1	Food Crop	4,965.91	13.82	32.64	0.32	4,998.12	10.72	4,965.91	13.82
2	Horticulture and Plantation Crops	Plants 1,460.37	4.06	605.29	5.96	2,065.67	4.79	Plants 1,460.37	4.06
3	Agriculture and Hunting Services	747.57	2.08	178.75	178.75	926.32	2.05	747.57	2.08
4	Agriculture and Plantation Services	112.30	0.31	105.29	1.04	217.5	0.49	112.30	0.31
5	Forestry and	215.12	0.60	53.44	0.53	266.10	0.55	215.12	0.60

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No	Sector	Demand Between		Final Domestic		Export		Demand Total Demand	
		Value Billions IDR	Proportion (%)	Value IDR Billions	Proportion (%)	Value IDR Billions	Proportion (%)	Value IDR Billions	Proportion (%)
	Logging								
6	Fishery	2.267.90	0 6.31	0.05	0.00	2.369	5.01	2.267.90	0 6.31
7	Coal and Oil and Gas Refining Industry	0.00	0.00	1,571.98	15.47	1,570.02	3.40	0.00	0.00
8	Food and Beverage Industry	3,568.48	9.93	1,529.57	15.11	5,172.10	11.19	3,568.48	9.93
9	Textile and Apparel Industry	48.88	0.14	605.11	5.81	652.18	1.43	48.88	0.14
10	Wood Industry, Wood Products and Cork and Goods	337.01	0.22	33.21	0.35	371.59	0.77	337.01	0.22
11	Non-Metal Industry	0.41	0.41	Mineral28 1.09	2.72	430.17	0.94	0.41	0.41
12	Furniture Industry	211.07	0, 59	38.01	0.38	251.19	0.52	211.07	0, 59
13	Other Processing Industry, Repair and Installation Services for Machinery and Equipment	128.11	0.37	4,219.10	41.22	4,316.02	9.37	128.11	0.37
14	Other	21,731.06	61.19	950.18	9,35	22,681.24	48.17	21,731.06	61.19
	TOTAL	**36,750.94**	**100.00**	**11,163.60**	**100.00**	**47,004.51**	**100.00**	**36,750.94**	**100.00**

Source: Table IO 2019 (Processed)

The proportion of domestic output in agriculture, forestry and fisheries is 22.60 percent. The trade sector provided the largest contribution to domestic output for this business field, with a proportion of 17.31 percent. Then followed by the government administration sector at 15.43 percent. Meanwhile, mining business fields of 10.72 had a proportion of the domestic output of 11.36 percent. The food and beverage sector contributed the largest domestic output for this business field, with a proportion of 8.93 percent. At the same time, the lowest was the coal and oil and gas industry sectors that did not produce domestic output.

4.3. Gross Value-Added Structure

In 2019, the total gross value added created by all economic sectors in North Maluku Province reached IDR 23.36 trillion. **Table 3** below shows that the agricultural, forestry and fishery business fields contributed IDR 8.15 trillion or 36.65 percent of the total gross added

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value created. In this business field, the largest share is contributed by the food crop sector; fishery sector; and the horticultural and plantation sectors, with a successive contribution of 19.09 percent; 8.09 percent; and 5.75 percent. On the other hand, the processing industry business field contributed IDR 1.94 trillion or about 4.23 percent of the total gross added value created. In this business field, the largest share was contributed by the food and beverage sector, contributing 2.71 percent. At the same time, the lowest was the coal and oil and gas industry sectors which did not create gross added value.

Regarding the gross value-added coefficient, the horticultural and plantation sectors have the highest coefficient value of 0.8761. This means that only about 12.39 percent of the total input is used in the production process of this sector. Then in the next position are the food crop sector (0.8546) and the forestry sector and logging (0.8469).

Table 3. Structure of North Maluku Province's Gross Value-Added 2019

No	Sector	Value (IDR in Billion)	Contribution (%)	Coefficient
1	Food Crops	4,243.94	19.09	0.8546
2	Horticultural and plantation crops	1,279.43	5.75	0.8761
3	Livestock	552.32	2.48	0.7388
4	Services Agriculture and hunting	91.21	0.41	0.8122
5	Forestry and logging	182.19	0.82	0.8469
6	Fisheries	1799.62	8.09	0.7935
7	Industry Coal and oil and gas quarrying	0.00	0.00	0.0000
8	Food and Beverage Industry	602.30	2.71	0.1688
9	Textile and apparel	Industry 19.17	0.09	0.3921
10	Wood Industry, Wood Products and Cork and Woven Goods from Bamboo, Rattan and the	Like 132.16Metallic	0.52	0.3434Non-Mineral
11	Goods Industry	63.26	0.28	0.4304
12	Furniture Industry	101.72	0.46	0.4819
13	Processing Industry Others, Repair Services and Machine and Equipment Installation	41.55	0.20	0.3471
14	Others	13,146.84	59.13	0.6050
	TOTAL	**23,367.16**	**100.00**	

Source: Table IO 2019 (Processed)

4.4. Cluster Analysis

Grouping sector-sex tor into two groups of industrialization strategies, namely Export-Led Industrialization (ELI) and Agricultural Demand Led Industrialization (ADLI), carried out by cluster analysis. The cluster analysis used is the K-Means Cluster based on the following variables: Gross Value Added (NTB) coefficient, contribution to Gross Regional Domestic Product (GRDP), export value, import value, and the investment value (Gross Fixed Capital Formation or GFCF). Because the units for the five variables used differed, standardization was carried out using the Z-Score. The sectors that will be grouped are sectors related to agriculture, forestry and fishery business fields (excluding agricultural and hunting services) and processing industry business fields (excluding the coal and oil and gas refining industry) because these sectors become the objectives of this study. The number of sectors to be grouped is 11 sectors.

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Table 4. Sectors Based on Grouping Results using Cluster Analysis

No	Sector	Group	Category
1	Food crops	1	ADLI
2	Horticulture and Plantation	1	ADLI
3	Animal Husbandry	1	ADLI
5	Forestry and logging	1	ADLI
6	Fishery	1	ADLI
8	Food and beverage industry	2	ELI
9	Textile and Garments Industry	2	ELI
10	Wood and Cork Goods Industry, Rattan Bamboo and the Like	2	ELI
11	Non-Metallic Mineral Goods Industry	2	ELI
12	Furniture Industry	2	ELI
13	Other Processing Industries, Repair Services and Marketing of Machinery and Equipment	2	ELI

Sources: Processed Results using SPPS

Based on the grouping results, five sectors are grouped into the ADLI category, and six are included in the ELI category. The sectors mentioned above are the sectors that will be used to simulate the amount of investment for each group.

Table 5. Final Cluster Centers

	Cluster	
	1	2
Zscore: Coefficient of Gross Value Added	0.98666	-0.82222
Zscore: Gross Regional Domestic Product Contribution	0.62214	-0.51845
Zscore: Export Value	0.44472	-0.37060
Zscore: Import Value	-0.40972	0.34143
Zscore: Investment Value	-0.19981	0.16651

Sources: Processed Results using SPPS

The analysis results show that the cluster of the two categories can be characterized based on the variables used. Based on **Table 5**, we can see the value of the cluster after the iteration process occurs.

4.5. Analysis of the Impact of Investment on the Impact of Investment on Output

To compare the impact of total investment in the ADLI and ELI category sectors on the formation of output, a simulation of the amount of investment with the same value for the two categories is carried out, namely IDR 6. The simulation was carried out in the IO Table of North Maluku Province, aggregating into 30 economic sectors. The results of these simulations are presented in (**Table 6**). This table shows that an investment value of IDR 6 in the ADLI category can create an output of IDR 6.88. The three sectors in the ADLI category that were most motivated by this investment were the food crop sector; livestock sector; and fisheries sector, while the three sectors outside the ADLI category that were most driven were the wholesale

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and retail trade sector, not cars and motorbikes; the food and beverage industry sector; and the land transport sector.

On the other hand, it can also be seen that an investment value of IDR 6 in the ELI category, The three ELI category sectors that are most motivated by this investment are the wood industry sector, wood and cork products and woven bamboo, rattan and the like; the food and beverage industry sector; and the textile and apparel industry sector, while the three sectors outside the ELI category that were most driven were the forestry and logging sectors; food crop sector; and the wholesale and retail trade sector, not cars and motorbikes. Based on the data above, it can be concluded that the ELI category's ability to create output from investment activities is better than the ADLI category.

4.6. Investment Impact on Gross Value-Added

In terms of gross value-added, based on the results presented in **Table 7**, it can be seen that the gross value-added created from the investment made in the ADLI category was greater than the ELI category, which was 26.02 percent. Suppose the investment simulation is carried out in the ADLI category sectors. In that case, 95.40 percent of the total value-added generated is enjoyed by the sectors in the ADLI category, while other economic sectors enjoy the rest. Meanwhile, suppose the investment simulation is carried out in the ELI category sectors. In that case, 53.50 percent of the total value-added generated is enjoyed by sectors in the ELI category, while other economic sectors enjoy the rest.

4.7. The Impact of Investment on Labor

Investment activities can also absorb labor and provide gross value-added and forming output. The issue of manpower is still a serious problem, so if the government and the private sector investment, it should be directed at sectors that can absorb labor.

From the simulation results with an investment value of Rp6, it can be seen that the ability of the sectors in the ELI category to absorb labor is greater than the sectors in the ADLI category. Seen in more detail, investment in the ELI sector has pushed the ELI sector itself and other economic sectors into their ability to absorb labor. The ELI sector can absorb 78.03 percent of the workforce, while other sectors absorb the rest.

On the other hand, the investment return in the ADLI sector has a big meaning for the ADLI sector itself because it can absorb a workforce of 94.64 percent, where the largest portion in the food crop sector is 29.20 percent. Meanwhile, other sectors can only absorb workers below 1 percent, except for the wholesale and retail trade sector, not cars and motorbikes and the land transportation sector.

If observed more deeply, labor in the textile and apparel industry sector has low productivity, which is only IDR 2.85 million/labor, even though this sector is based on the results of investment simulations in the ELI sector above which can absorb a workforce of 56.58 percent. Therefore, an appropriate investment policy is needed so that investments made can absorb a large number of workers and must also be followed by an increase in labor productivity so that high economic growth targets can be achieved.

4.8. Investment Impact on Income

To compare the impact of the total investment in the ADLI and ELI category sectors on community income creation, a simulation of the investment size was carried out with the same value for the two categories, IDR 6. An investment value of IDR 6 in the ADLI category can create an income of IDR 1.16. Three sectors are most compelled ADLI category revenue with

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this investment, namely the forestry and logging; food crop sector; and the fisheries sector, while the three sectors outside the ADLI category that were most driven were the wholesale and retail trade sector, not cars and motorbikes; land transport sector; and the financial services and insurance sectors.

On the other hand, it can also be seen that an investment value of IDR 6 in the ELI category can create a public income of IDR 1.29. Three categories of ELI sectors pushed revenue with this investment, namely the industrial sector of wood, articles of wood and cork and wickerwork of bamboo, rattan and the like; the non-metal mineral goods industry sector; and the furniture industry sector, while the three sectors outside the ELI category that were most driven were the forestry and logging sectors; food crop sector; and the wholesale and retail trade sector, not cars and motorbikes.

Based on the data above, it can be concluded that the ability of the ELI category to create public income from investment activities that occurs is better than the ADLI category.

4.9. Impact of Investment on Taxes Investment

Activities can also impact tax creation, which is one of the sources of regional income. Until now, taxes are still the main source of the regional revenue, so if the government and the private sector make investments, they should be directed at sectors capable of generating large taxes to support the implementation of regional development.

From the simulation results with an investment value of IDR 6, it can be seen that the ability of the sectors in the ELI category to tax creation is greater than that of the sectors in the ADLI category. As seen in more detail, investment in the ELI sector has pushed the ELI sector itself and other economic sectors into their ability to generate taxes. The ELI sector can tax IDR 0.02, while other sectors create the rest. Meanwhile, the investment return in the ADLI sector has a big meaning for the ADLI sector itself because it can create a tax of IDR 0.03, while other sectors create the rest.

4.10. Comparison of Total Investment Impacts

Table 6 shows a summary of investment activities with three different treatments. Of the total investment of IDR 6, if it is invested without paying attention to industrialization strategies, each economic sector will get the same investment value, which will be able to create output and gross value added of IDR 8.14 and IDR 4.66, respectively. In addition, investment without an industrialization strategy can absorb a workforce of 0.1244. The value of output and labor created without paying attention to the industrialization strategy is greater than the ADLI industrialization strategy but smaller than the ELI industrialization strategy. On the other hand, the gross added value created without paying attention to the industrialization strategy is smaller than the ADLI industrialization strategy but greater than considering the ELI industrialization strategy.

On the other hand, the income value created without paying attention to the industrialization strategy is greater than considering the industrialization strategy of ADLI and ELI. On the other hand, the tax value created without paying attention to the industrialization strategy is smaller than considering the industrialization strategy of ADLI and ELI.

Table 6. Comparison of the Impact of the Total Investment of Rp6 According to the 2019 Industrialization Strategy

Details	NON	ADLI

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		ADLI	ELI	ADLI-NON	ELI-NON	ADLI-ELI
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Output	8.1396	6.8840	9.4705	1,2556	1.3309	2,5865
Gross Value-Added	4.6651	5,5305	4,3887	0,8654	-0,2765	1,1419
Labor	0.1244	-0.1092	0, 2505	-0.0152	0.1261	-0.1413
Income	1.4430	1.1575	1.2884	-0.2854	-0.1546	-0.1309
Tax		0.0380	0.0435	0.0121	0.005	-0.005

Source: Processed Results

Description: NON = without industrial strategy

Based on **Table 6** above, it can be seen that the sectors in the ADLI category have the advantage of creating gross added value. In contrast, the sectors in the ELI category have the advantage of creating output, income, and taxes, as well as labor absorption. The determination of a more effective industrialization strategy must refer to development objectives. If what you want to achieve is the formation of high output to spur economic growth, the ELI strategy is the right choice.

4.11. Inference Analysis

Statistically, to determine whether there is a difference between the average investment simulation results for output, gross value added, labor, income, and taxes, a test was performed by One-Way Anova. The hypothesis used is:

H0 = the average ADLI and ELI populations are the same

H1 = the average ADLI and ELI populations are not the same.

Before the One-Way Anova test, the assumption of the equality of population variance must be tested. In this study, Levene's test carried out the variance similarity test. Based on the results of Levene's test using software SPSS, at the 5 percent test level, it can be concluded that statistically, there is no difference in variance between ADLI and ELI, both in the output, labor, income and tax variables (Sig.> 0.05), whereas in the gross value-added variable. Statistically, there is a difference in variance between ADLI and ELI (Sig value <0.05).

Table 7. Test of Homogeneity of Variances

	Levene Statistic	DF1	DF2	Sig
Output	.012	1	58	.915
Gross Value-Added	7,548	1	58	.008
Labor	1,241	1	58	.270
Income	1,468	1	58	.231
Taxes	.003	1	58	.959

Source: Results Statistical

Furthermore, on four variables that meet the assumption of variance equality, a test is performed by One-Way Anova. Based on the results of this test using software SPSS, at the 5 per cent test level, it can be concluded that statistically, there is no difference in the average between ADLI and ELI, both in the output, labor, income and tax variables (Sig.> 0.05).

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Therefore, in this study, it cannot be said that there is a significant difference between ADLI and ELI industrialization strategies. Thus, to accelerate the economic growth of North Maluku, a combination of ADLI and ELI strategies can be used, among others, by increasing the export of processing industry commodities that use raw materials for products from the agricultural, forestry and fisheries sectors.

Table 8. ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Output	Between Groups	.112	1	.112	.529	.470
	Within Groups	12 512	58	.211	-	-
	Total	12 326	59	-	-	-
Labor	Between Groups	.000	1	.000	.895	.348
	Within Groups	.022	588	.000	-	-
	Total.	022	59	-	-	-
Income	Groups Between	.000	1	.000	.057	.812
	Within Groups	.291	58	.000	-	-
	Total	.292	59	-	-	-
Taxes	Between Groups	.000	1	.000	.043	.836
	Within Groups	.001	58	.000	-	-
	Total	**.001**	**59**	**-**	**-**	**-**

Sources: Processed Results using SPPS

5. Conclusion

Based on the description in the previous chapter, the following conclusions can be drawn:

1. In 2019, most of the demand was used to meet the final demand, or it could be said that most of the consumption was allocated not for the production process. Meanwhile, from the supply side, about a fifth of the total value of goods and services circulating in North Maluku is imported.
2. The sectors in the ADLI category have the advantage of creating gross added value. In contrast, the sectors in the ELI category have advantages in creating output, income and taxes, and labor absorption.
3. The determination of a more effective industrialization strategy must refer to development objectives. If what you want to achieve is the formation of high output to spur economic growth, the ELI strategy is the right choice.
4. Based on the results of the One Way Anova test, it is concluded that statistically, there is no average difference between ADLI and ELI, both in the output, labor, income, and tax

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variables, so in this study, it cannot be said that there is a significant difference between industrialization strategies. ADLI and ELI. Thus, to accelerate economic growth in North Maluku, a combination of ADLI and ELI strategies can be used, among others, by increasing the export of processing industry commodities that use raw materials for products from the agricultural, forestry and fisheries sectors.

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About the Authors

1. **Amran Husen** obtained his Doctoral degree from Universitas Brawijaya, Indonesia, in 2014. The author is an Associate Professor at the Department of Economics, Postgraduate Program, Faculty of Economics and Business, Universitas Khairun, Indonesia.
   E-Mail: amran.husen@yahoo.co.id

2. **Prince Charles Heston Runtunuwu** obtained his Doctoral degree from Universitas Airlangga, Indonesia, in 2018. The author is an Assistant Professor at the Department of Development Economics, Faculty of Economics and Business, Universitas Khairun, Indonesia.
   E-Mail: princecharles@unkhair.ac.id

3. **Muhammad Hasnin** obtained his Magister degree from Universitas Brawijaya, Indonesia, in 2008. The author is an Assistant Professor at the Department of Development Economics, Faculty of Economics and Business, Universitas Khairun, Indonesia.
   E-Mail: mhasnin.feb@gmail.com

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