Comparison of competitive model advantage tools in the economic potential of north Kolaka Regency

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Abstract. The purpose of this study was to identify superior sectors in North Kolaka Regency. The study used competitive model advantage tools (LQ, DLQ, MRP, Tress Index, Shift Share, multiplier effects and compounding factors). Comparative results Sector of the economic potential in North Kolaka Regency that was; agriculture, forestry and fisheries, and construction sector are the base sectors that have a multiplier effect> 1. According to DLQ analysis, some sectors were experiencing rapid development namely the real estate sector, company services, government administration, defense and compulsory social security and health services and social activities. As Carvalho Classification Analysis like agriculture, forestry and fisheries sectors were classified as very high. Meanwhile, the mining and quarrying sector, water supply, waste management, and re-leaf; construction, wholesale and retail trade, Car and Motorcycle Repair, and other services were in the medium classification. According to MRP analysis, information and communication sector were in Classification 1. Tress index analysis during this period experienced an increasing trend.

1. Introduction
The partnership between the government, the community and the private sector in managing resources in economic development will expand the availability of job vacancies and spur regional economic activities. Each region knows and understands more the needs and potentials it possesses, therefore optimizing its resources can be maximized effectively and efficiently. Regional Autonomy Law No. 5 of 2015 j.o No.23 of 2014 and Law No. 33 of 2004 concerning Fiscal Balance between the Central and Regional Governments opens opportunities for regions to manage and develop their potential through policies related to locality to encourage economic activity, investment and sustainable development.

Regional economic development must take place through investments in industries or strategic sectors based on regional peculiarities, regional specialization, and the greatest economic potential. These sectors can be developed quickly because it has a comparative advantage where regions have superior capabilities and resources. Activities Sectors that contribute an additional large value to the economy is a potential that must be managed and developed by the government. In addition, the determination of potential sectors is closely related to employment opportunities in the area, so it is expected that the economy will grow and be able to advance the region  [1–3]. Resource Based View model developed by Clulow et al. (2007) [4] showed that internal resources owned by an area and
emphasize these resources and capabilities in the formulation of strategies to achieve sustainable competitive advantage. Resources are inputs that enable regions to carry out activities, determine policies, and compete with other regions that are expected to provide additional value to regional sector output, product development and expansion into new markets. In order to achieve development goals, economic planning is preceded by processing identifying base or superior sectors that are able to increase economic growth considering the competitiveness and prospects of the coming sector economy and potential economic sectors. On the other hand, important factors that need to be considered in regional development planning are the contribution of the economic sector to total regional income, growth and regional autonomy policies [3].

Economic development planning begins with taking into account the conditions and sector potential of the region and seeing the regional comparative and competitive advantages through the economic structure of North Kolaka Regency. Comparative advantage refers to resource ownership, socio-political, and institutional governance, while competitive advantage refers to the management efficiency of the planning, implementation and supervision process of resource management. Comparative advantage will lead to a competitive advantage where abundant endowment factors make possible to achieve scale conditions economically efficient (economic scale) as the basis of competitive advantage. However, competitive advantage can also be achieved without having a comparative advantage when an area manages to manage resources efficiently. Economic development based on competitive advantage will be more sustainable than a comparative advantage because it has the ability to substitute and efficiently use natural resources.

North Kolaka Regency became independent in 2003 from Kolaka Regency with its relatively high economic growth. The topography of North Kolaka Regency is in the form of mountains and hills which are potential for the agriculture, plantation and forestry sectors. Based on data from North Kolaka Regency in 2018, the biggest contributors to GRDP are the agriculture, forestry and fisheries sectors, mining and excavation, construction, wholesale and retail trade, car and motorcycle repair.

In determining development priorities in North Kolaka Regency, it is necessary to understand through the GRDP Sector of North Kolaka Regency in the period 2005-2017. In 2005 economic growth reached 6.75% and decreased to 5.64% in 2006, while in 2007 economic growth rose to 5.88%. In 2008, economic growth fell again to only 3.64% due to the deterioration of the cocoa plantation business, then in 2009 economic growth improved to 7.07% and 7.25% in 2010. In 2011, the economic growth of North Kolaka Regency reached 8.93%, then it reached 11.85% in 2012, and in 2013-2015 it fell back to 8.70%, 8.35% and 7.05% accordingly. However, it was still better than the national growth of only 5.04%, then continues to occur in 2016 which was 7.69% and in 2017 only 5.69% (preliminary data). From Graph 1 it can be seen that the economic growth of North Kolaka in the past 14 years has experienced an increase in fluctuating dynamics.

Source: North Kolaka Regency in figures 2003-2018

Graph 1. North Kolaka Regency GRDP Growth Rate
The economic potential of the region needs to be developed to increase economic growth and development. Superior regional economic sectors become the determinant and benchmark of regional economic success. The development of superior regions and sectors needs to plan based on geographical, socio-cultural conditions and the potential of resources owned. So, the development has an impact on regional revenues, the availability of labor, the availability of consumption needs both household and industry, as well as the optimization of sustainable resources in order to increase growth and development regional economics. The comparative analysis method is used to analyze leading economic sub-sectors in North Kolaka which was used to see sustainable competitive advantage so that North Kolaka Regency is able to produce output that is different from other regions in the province of Southeast Sulawesi.

### 2. Methods

The economic analysis of the North Kolaka Regency included: a) analysis of economic potentials and advantages and economic interactions between regions; b) economic structure and economic structure shift; and c) determination of the economic driving sector and investment opportunities. The data used were sourced from BPS Kolaka Utara and BPS Sulawesi Tenggara. To identify leading sectors in North Kolaka Regency, Southeast Sulawesi Province, several methods of analysis were used, namely LQ, DLQ, MRP, Tress Index, Multiplier effect, Shift Share, and Compounding Factor. The results of each method were then compared to determine which potential sub-sectors which consistently had comparative and competitive advantages in the 2014-2017 timeframe.

#### Table 1. Analysis Method

| Analysis Tools                                      | Function                                                                 | Data Used                                                                 |
|-----------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------|
| LQ Analysis (Location Quotient) - Carvalho Classification | Shows the amount of contribution and is used to find out the sector basis, which has a comparative advantage. | ADHK GRDP Data of North Kolaka and Southeast Sulawesi Regencies             |
| DLQ Analysis (Dynamic Location Quotient) - Carvalho Classification | Introducing sector growth rates                                           | LQ Data of North Kolaka Regency                                             |
| MRP Analysis (Model Ratio Pertumbuhan)              | Identifying potential sectors/sub-sectors of the economy based on GRDP (competitive advantage) growth criteria. | ADHK GRDP Data of North Kolaka Regency and Southeast Sulawesi (average growth). |
| Tress Index                                         | Look at the degree of diversification or the degree of economic concentration of a region through its sectoral activity composition. | Total sector contribution to the North Kolaka GRDP                          |
| Multiplier Effect                                   | Seeing sector dual effects on other sectors                              | ADHK GRDP of North Kolaka Regency and Southeast Sulawesi Province           |
| Shift-Share Analysis Esteban-Marquillas                | Recognize how specialized the level of the economy is in an area        | ADHK GRDP Data of North Kolaka Regency (average growth)                     |
| Compounding Factor                                   | Forecasting future value on the present value                           | ADHK Regency GRDP and Southeast Sulawesi Province                           |

(Source: CJ [5,6])
3. Results and discussions

3.1. Location Quotient (LQ) analysis, and Dynamic Location Quotient (DLQ)

LQ analysis showed that the agriculture, forestry and fisheries sectors, and the construction, wholesale and retail sectors over the 2014-2017 range were leading sectors (LQ> 1). In the meantime, the water supply sector, waste management, waste and recycling as well as the service sector and others were also leading sectors (2014, 2016, 2017) but in 2015 LQ <1 was not a leading sector. The mining and quarrying sector, as well as the wholesale and retail trade sector; car and motorcycle repair became the leading sector only in 2015 (LQ> 1). Outside of these sectors, were non-base sectors (LQ <1). The DLQ analysis results, the 4 of basic sectors experienced a negative development which the development of the agricultural sector in the last two years had slowed. The following table shows a comparative analysis of competitive model advantage tools for the economic potential of North Kolaka Regency.

Table 2. Analysis Comparison on the Competitive Model Advantage Tools.

| Sector                                      | Basis/Non-Basis | LQ | Classification | 2014-2015 | 2015-2016 | 2016-2017 | ME |
|---------------------------------------------|-----------------|----|----------------|-----------|-----------|-----------|----|
| Agriculture, Forestry, and Fisheries        | Basis           | Slow | Very High      | Class. 4  | Class. 1  | Class. 4  | ME > 1 |
| Mining and excavation                       | Non-Basis       | Slow | Medium         | Class. 2  | Class. 4  | Class. 1  | ME < 1 |
| Processing industry                         | Non-Basis       | Slow | Low            | Class. 1  | Class. 1  | Class. 3  | ME < 1 |
| Electricity and Gas Procurement             | Non-Basis       | Slow | Low            | Class. 2  | Class. 3  | Class. 4  | ME < 1 |
| Water Supply, Waste Management, Waste and   | Non-Basis       | Slow | Medium         | Class. 3  | Class. 1  | Class. 4  | ME < 1 |
| Recycling Construction                      | Basis           | Slow | Medium         | Class. 1  | Class. 1  | Class. 4  | ME > 1 |
| Wholesale and retail trade; Car and Motorcycle Repair | Non-Basis | Slow | Medium         | Class. 1  | Class. 1  | Class. 3  | ME < 1 |
| Transportation and Warehousing              | Non-Basis       | Slow | Low            | Class. 1  | Class. 1  | Class. 2  | ME < 1 |
| Provision of Accommodation, Food and Drink  | Non-Basis       | Slow | Low            | Class. 1  | Class. 1  | Class. 4  | ME < 1 |
| Information and Communication              | Non-Basis       | Slow | Low            | Class. 1  | Class. 1  | Class. 1  | ME < 1 |
| Financial Services and Insurance            | Non-Basis       | Slow | Low            | Class. 1  | Class. 1  | Class. 4  | ME < 1 |
| Real estate                                 | Non-Basis       | Fast | Low            | Class. 3  | Class. 4  | Class. 4  | ME < 1 |
| Company Services                            | Non-Basis       | Fast | Low            | Class. 1  | Class. 1  | Class. 4  | ME < 1 |
| Government Administration, Defense and      | Non-Basis       | Fast | Low            | Class. 3  | Class. 4  | Class. 4  | ME < 1 |
| Mandatory Social Security                   | Non-Basis       | Slow | Low            | Class. 1  | Class. 1  | Class. 4  | ME < 1 |
| Educational Services                        | Non-Basis       | Slow | Low            | Class. 1  | Class. 1  | Class. 4  | ME < 1 |
| Health Services and Social Activities       | Non-Basis       | Fast | Low            | Class. 3  | Class. 3  | Class. 4  | ME < 1 |
| Other services                              | Non-Basis       | Slow | Medium         | Class. 1  | Class. 1  | Class. 4  | ME < 1 |

In Competitive Advantage Analysis Tools (2008), there were four categories of LQ results based on Carvalho Classification, namely 1) Very High (driving, accelerating, and rising) which indicates that there are indications that community independence is very large in this sector; 2) High (evolving, transitional, and moderate) which means that this sector is able to exceed the demands of the community and has exported goods/services produced by this sector; 3) Medium (promising, yielding, and modest) means that most of the needs of the community have been able to be met through the production of...
goods / services from this sector, but this area also still imports and exports in this sector; and 4) Low (challenging, vulnerable, and marginal) means that local needs are not fulfilled or in other words this area still imports goods and services to meet the needs of the community in this sector. By using the Carvalho Classification category, from the 17 sectors in North Kolaka, the Agriculture, Forestry, and Fisheries Sector were in very high category and driving that is the leading sector in North Kolaka Regency, contribute at the provincial level and can also be a major driver of growth in the region.

Mining and Quarrying, Water Supply, Waste Management, Waste and Recycling, Construction, Wholesale and Retail Sector; Car and Motorcycle Repair, Other services were in the medium (Medium), and Modest categories were experiencing a slow development of specialization in general, regionally. However the growth of the region was slower than the growth of the Southeast Sulawesi Province. While the other 12 sectors are sectors that need further attention because they were in the category of Low. Also challenging which had a relatively high concentration has an important role but must be monitored carefully.

3.2. Analysis of Growth Ratio and Tress Index Models

Growth Ratio Model was used to compare the growth of activity on a broader and smaller scale, namely the growth ratio of the North Kolaka study area (RPs) and the growth ratio of the Southeast Sulawesi reference region (RPr). If the value of RPR> 1 then the RPR (+) and if the RPR smaller than 1 it says (-). RPR (+) results showed that the growth of a certain activity in the district or sub-district level was higher than the growth of district GRDP or district GRDP, so it is the opposite if the RPR (-). RPS compares sectors growth at the district level with the growth of the sector concerned at the provincial level. If the growth of the sector at the district level is higher than the sectoral growth at the provincial level, then the result is defined (+), and vice versa if the RPS is defined (-). MRP analysis will obtain real and nominal value, a combination of real and nominal value is obtained from a potential economic sectors description at the district level which is: 1) Category 1, the sector is dominant growth both at the provincial and district levels, if the real and nominal values are positive (+); 2) Category 2 is the real value (+) and nominal value (-). At the provincial level, the growth is prominent while at the district level it is not yet prominent; 3) Category 3 is the sector that has the potential to be developed in the district. Real value (-) and nominal (+) but at the provincial level the growth is not prominent but this activity has the potential to contribute to the growth of the province; 4) Category 4, the sector growth is low, if the real value and negative nominal (-) of the sector so at the provincial and district levels, it will have low growth.

From the results of the MRP analysis, real values, nominal and sectors combinations from 17 sectors obtained showed that the Agriculture, Forestry, and Fisheries, Mining and Mining sectors, Manufacturing and Transportation Industries and Warehousing were varied from classification 1-4. Whereas the potential sector at the North Kolaka level was in the information and communication sector which in the period 2013-2017 was consistent in classification 1, namely the values (+) and (+) which means that the sector at the district and provincial levels have a dominant growth. Then the sectors that had MRP values that were continuously declining were the Real Estate, Government Administration, Defense, and Mandatory Social Security sectors.

The Tress index analysis was used to measure the degree of diversification or economic concentration of an area based on its base sector. Tress Index value = 0, indicated a total of a diversified economy, while a high Tress index value (close to 100) means that economic activity is increasingly concentrated (single contributor). In the period 2014-2017, the value of the North Kolaka Tress Index continued to increase at 40.30; 45.52; 50.1; and 53.68 in 2017, which means not diversified or not concentrated. The economic growth of the North Kolaka Regency depends on more than one sector so that the sector's growth is not greatly influenced by external impacts such as seasonal changes and price fluctuations (inflation). However, this growth is also still strongly influenced by the economic policies of the province of Southeast Sulawesi and the national form of interest rates, subsidies, taxes, and investment value.
3.3. Multiplier Effect Analysis

The results of the multiplier effect analysis of 17 sectors in North Kolaka Regency showed that there were only 2 sectors that gave a double effect to other economic sectors, namely the Agriculture, Forestry, and Fisheries and Construction. These sectors consistently had a multiplier effect \( > 1 \) in 2014-2017, while other sectors did not have a multiplier effect \( < 1 \), namely the other service sectors during 2014-2016 had a multiplier effect \( > 1 \) in 2017 which experienced a decline.

Based on the results of the LQ analysis, the Agriculture, Forestry, and Fisheries and Construction sectors were the base sector and the Carvalho classification analysis also showed that the Agriculture, Forestry, and Fisheries sectors were in the very high category where this sector was the leading sector in North Kolaka Regency. This sector contributes to the provincial level and can also be a major driver of growth in the region. While the construction sector was in the medium category, where the average employment of this sector was concentrated and indicated that the source of the main sector of labor had decreased. A large number of job opportunity multipliers showed the multiplier effect of the economic sector which is able to increase income, employment opportunities of other sectors that improve people's welfare. Other sectors also had an influence on the progress of the leading sector, thus, the sector that is still minimal has been affected by a positive impact in reviving its sector from the superior sector. In the agriculture, forestry and fisheries sectors, water supply, waste treatment, waste and recycling, construction, and other services appeared that the multiplier effect \( < 1 \).

3.4. Shift-Share Analysis

Shift share analysis measures the performance of the economic sector at the local level calculated through labor growth that occurred in North Kolaka Regency during the 2014-2017 period of the economic reference area of Southeast Sulawesi Province. Thus, it can be seen how competitive each sector in the economy each the district. Based on the results of the Shift-Share Analysis, during 2013-2014 there were 8 economic sectors identified in North Kolaka Regency in the growth category because they have the potential for rapid growth (positive PS) and higher competitiveness (positive DS). The economic sector in question was the manufacturing sector, trade, transportation, tourism, information, and communication, as well as the company service sector. Then, in 2014-2015 there were only 3 sectors included in this category, namely the construction, tourism, and corporate services sectors. At the end of the period, none of the sectors included in the fast-growing category were only 3 sectors that were in the developing category (positive PS and negative DS), namely the mining and quarrying, transportation, and information and communication sectors.

The results of the Shift-Share Analysis and sectors growth showed that agriculture, forestry, and fisheries, manufacturing, and tourism (providing accommodation and drink food) throughout 2013-2017 were declined. While the mining and quarrying sector experienced fluctuating growth from the developing to highly potential categories. In addition, to the four sectors that were expected to be the driving force for economic activity in North Kolaka District, there are three sectors that had increased during 2013-2017, but these three sectors (Real Estate Sector; Government Administration, Defense and Mandatory Social Security; Health Services and Mandatory Social Activities) were still in the highly potential category which means that these three sectors do not have links to other sectors in North Kolaka Regency but have a competitive advantage at the provincial level.

Based on the modification of the Shift Share Esteban Marquillas, the competitive advantage component generated comes from competitive advantage with its specialization due to the allocation effect. It also shows the potential and condition of the factors that influence the competitiveness of the Water Supply, Waste, Waste and Recycling sector; Financial Services and Insurance; Company Services; and Mandatory Government Administration, Defense and Social Security in North Kolaka District were possibly measured through the effect of the Sector allocation. Based on the North Sumatra District Shift-Share Analysis, the effect of the sector allocation in 2014-2017 showed that the four sectors were within the CA criteria; S (competitive advantage and Specialization) have competitive and specialized advantages. This means that the four sectors are able to compete quickly from other regional...
economic sectors at the level of Southeast Sulawesi Province, specialization occurs because of the large nature resource potential of the sector in North Kolaka Regency.

Compounding factor analysis found, both at the district and provincial level, the average compounding factor of North Kolaka Regency was 0.13% with an average GDP growth forecasting for North Kolaka in 2018-2021 at 0.21%, while at the provincial level, the compounding factor value was 0.10% by forecasting Southeast Sulawesi GRDP growth of 0.20%.

Table 3. Regency-Provence GRDP Compounding Factor Analysis and Forecasting

| Year   | North Kolaka Regency GRDP | Compounding Factor | Forecasts GRDP | Southeast Sulawesi GRDP Forecasting | Compounding Factor |
|--------|---------------------------|--------------------|----------------|-------------------------------------|--------------------|
| 2014   | 4,581,377.20              | 0.08               | 2018 5,990,413.83 | 5,990,413.83                        | 0.07               |
| 2015   | 4,904,226.00              | 0.11               | 2019 7,188,153.27 | 7,188,153.27                        | 0.09               |
| 2016   | 5,281,340.00              | 0.14               | 2020 9,064,176.57 | 9,064,176.57                        | 0.11               |
| 2017   | 5,598,713.70              | 0.17               | 2021 12,045,283.57| 12,045,283.57                       | 0.14               |

Table 4. Effect of Sector Allocation on GRDP on the 2010 Constant Price of North Kolaka Regency in 2013-2017

| Sectors                                      | Allocation Effects 2014 | Allocation Effects 2015 | Specialization 2014 | Specialization 2015 | Criteria 2015 | Criteria 2016 | Criteria 2017 |
|----------------------------------------------|-------------------------|-------------------------|---------------------|---------------------|---------------|---------------|---------------|
| Agriculture, Forestry, and Fisheries         | 55288                   | 16787                   | -1265               | 1,566,866           | CA; S         | CD; S         | CD; S         |
| Mining and excavation                        | -                        | 32600                   | -38365              | 654,956             | CD; S         | CD; S         | CA; S         |
| Processing industry                          | 2329                    | -229                    | 325                 | 40,542              | CA; S         | CD; S         | CA; S         |
| Electricity and Gas Procurement              | -4                      | 9                       | -1                  | 689                 | CA; S         | CA; S         | CD; S         |
| Water Supply, Waste Management, Waste and Recycling | 567                | -362                    | 71                  | 12,435              | CA; S         | CA; S         | CA; S         |
| Construction                                 | -152                    | 9439                    | 4154                | 514,343             | CD; S         | CA; S         | CA; S         |
| Wholesale and retail trade; Car and Motorcycle Repair | 12776                | -4499                   | -857                | 468,43              | CA; S         | CD; S         | CD; S         |
| Transportation and Warehousing               | 2143                    | -2557                   | -2141               | 70,031              | CA; S         | CD; S         | CD; S         |
| Provision of Accommodation and Food and Drink Information and Communication | 413                      | 178                     | -76                 | 19,766              | CA; S         | CA; S         | CD; S         |
| Financial Services and Insurance             | 1366                    | -1001                   | -115                | 32,341              | CA; S         | CD; S         | CD; S         |

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4. Conclusion

The results of the LQ and DLQ analysis (Carvalho Classification) show the manufacturing and tourism industries (providing accommodation and eating and drinking) in the Low category with Challenging classification. Meanwhile, the mining and quarrying sector is in the medium category with modest classification. And, the agriculture, forestry and fisheries sector is in the very high category with driving classification. MRP analysis shows the information and communication sector at the district and provincial levels are the dominant growth. Tress Index analysis indicates that period economic concentration during the study in North Kolaka Regency continued to increase based on its sector basis.

The results of the Regional Share value of the manufacturing sector and tourism are declined. Net value added in the manufacturing and tourism industries has decreased, while the mining and quarrying sectors have increased. Conversely, fluctuations in net value-added growth occur in the agriculture, forestry and fisheries sectors. The mix of the agriculture, forestry and fisheries, mining and quarrying, processing and tourism industries has a positive value. Thus, there is a link between these sectors and other sectors.

Job base multiplier analysis shows that non-base employment opportunities will increase by 9.88%. The result of Shift-Share Analysis represents that there is a sector decline from the fast-growing category (potential for fast growth and high competitiveness) back to the position of the developing category (potential for fast growth and low competitiveness). The agriculture, forestry and fisheries sector and the manufacturing industry experienced a decline. While the mining and quarrying sector experienced fluctuating growth from the developing to highly potential categories. Real Estate Sector like Government Administration, Defense, and Mandatory Social Security as well as Mandatory Health Services and Social Activities have increased in the high potential category. This means that these three sectors do not have links to other sectors in North Kolaka District but have competitive advantages at the regional scale of Southeast Sulawesi Province. According to Esteban Marquilas’ Shift Share Results, the effects of the allocation of the Industrial, Tourism, Agriculture, Forestry, and Mining sub-sectors and excavation have a competitive advantage and are specialized. Compounding analysis factors find out the economic growth by sector and overall total GRDP during the planning period. The results of the analysis of the development of the economic driving sector and economic investment opportunities in North Kolaka Regency during the planning period (2018-2021) discovered that the manufacturing and tourism industries are expected to be the driving sectors of economic activity because both sectors have competitive and specialized advantages.
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