CHAPTER III

RESEARCH METHODOLOGY

A. Data Source

1. Population of Data

   Population means all of research subject, the set of entities under study or total number from unit of analysis which characteristics would be suspected. Population in this research are sub sector of GRDP in Pontianak regency and Pontianak province that calculated at constant market prices.

2. Sample of Data

   Sample means partially or representative of the population studied. The technique of sampling in this research is purposive samplethat sampling way based on certain purpose. This technique performed on several considerations, because limited of energy, time, and funds so it can't take a sample of large and far. Sample in this research is GRDP at constant market prices from 2010 until 2014.

B. Research Variable

Variable means research subject that a characteristic, number, or quantity that increases or decreases over time, or takes different values in different situations

or research subject that become a focus point in research. In this study, variable as a subject of research include:

a. Economic growth rate

      Economic growth rate is an increase in RGDP, regardless whether that increase larger or smaller than population growth, or whether changes in economic structure are valid or not. Economic growth rate is measured by RGDP growth indicators from year to year, which is expressed in percent per year. This analysis is used to determine regional development seen from RGDP growth each year.

      Economic growth is an increase in the capacity of an economy to produce goods and services compared from one period of time to another. It can be measured in nominal or real terms, or can be called adjusted for inflation. Traditionally, aggregate economic growth is measured in terms of Gross National Product (GNP) of Gross Domestic Product (GDP), although alternative metrics are sometimes used.

      In simplest terms, economic growth refers to an increase in aggregate productivity. Often, but not necessarily, aggregate gains in productivity correlate with increase average marginal productivity. This means the average labor in a given economy becomes, on average, more productive. It is also possible to achieve aggregate economic growth without an increased average marginal productivity through extra immigration or higher birth rates.

b. Growth of economic sectors

Growth of economic sectors is growth from value of goods and services from every sector of economy which calculated from RGDP at constant market prices in 2010-2014 and expressed as a percentage.

c. Regional Gross Domestic Product (RGDP)

Is a subnational gross domestic product for measuring the size of that region's economy. In production perspective, RGDP is total value of net production of goods and services produced by various production units within a region during time period is one year. That unit of production grouped by nine sectors.

Regional gross domestic product (RGDP) is conceptually equivalent to gross domestic product (GDP); the latter measures newly created value through production by resident production units (or residents in short) in the domestic economy, while for the former measures newly created value through production by regional production units (or regional residents in short) in the regional economy.

In this research using RGDP at constant market price, that market prices based on year selected at 2010 until 2014. Calculating using this constant market price because has been cleared from inflation element.

d. Economic sectors

Economic sectors means sector that forming RGDP number that has a big role in determining rate of economic growth. In this case, Central Bureau of Statistic divide that economic sectors become nine sectors as explained in above.

One classical breakdown of economic activity distinguishes three sectors:

1) Primary: involves the retrieval and production of raw materials, such as corn, wood, coal, and iron. (A coal miner and a fisherman would be workers in the primary sectors)

2) Secondary: involves the transformation of raw or intermediate materials into goods example manufacturing steel into cars, or textiles into clothing into goods e.g. manufacturing steel into cars, or textiles into clothing. (A builder and a dressmaker would be workers in the secondary sector)

3) Tertiary: involves the supplying of services to consumers and business, such as baby sitting, cinema, and banking. (A shopkeeper and an accountant woul be workers in the tertiary sector)

e. Component of Share

Is GRDP growth in a region if its growth is equal to increment of GDP province during certain time period. The final component of SSA is the Competitive Share (CS) indicator. The competitive share component is often viewed by researchers as the most imprtant of three because it is only SSA variable which can be directly influenced by the local population. The CS component measures the growth in an industry locally and nationally; and the result, gigure represents the regions competitiveness for that industry. This measurement is calculated by

"multiplying local employment in each economic sector by difference in growth rate of that sector locally and nationally" (Hustedde et al. 2005,36).

f. Component of Net Shift

Is component of value to indicate deviations from Nj in the regional economy.

g. Component of Shift Differential

Is a component to measure Shift Net used by certain sectors that are growing faster or slower in a region concerned in comparison with the province.

h. Component of Shift Proportional

Is a component that used to produce number of Shift Netto as a result of GRDP that concerned change. Component has positive value if that region specialize in a sector which at the provincial level is growing rapidly, and has negative value when specializes in a sector at the provincial level is growing slowly.

C. Method of Data Analysis

Method that used to analyze the data in this research these are:

1. Location Quotient (LQ)

A location quotient (LQ) is an analytical statistic that measures a regions industrial specialization relative to a larger geographic unit (usually the nation). LQ is computed as an industry's share of a regional total for some economic statistic (earnings, GDP by the metropolitan, area, employment, etc) divided by

the indutry's share of national total for same statistic. For example, LQ of 1.0 in mining means that region and the nation are equally specialized in mining; while a LQ of 1.8 means that region has a higher concentration in mining than the nation.

Location quotient (LQ) are a simple tool used to determine the spatial distribution of a phenomenon district, compared to an entire region (used for spatial data, human geography, and economics). The value of each location quotient is given by the formula above using share of the phenomenon observed, sum of shares, total (T) phenomenon and grand total (sum of T).

Location Quotient (LQ) are frequently used in demography, economics and any type of location analysis. LQ is an index for comparing the importance of a phenomenon's share with general phenomenon over a certain area.

The Location Quotient (LQ) is a popular indirect method of identifying export industries because it is easily applied and interpreting the results requires little expertise. Fundamentally, the LQ measurement assesses "the extent to which total export employment is spread among various industries and whether the economic base is becoming more diversified over time or more widely spread among industries" (Galambos and Schreiber 1978, 20). Locattion quotients are calculated for each industry to determine if local economy has a greater proportion of each industry that the national economy. Thus, location quotient can reasonably to determine which industries are comparatively

exporting their goods and service and extent of their involvement in "driving" the local economy.

Another function of LQ is that it can be used comparatively against LQ of another region which similar size and structure. For example, if region B is robustly exporting godds and services in a specific sector and region A is aware of the circumstances with LQ, then region A can adjust its economic startegy accordingly. Region A can choose to select an alternate type of industry to encourage or local official can addopt an approach that aggresively challenges region B's dominance in that sector. In either scenario, using LQ to asses the strengths and weaknesses of surrounding communities provides policy makers with a competitive advantage in determining which direction will local economy should move.

This technique is used to identify internal potential that owned by a region which some basic sector and which sector is non basic sector. Basically, this technique shows a relative comparison between the ability of one sector among some regions researched by the ability of same sector in wider region. That relative comparison can be expressed mathematically as follows:

$$LQ = \frac{\frac{S_i}{S}}{\frac{N_i}{N}}$$

LQ : Value of Location Quotient
S_i : GRDP Sector i in Pontianak regency
S : GRDP total in Pontianak regency
N_i : GRDP Sector i in Pontianak province
N : GRDP total in Pontianak province

The units can be used to generate coefficients that the unit number of workers, or the unit of production or other units that can be used as a criteria.

If the calculation results show LQ>1, meaning that basis sector and potential for export, while the LQ<1, meaning that isn't basis sector (local sector/import).

This technique makes an assumption that all of populations in a region have same demand patterns with pattern of national demand (regional). That productivity of every worker in each industry sector at a region is same as productivity of workers in national industry. Every industry produces homogenous goods in each sector, so system economy of nation is a closed economy.

Analysis of LQ has used because this analysis has certain advantages. Some advantages from this analysis, can show structure of economyin a region and industry of import substitution potential or products that can be developed for export and show potential industries for further analysis. And some weaknesses from this analysis, more descriptively, temporary conclusion, not much attention with economic structure. This is considering that production result and productivity of labor in every region is different, and also differences in natural resources that could be developed in each region.

2. Analysis of Shift-Share

This analysis is used to determine the performance or productivity of a region, structure shift, relative position of economic sectors and identification of potential sectors economy in a region and then compare it to a larger area (regional/national).

Shift share analysis is a quantitative technique that is commonly used to analyze changes in the economic structure of the region relative to the economic structure of the higher administrative region as a comparison or reference. For this purpose, this analysis uses three basic information related to each other (Tri Widodo, 2006).

Complementing the EBA, shift share analysis (SSA) is another trusted and renowned economic development model. The SSA is "designed to interpret a region's growth in terms of the dynamics of its industrial structure by decomposing differences between the value of a chosen variable as observed regionally and nationally" (Buck, 1970). Simply put, a shift share analysis concentrates on local employment fluctuations over a specific period of time and compares them against national employment trends. Similarly, the shift share analysis can use of variety of economic variables to perform the study. However, employment data is not often used. The local and national employment data used to perform the analysis in this research.

Shift share analysis can give a description of total economic change that is attributable to the growth of the national economy, the industrial mix of the region, and the competitiveness of the local industries. By interpreting the results of shift

share analysis, it is possible to explore the advantages of local area, as well as to identify growth, or potential growth industries that are worthy of further investigation. Shift share analysis deconstructs a regional economy into threee primary components there are: industrial mix, national growth, and competitive share.

This analysis provides data about economics performance in three areas that relate to each other (Kuznet, 2003). Three areas that relate to each other includes:

a. Regional economic growth is measured by analyzing the changes in aggregate of sub sector progress then made a comparison with same economic sector as a reference, so that changes and comparison will be known.

b. Proportional shift is used to measure the relative changes, growth or decline, in a region compared to larger economy as a reference. These measurements allow us to determine whether the region's economy that concentrated in industries are growing faster than economy as a reference.

c. Differential shift is used to support in determining how far the competitiveness of local industry with economy that used as a reference. Therefore, if a differential shift from one industry is positive, then that industry has higher competitiveness compared to same industry in the economy as referenced. Formula from analysis of shift share as follows:

$G_j: Y_{jt} - Y_{jo}$

$: (N_j + P_j + D_j)$

$N_j: Y_{jo} (Y_t / Y_o) - Y_{jo}$

$(P + D)_j: Y_{jt} - (Y_t / Y_o) Y_{jo}$

$: (G_j - N_j)$

$P_j: \Sigma_i [(Y_{it} / Y_{io}) - (Y_t / Y_o)] Y_{ijo}$

$D_j: \Sigma_t [Y_{ijt} - (Y_{it} / Y_{io}) Y_{ijo}]$

$: (P + D)_j - P_j$

Where:

G_j: Growth of total GRDP in Pontianak regency

N_j: Component of *Share* in Pontianak regency

$(P + D)_j$: Component of *Net Shift* in Pontianak regency

P_j: *Proportional Shift* Pontianak regency

D_j: *Differential Shift* Pontianak regency

Y_j: Total GRDP Pontianak regency

Y : Total GRDP Province of West Borneo

o,t: First period and last period of calculation

i: Sub sector in GRDP

If $D_j > 0$, that mean growth of sector i in Pontianak regency faster than growth in same sector in West Borneo province and if $D_j < 0$, that mean growth of sector in Pontianak regency relatively slower than growth in same sector in West Borneo province.

When $P_j > 0$, that mean Pontianak regency will specialize in a sector that in provincial level is growing faster. Conversely, if $P_j < 0$, that mean Pontianak regency will specialize in a sector that in provincial level is growing more slowly.

3. Analysis of Growth Ratio Model/Model Rasio Pertumbuhan

This analysis is an analytical tool to see a description of activity or potential economic sector based on criteria of regional economic structure growth, both external and internal (Yusuf, 1999).

This analysis model is derived from original equation in Shift Share analysis, namely Differential Shift and Proportional Shift. Mathematically Differential Shift can be write as:

$$D_{ij} = \left[\frac{\Delta E_{ij}}{E_{ij(t)}} - \frac{E_{IR}}{E_{IR(t)}} \right] E_{ij(t)} \quad (1)$$

And Propotionality Shift can be write:

$$P_{ij} = \left[\frac{\Delta E_{IR}}{E_{IR(t)}} - \frac{\Delta E_R}{E_{R(t)}} \right] E_{ij(t)} \quad (2)$$

So from the above equation derived formulas calculated as follows:

$$\Delta E_{IR} = E_{IR\,(t+n)} - E_{IR\,(t)} \quad (3)$$

$$\Delta E_R = E_{R\,(t+n)} - E_{R\,(t)} \quad (4)$$

Explain :

ΔE_{ij} : Revenue changes activity in studied area at a period t and t+n

ΔE_{IR}: Revenue changes activity in reference area;

ΔE_R: GRDP changes activity in reference area

E_{ij}: Revenue activity in studied area

E_{IR}: Revenue changes activity in reference area

E_R: GRDP in reference area

t+n : year between two period.

Approach from this analysis divided into two ratios, are: (1) ratio of reference area growth (RPR) and (2) ratio of studied area (RPS).

(1) Rasio Pertumbuhan Wilayah Referensi (RPR) / Ratio of Reference Area Growth

RPR is the ratio between rate of revenue growth activity of i reference area with growth rate of total activity (RGDP) reference area.

$$RP_R = \frac{\Delta E_{iR}/E_{iR}(t)}{\Delta E_R/E_R(t)}$$

Explain:

ΔE_{iR} : Revenue changes activity in reference area

$E_{iR}(t)$: Revenue activity in first period research in reference area

ΔE_R: GRDP changes activity in reference area

$E_R(t)$: GRDP in first period research in reference area

If value of $RP_R > 1$ Þ positive (+), that means growth of a particular sector in a reference area is higher than GRDP growth of total reference area.

If value of RPR < 1 Þ negative (-), that means growth of a particular sector in a reference area is smaller than GRDP growth of total reference area.

(2) *Rasio Pertumbuhan Wilayah Studi (RPs) / Ratio of Studied Area*

RPS the ratio between rate of revenue growth activity of is studied area with growth rate of total activity (RGDP) reference area.

$$RPS = \frac{\Delta E_{ij} / E_{ij}(t)}{\Delta E_{iR} / E_{iR}(t)} \quad (6)$$

Explain:

ΔEij : Revenue changes activity in studied area

$Eij(t)$: Revenue changes activity in first period research of studied area

ΔEiR : Revenue changes activity in reference area,

$EiR(t)$: Revenue changes activity in first period research in reference area

If value of RPs > 1 Þ positive (+), that means growth of a particular sector in a studied area is higher than RGDP growth of total reference area.

If value of RPs < 1 Þ negative (-),that means growth of a particular sector in a studied area is smaller than RGDP growth of total reference area.

Result from this MRP analysis can be classified:

- Classification of 1, is value of RPR (+) and RPS (+) means that such activity at provincial level have a prominent growth and likewise at regency level. This activity is referred to dominant growth.

- Classification of 2, is value of RPR (+) and RPS (-)means that such activity at provincial level have a prominent growth, but at regency level did not prominent.

- Classification of 3, is value of RPR (-) and RPS (+) means that such activity at provincial level have not prominent growth while in regency level including prominent growth.

- Classification of 4, is value of RPR (-) and RPS (-)means that such activity at provincial level and a regency level have low level of growth.

4. **Klassen Typology**

Klassen Typology analysis is used to see an overview of structure and pattern of growth from each economic sector. The description of structure and pattern of growth from this area, can be used to estimate growth economic prospects in the future regional. In addition, it can also be used as a material consideration in determining the development policy area.

Analysis tool of Klassen Typology is used to determine an overview of the economic growth pattern and structure of each region. Klassen Typology basically divided areas based on two main indicators, namely regional economic

growth and per capita income of area. Through this analysis, there are four characteristics of structure and pattern of economic growth that is different, namely: high growth and high income, high income but low growth, high growth but income, and low growth and low income (Kuncoro dan Aswandi, 2002: 27-45) dan (Radianto, 2003: 479-499).

Based on area typology, an area divided into 4 classification, are:

1) *Rapid developed region*is an area that has economic growth rate and per capita income higher than the average region.

2) *Pressed developed region*is an area that has a higher per capita income, but its economic growth rate is lower than average.

3) *Fast developed region* is an area that have high levels of growth, but rate per capita is lower than average.

4) *Low developed region* is an area that have high levels of economic growth and low per capita income.

In the analysis, there are four classifications of economic sectors which have different characteristics, namely, rapid growth sector, retarded sector, growing sector, relatively backward sector that can be seen in table 3.1.

Table 3.1.
Economic Sector Classification According to Klassen Typology

GRDP per capita (y)		
Growth rate (r)	$yi > y$	$yi < y$
$ri > r$	Rapid developed region	Fast developed region
$ri < r$	Pressed developed region	Low developed region

Explain:

r = Growth average of regency/city

y = RGDP per capita average of regency/city

ri = Economic growth of regency/city that observed

yi = RGDP per capita of regency/city that observed

5. Analysis of Overlay

This Overlay analysis intended to determine sectors or economic activities of potential based on criteria of growth and contribution criteria by combining the results of Method of Growth Ratio (MRP) and method of Location Quotient (LQ). This method has four (4) possibility, namely:

Growth (+) and contribution (+) shows an activity that is dominant both from growth and contribution.

Growth (+) and contribution (-) shows an activity which growth is dominant but smaller contribution. This activity needs to be further improved its contribution to become dominant activity.

Growth (-) and contribution (+) shows an activity which growth is small but big contribution. This activity is very possible that an activity is in decline.

Growth (-) and contribution (-) shows an activity which is not potential even from growth criteria and from contribution.

D. Operational Definiton of Variable

1. Economic Potential

Economic potential that meant in this research is everything that belongs to the areas that might or should be developed so that it will continue to be a source of livelihood of the local people and even can help to regional economy as a whole to grow by itself and continuously (Tarigan, 2007)

2. Regional Gross Domestic Product (RGDP)

Regional Gross Domestic Product (RGDP) is the amount of value-added goods and services produced of all economic activities in a region (BPS, 2010). The RGDP is one indicator for the economic development in a region.

The RGDP is calculated based on current prices and at constant prices. RGDP seen in this study based on 2010-2014 at constant prices.

3. **Economic Growth**

Growth in this case is the average of RGDP growth since year 2010-2014 were calculated using the formula:

a. For growth by industrial used $(E^*ij - Eij)/ Eij$

b. For growth by GRDP used $(E^*j - Ej)/ Ej$.

Where :

E = Output

I = Industrial (sector)

J = regency/city

*last year

4. **Per Capita Income**

Income per capita is one of the indicators used to describe the macro level of social welfare. The higher GDP is acceptable to the population in a region, the welfare of the people in the region can be said to be good. With per capita income can be seen picture of income received by each population. Per capita income is generated by dividing regional revenue by the number of mid-year population.

5. Economic Sector

Referring to the data issued by BPS Regency / City in the province there are nine economic sectors studied, this is all of economic sectors, namely: sector of agriculture, sector of mining, sector of construction, sector of electricity, gas, and water, sector of financial activities, sector of other service activities, sector of trade, hotel, and restaurant, sector of transportation, and sector of manufacturing.

6. Economic Activity

In the regional economic studies there is a term called the economic activity. In this study is the economic activity that is the base of economic activity and economic activity base.