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Agglomeration of Food and Beverage Industries in Regencies and Cities in East Java Province

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Abstract
The focus of this dissertation will discuss about the food and beverage industries as the object of research due to the three main reasons, namely: 1) The high contribution (share) of food and beverage industries is setting up **Gross Regional Domestic Product (GRDP)** of East Java; 2) The phenomena of agglomeration of food and beverage industries in East Java Province and their influencing factors observed from the view point of agglomeration theory; 3) The policy of **MP3EI – Master Plan on Economic Acceleration, Enlargement and Development**. This MP3EI instructs the East Java Province as the Motivating Corridor for National Industries and Services focusing on development of economic activity in food and beverage industries. (MP3EI Document, Coordinating Minister for Economic Affairs of The Republic of Indonesia, 2011:47), so that East Java Province may not ignore in developing the of food and beverage industries.Based on the empirical phenomena and the theoretical review applied, the goals of this research are as follows: 1) To do the mapping on the **'excellent'** food and beverage industries in Regencies / Cities in East Java; 2) To measure the agglomeration indexes in each regency / city. 3) To calculate and to analyze the influence of manpower wage variables, the export, outputs and index of the regional competing power to the agglomeration of food and beverage industries. 4) To analyze the correlation among the regions of food and beverage industries. The analytical tools applied in this research are: **LQ Analysis, Balassa index, Ordinary Least Square (OLS) Analysis**, and **Moran Index Analysis**.The outputs of agglomeration analysis indicate: 1) The biggest agglomeration indexes in the year 2012 were as follows: Regency of Situbondo (4.05) and Regency of Trenggalek (2.03) in which those two regions are based on natural resources. 2) Agglomeration of food and beverage industries in regencies / cities undergo the shift, in which in the year 2000 the regions experiencing the agglomeration such as Bangkalan, Sampang, Pamekasan, Sumenep, Lamongan, Jombang, Nganjuk, Madiun, and Pacitan; but in the year 2012 those regions do not undergo any agglomeration (non-agglomerated). Output of analysis on factors motivating the occurrence of agglomeration are variables of manpower wages, export and index of positive significant competing power causing the increase in concentration of temporary industrial regions (agglomeration), meanwhile the outputs of food and beverage industries do not influence the occurrence of agglomeration of food and beverage industries in regencies / cities in East Java.Outputs of analysis on correlation among regions by using Moran's Index in perspective of manpower amount working in food and beverage industries that in the year 2010 (0.256) and in 2012 (0.151) indicate the positive index in the occurrence of autocorrelation, but its correlation is weak. Such condition shows that the manpower in food and beverage industries in regencies / cities in East Java is not inter-regionally influenced at the place where such manpower is available (independent).
Keywords: Food and Beverage Industries, Agglomeration, Moran's index.

I. INTRODUCTION

National development is an effort to improve the Indonesian people and communities conducted continuously and in sustainable way based on our national ability by utilizing the progress of science and technology by viewing the challenge of global development.

Table-1: Contribution in the Sector of Manufacturing Industry

Business Sectors	2012 (%)	2013 (%)	2014 (%)	2015 (%)	1st Quarter of 2016
Agriculture	15.38	14.91	13.61	13.75	14.22
Manufacturing Industry	27.13	26.60	28.95	29.27	29.18

Source: BPS – Board of Statistics, East Java, August 2016.

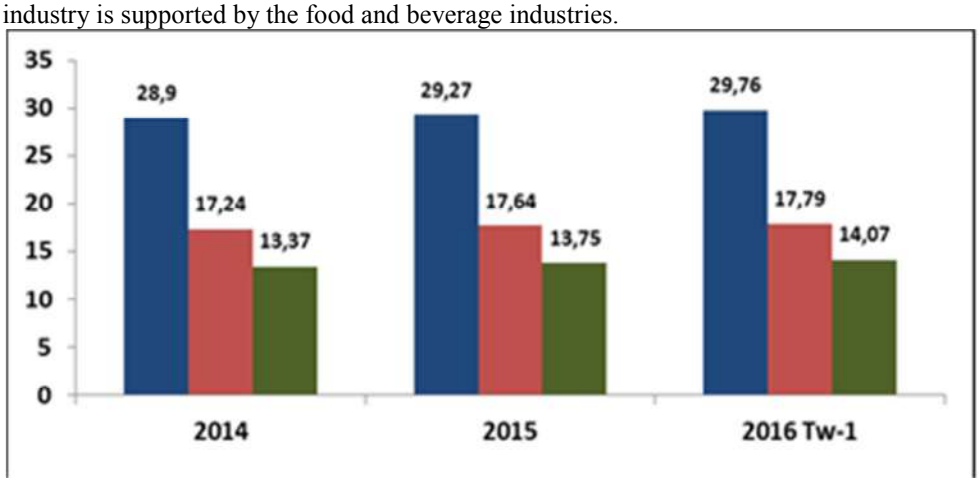
The development target above can be achieved if the industrial sector is used as a motor for innovation and for the growth of national economy. The growth in this sector will be able to provide the job opportunities, to provide the needs for national services and goods, and to provide contribution in setting up the Gross National Product ***(Subuh SP., 2013:1).***

Three reasons why industrial sector is used to be the key sector for regional economic growth and development are as follows: ***First,*** industry is the only economic sector able to produce the biggest added value and the biggest contributor to the growth of Gross Regional Domestic Product (GRDP). ***Second***, industry can be the pulling and the pushing agents to the development and the growth of outputs in other economic sectors.

Third, industry is the most important sector for the technological development which then can be spread out through the *spill-over effects* to the other sectors ***(Tambunan, 2006 in Neli Rahmawati, 2012)***.

East Java as one of the supporting regions for the national economy also relies on the sector of manufacturing industry to be the activating motor in regional economic development. During the last five years, the contribution of the sector of manufacturing industry has got an increase, while the contribution in the agricultural sector continuously has undergone the decrease.

The focus of this research is to discuss the food and beverage industries, because: ***First***, East Java in the first quarter of 2016 the economic structure is still dominated by the business sector in manufacturing industry, namely at the amount of 29.76%, the big scaled trading and retailer at the amount of 17.79% and the agricultural sector at the amount of 14.07%. Meanwhile 30.03% of the business sector of the aforesaid manufacturing industry is supported by the food and beverage industries.



Drawing-1: The Economic Structure of East Java Province
Source: BPS – Board of Statistics, East Java, August 2016.

Second, the policy of MP3EI – Master Plan on Economic Acceleration, Enlargement and Development declares that East Java which is in the Corridor of Economic Development in Java Island shall serve as the Motivating Corridor for National Industries and Services focusing on development of economic activity in food and beverage industries. (MP3EI Document, Coordinating Minister for Economic affairs of The Republic of Indonesia, 2011:47).

At the national scope, the food and beverage industries are significant contributors to the Gross Domestic Products of Indonesia, namely 5.5% in 2015, in which the investment in the year 2015 reached 43 trillion Rupiahs ***(Tribunnew.com, October 5, 2016).***

Third, the approach of agglomeration theory, namely the causing factor or the motivating factor for the agglomeration of food and beverage industries in East Java Province, so that the Government Policy in developing the food and beverage industries in East Java become more sustainable in the future. Is it true that the food and beverage industries tend to be located inside and or around the cities, just like the other manufacturing industries or even in adjacent to their raw materials (resource-based) ?

In line with fast development of industrialization, namely more increasing number of industries available in East Java, it will shift the sector of agriculture, pursuant to the theory ***W. Arthur Lewis in Todaro (2006:132)*** stating that the difference in the level of wages between the agricultural and industrial sectors motivate the switch of manpower from agricultural to the industrial sector, then urbanization takes place. The manpower who switches from the agricultural sector to the industry will obtain higher income, so that the demand for the agricultural product (food) will increase. This motivates the growth of output in that sector.

To know the overall illustration related to the food and beverage industries becoming the products of excellence of regencies / cities in East Java Province, and also the occurrence of agglomeration of industries and the inter-correlation among regions becomes very strategic and urgent in order to give the input for policy in implementing the economic development of East Java in the future.

II. LITERATURE REVIEW

The economic growth is a process of change of the economic condition of a certain country in a sustainable way leading towards a better condition during for a certain period. Meanwhile, the development of regional economy is a process in which the regional government and community are able to manage the existing resources and setting up a partnership pattern between the regional government and the private sectors to establish new job opportunities and stimulate the growth of economic activities (economic growth) in a certain region ***(Arsyad, L., 2010:374).***

The regional development shall also accommodate the spatial structural condition, such as urban centers, rural centers, isolated regions (lagging regions), growth centers (growth poles). ***(Ishander, 1995 in Riyadi and Bratakusumah, 2003)***. The policy on economic growth and development should be more prioritized on the sub-sectors of excellence possessed by each regency / city, by continuously viewing the other sub-sectors proportionally pursuant to the potentials and opportunities of their development. ***(Kuncoro, 2004).***

Montgomery (1988) in Kuncoro (2002:24) defines that agglomeration is a spatial concentration of the economic activities at the urban areas due to the economization as a result adjacent locations (economies of proximity associated to the spatial cluster of the company, the workers, and the consumers. The localization economies come out because of the geographical proximity to the sources of raw materials, manpower, and the knowledge spill-over offering the spatial concentration.

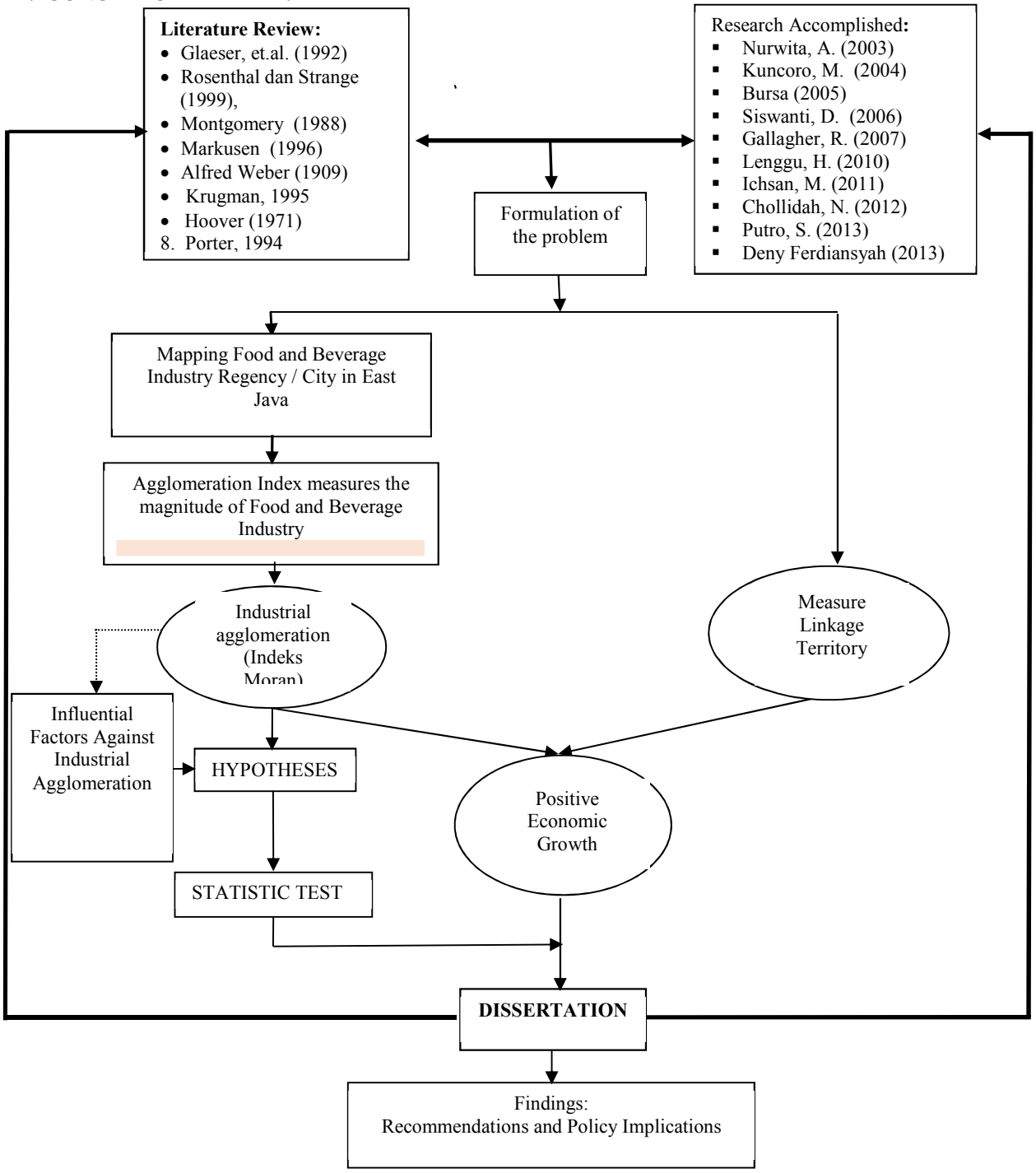
The influences of economic variables to agglomeration and the contrary - the agglomeration aspects to the economic activities can be explained by using the concept of agglomeration economies.

The existing empirical analysis base on econometrics usually applies the following variables: 1) Manpower or the manpower growth ***(Glaeser, Kallal, Scheinkman, and Shleifer, 1992; Keeble, 1976).*** 2) The growth of Output ***(Mody & Wang, 1997).*** 3) The growth of Quotient modified from the Location Quotient (LQ) ***(Shilton and Stanley, 1999).***

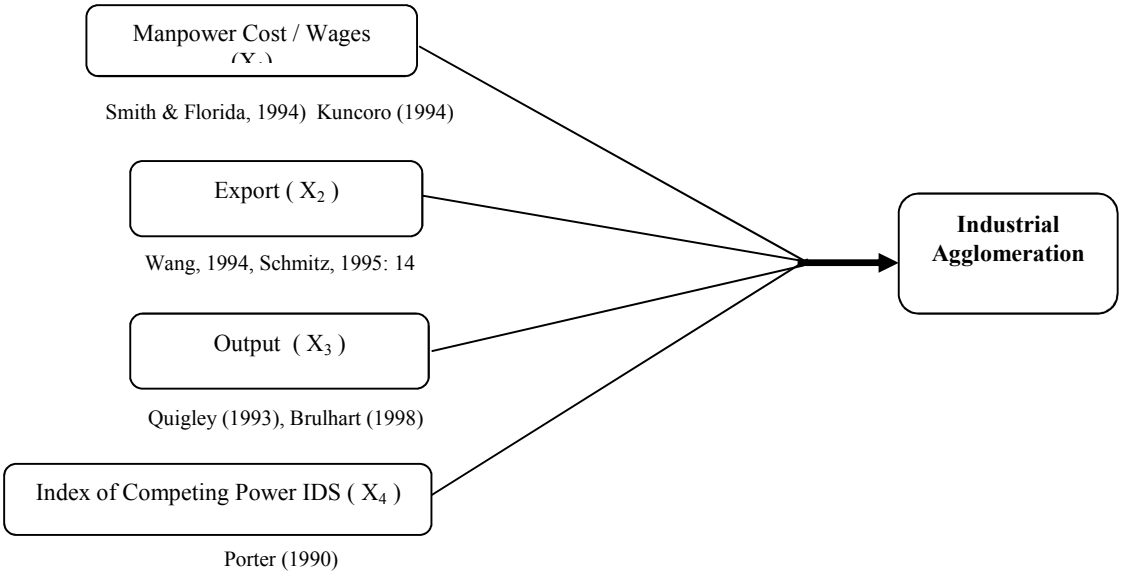
The new theory of geographical economy emphasizes on the presence of circular causality mechanism to explain the spatial concentration of the economic activities. ***(Krugman and Venables in Martin & Ottavianno, 2001).*** In the said model, the centripetal strength derives from the various consumptions or the variety of intermediate goods on production side. The centrifugal power comes from the pressure possessed by geographical concentration from the local input market offering higher prices and spreading the demand. If the transportation cost is sufficiently low, then agglomeration will occur.

The Spatial Statistics is a statistical method applied to analyze the spatial data. The spatial data is a data containing the information on *"location",* so it is not merely *"what"* is being measured, but it shows the location where such data is available. ***(Banerjee, S., 2004 in Triastuti Wuryandari, 2014).*** The spatial data can be in the forms of information about the geographical location, such as positions of latitude and longitude of each region and the borders among regions and can be presented in the form of thematic map.

III. CONCEPTUAL FRAME:



Drawing-2: Conceptual Frame
Source: Processing Output, 2016.



Drawing-3: Factors Influencing the Agglomeration
Source: Processing Output, 2016.

Free variables,
namely: Manpower Cost / Wages (X1), Export (X2), Outputs (X3), Index of Competing Power (X4) and the Bound Variables, namely the Industrial Agglomeration (Y).

IV. METHOD OF RESEARCH

Techniques of analysis applied in this research among others are as follows:

a. **LQ Analysis (SLQ/DLQ Analysis)** to map the 'excellent' food and beverage industries in Regencies / Cities in East Java Province.
b. **Balassa Index Analysis** to know the magnitude of agglomeration index of food and beverage industries in Regencies / Cities in East Java Province.
c. **Ordinary Least Square (OLS) Analysis** to know the factors influencing the agglomeration.
d. **Regional Inter-Connection Analysis** (Moran's index).

Static Analysis Quotient (SLQ):

$$SLQ = \frac{Vik/Vk}{Vip/Vp} \quad \text{..... (1)}$$

Vik = Output value / Gross Regional Domestic Product (**GRDP**) in the sector of ***i*** (food and beverage industries) and the area of study ***k*** (regencies / cities) at the GRDP at the area of study ***k***.
Vk = Total GRDP of sectors in area of study.
Vip = Output value / Gross Regional Domestic Product (**GRDP**) in the sector of ***i*** (food and beverage industries) and the area of reference ***p*** (province) for example in setting up the GRDP at the ***p*** area of reference.
Vp = Output / total overall Gross Regional Domestic Product (**GRDP**) in the sector of ***i*** (food and beverage industries) at the area of reference ***p.***
SLQ>1: Basis Area; **SLQ < 1:** Non-basis Area; **SLQ= 1:** the same Production Scale.

Dynamic Analysis Quotient (DLQ)

$$DLQ = \frac{(1+gik)/(1+gk)}{(1+Gip)/(1+Gp)} \quad \text{..... (2)}$$

gik : The average growth rate of output / Gross Regional Domestic Product in sector ***i*** (food and beverage industry) at the area of study ***k*** (regency/City).
gk : The average growth rate of the Total Gross Regional Domestic Product in all sectors at the area of study ***k*** (regency/City).
Gip : The average growth rate of output / Gross Regional Domestic Product in sector ***i*** (food and beverage

industry) at the area of reference ***p*** (province, for example) in setting up the output / Gross Regional Domestic Product at ***p*** area.

Gp : The average growth rate of the Total Gross Regional Domestic Product in all sectors (food and beverage industry) at the area of reference ***p.***

Table-2: Classification of Industrial Regions

Criteria	SLQ < 1	SLQ > 1
DLQ>1	Reliable Region	Region of Excellence
DLQ<1	Left-Behind Region	Prospective Region

Source: Kuncoro, 2002 in Deny F. 2013.

Balassa Index:

$$Balassa = \frac{\left(\frac{\sum ij}{\sum jEij}\right)}{\left(\frac{\sum iEij}{\sum i\sum jEij}\right)} \quad \text{..... (3)}$$

In which:

i = Sector

J = Zone or Region

E = Manpower

The modeling in this research is as follows:

$$Y = \beta_0 + + \beta X_{1rt} + \beta X_{2rt} + \beta X_{3rt} + \beta X_{4rt} + e_{rt} \quad \text{..... (4)}$$

In which:

Y : Industrial Agglomeration (1 is industrial agglomeration zone, 0 is non-industrial zone).

X1 : Manpower Cost / Wages.

X2 : Export.

X3 : Output.

X4 : Index of Competing Power

ert : Level of error (Error Term)

Moran Index:

Moran Index can be calculated by using the Formula as follows:

1. Moran Index with non-standardized matrix of regional scale W*.

$$I = \frac{n}{S_0} \frac{\sum_{i=1}^{n} [(x_i - \bar{x}) \sum_{j=1}^{n} W_{ij}^{*} . (X_j -]\bar{x})}{\sum_{j}^{n} [(x_i -]\bar{x})^2}$$

with $S0 = \sum_{i=1}^{n} \sum_{j=1}^{n} W^{*}_{ij}$ (total cross products)

within the matrix notation:

$$I = \frac{n}{S_0} \frac{(x - \bar{x})' W^{*} (x - \bar{x})}{(x - \bar{x})' (x - \bar{x})}$$

In which:

x : nx', the vector of observation score x.

x : nx', the average vector of x.

2. Moran Index with standardized matrix of regional scale W*.

$$I = \frac{\sum_{i=1}^{n} (x_i - \bar{x}) \sum_{j=1}^{n} W_{ij} . (X_j - \bar{x})}{\sum_{j}^{n} (x_i - \bar{x})^2}$$

Within matrix notation:

$$I = \frac{(x - \bar{x})' W (x - \bar{x})}{(x - \bar{x})' (x - \bar{x})}$$

In which:

I : Moran Index.
n : Amounts of Event Locations.
xi : Score at location *i.*
xj : Score at location j.
x : Average of the total variables.
w*ij : Element at the non-standardized load between area *i* and area *j.*
wij : Element at the standardized load between area *i* and area *j.*

The score range of the Moran Index in the case of matrix with the standardized spatial load is: **-1≤ 1 ≤ 1.** The score **-1≤ 1 < 0** indicates that there is auto-correlation of negative spatial, whereas the score of: **0 < 1 ≤ 1** indicates that there is auto-correlation of positive spatial, the score of Moran Index equal to zero indicates there is no agglomeration.

The Hypothetical Testing for Moran Index are as follows:

Ho : There is no spatial auto-correlation.
H1 : There is spatial auto-correlation.

- Level of significance: α.
- Statistical Testing:

$$Z(I) = \frac{I - E(I)}{\sqrt{Var(I)}} \sim N(0,1)$$

The expected Value: ……

$$Var(I) = \frac{n^2.S_1 - n.S_2 + 3.S_0^2}{(n^2-1).S_0^2} - |E(I)|^2 \qquad E(I) = -\frac{1}{n-1}$$

In which:

$$S_0 = \sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}$$

$$S_1 = \frac{1}{2}\sum_{i=1}^{n}\sum_{j=1}^{n}(w_{ij} + w_{ji})^2$$

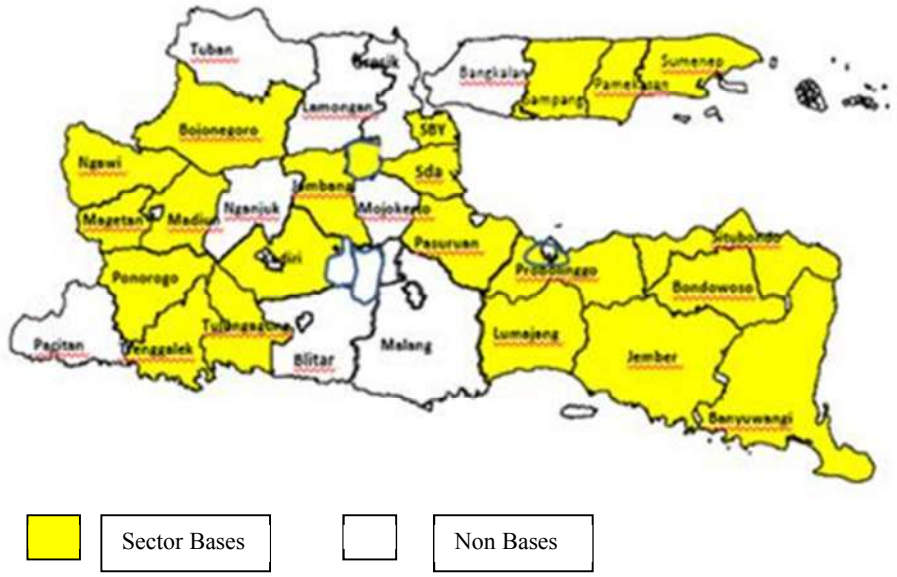
$$S_2 = \sum_{i=1}^{n}\left(\sum_{j=1}^{n} w_{ij} + \sum_{j=1}^{n} w_{ji}\right)^2 = \sum_{i=1}^{n}(w_i + w_j)^2 ,$$

With: $dengan\ w_i = \sum_{j=1}^{n} w_{ij}$

The next stage is analyzing the **Moran Scatterplot**, namely an equipment applied to see the correlation between the standardized observing value and the average value of the neighbors' already been standardized. If combined with the regression lines, it can be used to know the level of compatibility and to identify the outliers. Moran Scatterplot can be used to identify the balance or the spatial influence. **(Anselin, L., 1993).**

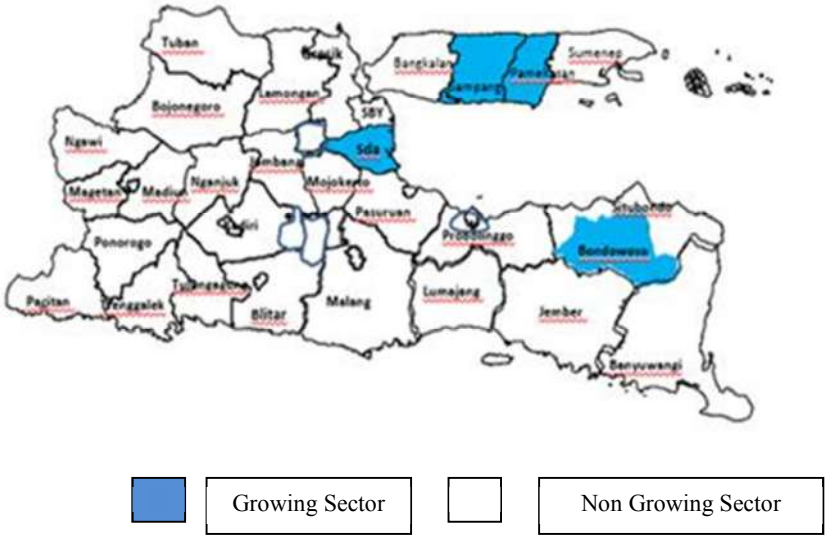
V. RESEARCH OUTPUT AND DISCUSSION

The Mapping of Food and Beverage Industries based on the output of analysis using the *Static Location Quotient (SLQ)* reveals the regions classified as the '**Basis Sector'**, as presented in the following picture:



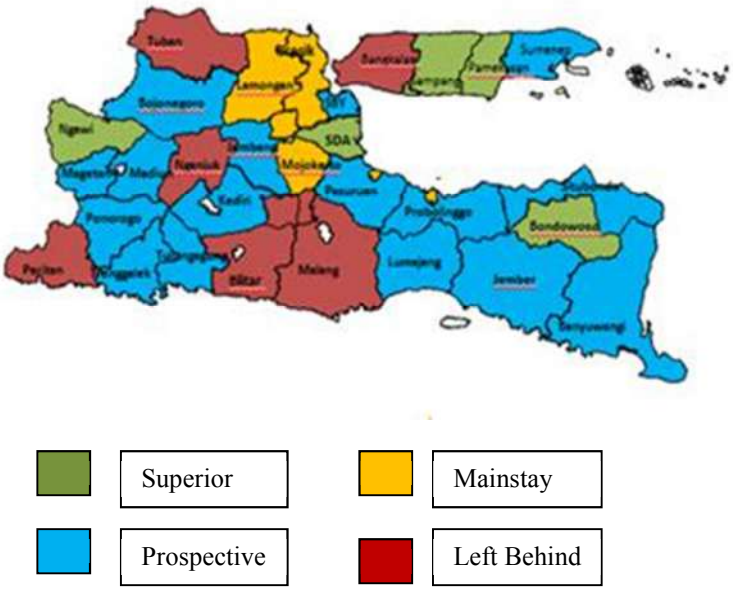
Drawing-4: Mapping of Food and Beverage Industries in East Java as the **Region of Basis Sectors**. Source: BPS, Industrial Sector, processed in 2016.

Meanwhile the output of Dynamic Location Quotient (DLQ) is presented the drawing below:



Drawing-5: Mapping of Food and Beverage Industries in East Java as the **Region of Developing Sectors**. Source: BPS, Industrial Sector, processed in 2016.

The food and beverage industries are one of industrial activities giving the dominant contribution in setting up the **Gross Regional Domestic Product (GRDP)** in East Java. Thirty point zero three percent (30.03%) of the food and beverage industries contribute the manufacturing / processing industry in East Java Province. (BPS of East Java, October 2016), therefore this sector can be classified as the **'Basis Sector'**, namely the sector relatively has a contribution exceeding the average if compared to other sectors; or in other words, the basis activity is to export the commodities and services to the places outside the economic boundaries concerned. Output of the mapping analysis is the location distribution of food and beverage industries in regencies / cities in East Java Province and can be illustrated as follows:



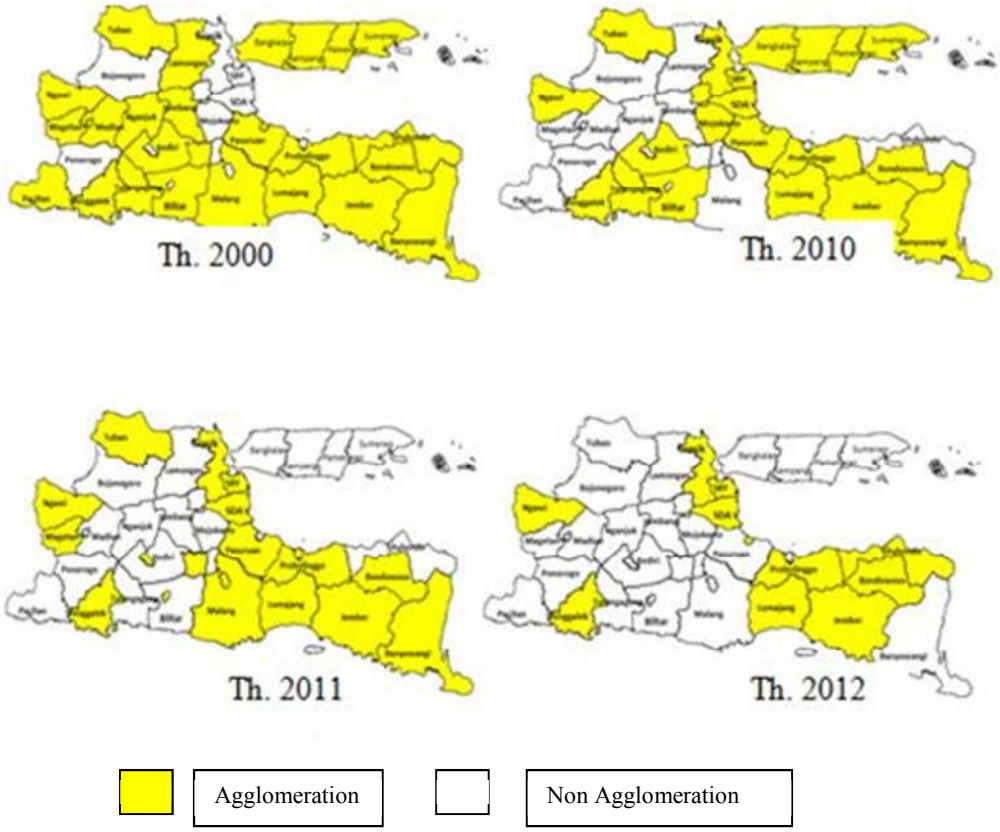
Drawing-6: Region Mapping of Food and Beverage Industries in East Java. Source: BPS, the Processed Data, 2016.

In reference to Drawing-6 above, the regional category classified as the regions of excellence in food and beverage industries are Regency of Bondowoso, Regency of Sidoarjo, Regency of Ngawi, Regency of Sampang, Regency of Pamekasan, meaning that the aforesaid regions have activity characteristics in the sector of food and beverage industries under the basis criteria. It means that the aforesaid regions are capable of producing the food and beverage required by their own regions as well as the capability to supply the other regions and such food and beverage industries have potential to develop in the future.

The category of **Prospective Food and Beverage Industries** are Regency of Ponorogo, Regency of Trenggalek, Regency of Tulungagung, Regency of Kediri, Regency of Lumajang, Regency of Jember, Regency of Banyuwangi, Regency of Situbondo, Regency of Probolinggo, Regency of Pasuruan, Recency of Jombang, Regency of Madiun, Regency of Magetan, Regency of Bojonegoro, Regency of Sumenep, Madiun City, Surabaya City, and Batu City can be interpreted that the aforesaid regions have the capability to make production in the sector of food and beverage industries from the natural resources in the possession of their respective regions. Such a condition indicates that the food and beverage industries constitutes a basic sector, but its development is low if compared to the same industry in other regions. Therefore, the Government is obliged to be present to give the policy touch in the scheme of improving the added value of industry.

Industrial Agglomeration:

Based on the calculation output, the development of food and beverage industries in regencies / cities in East Java can be mapped. Its result is that there has been a shift in agglomeration of food and beverage industries in regencies / cities in East Java Province occurring in the year 2000 in which it is clearly visible that majority of the food and beverage industries in regencies / cities undergo the industrial agglomeration, but the shift occurring in 2012 indicated that the spread of agglomeration in food and beverage industries spatially underwent the decrease in quality, among others in Regencies of Bangkalan, Sampang, Pamekasan, Sumenep, Lamongan, Jombang, Nganjuk, Madiun, and Pacitan became non-agglomerated.



Drawing-7:
The Trend of Agglomeration in Food and Beverage Industries in East Java Province.
Source: BPS, Industrial Survey, Processed Data 2016.

The highest agglomeration in the year 2012 occurred in **Regency of Situbondo** (4.25), followed by **Regency of Bondowoso** (4.05) and **Regency of Trenggalek** (2.03). This is due to the fact that the said regions have the agricultural potential in East Java, so that the development of food and beverage industries in the said regions are also good.

Modeling the Factors Influencing Agglomeration:

Further, in order to know the factors influencing the occurrence of agglomeration of food and beverage industries in East Java Province is conducted by means as follows:

- Based on the logistic regression that the wages with the level of coefficient of 0.142896 and the t-statistic 2.984197, the probability is 0.003. It means that the wok wages significantly influences the occurrence of food and beverage Industrial agglomeration in East Java Province. The model identifies that the higher the work costs (wages) in a certain sector of Industry, the higher manpower growth will increase in the said industrial sector, so that it is very elastic causing the occurrence of industrial agglomeration.

This is in line with the statement of ***Montgomery (1988)*** that agglomeration is a spatial concentration of the economic activities at the urban areas due to the economization as a result of adjacent location (*economies of proximity*) socialized by spatial cluster of the companies, the workers and the consumers ***(Kuncoro, 2012).*** The bigger amount of manpower we have, it will give a more progressive opportunity to the regional economic activities, so that it stimulates the occurrence of industrial agglomeration, triggering the process of acceleration of regional economic growth.

Variables	Coefficient	t-Statistics	Probability	Remarks
Log – Wages	0.142896	2.984197	0.003	Significant
Log – Export	0.043563	3.379038	0.001	Significant
Log – Output	0.036204	0.928455	0.355	Not Signif.
Log – IDS	-1.389930	-1.451858	0.050	Significant

Table-3: Output of Logistic Regression Equation
Source: The Processed Data, 2016.

The Export with the level of coefficient of 0.043563 and t-statistic of 3.379038, significance of 0.001. Export has positive significance at the degree of trust of 5% (five percent) at the amount of 0.001. This identifies that the higher the orientation of an export is, it becomes bigger and more elastic in motivating the

growth of industrial regional agglomeration.

Such a condition is strengthened by **Wang's opinion, in 1994**, that the industrial areas whose level of export is higher tend to be capable of accelerating the progress of productivity on its company rather than the industry whose level of export is low. It means that the productivity of the said area is able to develop, but it has not yet been able to motivate the occurrence of industrial agglomeration at the region of study.

The output with the level of coefficient of 0.036204 and t-statistic of 0.928455, significance of 0.355. The amount of output indicates the non-significant result at the degree of trust of 5% (five percent). This indicates that the higher the output of the sector of food and beverage industries in a certain region, it has not yet been able to significantly motivate the growth of bigger industrial agglomeration. Such a condition reveals that the amount of output does not increase the growth of the manpower amount and the growth of industry significantly at the Regencies / Cities in East Java Province.

The output of this research is not in line with the Opinion of Quigley (1993) stating that agglomeration gives influence to the economic growth of regencies / cities and the condition of the integrated urban will support the various economic activities in the aspects of production of commodities and services become bigger.

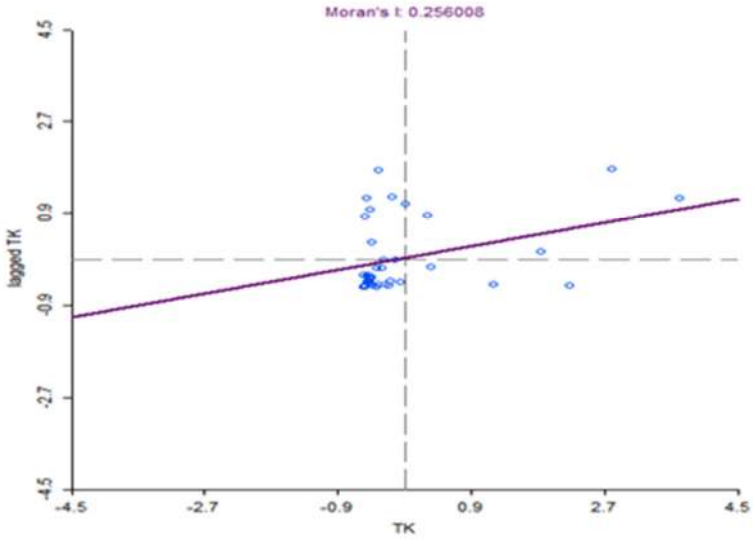
The Competing Power Index with the level of coefficient of - 0.395091 and t-statistic of - 1.987378, the significance of 0.050. The Competing Power Index has the positive significance at the level of trust of **5%** (five percent) at the amount of 0.050. Such a condition indicates that the higher the competing power index in a certain region is, it will influence more the level of agglomeration of food and beverage industries. It means that the regional competing power will make the said region has the power to concentrate at the food and beverage industries; so that it will be able to improve the whole roles and performance of the other industries.

This condition is in line with the Opinion of Porter (1990); the matter of regional competing power is closely related to industrial competing power. A region having a high competing power is a region capable of motivating the existing industries inside; and is always oriented to low price due to low production costs.

Meanwhile, the joint output of model testing declares that the Chi-Square (4, N=114) = 30.97), with the level of significance (F-statistics) p>0.00. This output indicates that certain amounts of descriptive variables are able to jointly give an influence of **30.97%** (thirty point nine seven percent) of acceleration in setting up the industrial agglomeration.

Regional Inter-Correlation:

The manpower input data at the food and beverage Industries obtained from 38 (thirty eight) regencies / cities in East Java Province is conducted by using the **GeoDa Software** as shown below:



Drawing-6: Moran Scatterplot

Source: BPS Industrial Survey, Processed Data, 2016.

The highest value of **Moran Index** for the observation years 2010 – 2012 is 0.256. Meanwhile the **Moran Scatterplot** as presented above, has the dots scattered as follows:

1. **Quadrant-I, HH (High-High)** covers: Regency of Kediri, Regency of Lumajang, Regency of Bondowoso, Regency of Probolinggo, Regency of Mojokerto, Regency of Lamongan, Regency of Bangkalan, Regency of Madiun, and Batu City.
2. **Quadrant-II, LH (Low-High)** covers: Regency of Pacitan, Regency of Ponorogo, Regency of

Trenggalek, Regency of Tulungagung, Regency of Blitar, Regency of Situbondo, Regency of Jombang, Regency of Nganjuk, Regency of Madiun, Regency of Magetan, Regency of Ngawi, Regency of Bojonegoro, Rengency of Tuban, Regency of Sampang, Regency of Pamekasan, Kediri City, Blkitar Cityt, Malang City, Probolinggo City, Pasuruan City and Mojokerto City.

3. **Quadrant-III, LL (Low-Low)** covers: Regency of Malang, Regency of Gresik, and Surabaya City.
4. **Quadrant-IV, HL (High-Low)** covers: Regency of Banyuwangi, Regency of Jember, Regency of Pasuruan, Regency of Sidoarjo.

The value of Moran Index of 0.256 indicates that there is a positive spatial auto-correlation, but weak, because it is closer to zero. It means that there is a regional inter-connection among regencies / cities although very weak, that the manpower working in the food and beverage industries derive from the manpower in the said region itself and not depending on the manpower from other regions or the independent workers.

VI. CLONCLUSION AND SUGGESTIONS

CONCLUSIONS:

1. Based on the results of **LQ Static and Dynamic Analysis,** they indicate that distribution of 'excellent' food and beverage industrial activities in Regencies of Bondowoso, Sidoarjo, Ngawi, Sampang, and Pamekasan. It means that the aforesaid regions have the activity characteristics in the sector of food and beverage industries with the basis criteria; this means that the said regions are able to produce the food and beverages required by their own regions, or the ability to supply other regions and such food and beverage industries have the potential to develop in the future. It is better if the classification of this type of 'excellent' commodity become the main priority on its development, so that in a long run it can trigger the growth more in other sectors.
2. **The regions undergoing the highest industrial agglomeration in the year 2012 are located in** Regency of Situbondoi (4.25), followed by Regency of Bondowoso (4.05) and the Regency of Trenggalek (2.03). It means that the food and beverage industries in the said regions undergo a positive industrial development. This is supported by the potential condition of the region having the agricultural basis as raw material, the closest to the natural resources (Resource Based).
3. **Agglomeration of food and beverage industries in East Java undergoes a shift. In the year 2000**, almost all regions in East Java underwent agglomeration in food and beverage industries. But in the year 2010 until 2012, the regions formerly used to be agglomerated regions become the regions of non-agglomeration, such as Regencies of Bangkalan, Sampang, Pamekasan, Sumenep, Tulungagung, Kediri, Banuwangi and Tuban.
4. **Partially a) the positive and significant manpower cost (wages) is 0.0037 at the level of trust of α = 5% (five per cent),** indicating that the increase in manpower cost / wages is very elastic, causing the industries tio be more centralized at the agglomerated industrial regions. b) Export, the significance of 0.0011 at the level of trust of α = 5% (five per cent), it means that the high export of a certain region will accelerate the said region naturally undergoing the industrial agglomeration. c) The Competing Power Index has the positive correlation at the level of trust of 10% (ten percent) at the amount of 0.0502. Such condition indicates that the higher the competing power index in a certain region, the stronger it motivates the occurrence of agglomeration in food and beverage industries. d) Output indicating the non-significant result at the level of trust of 5% (five percent) shows that higher the output in the sector of food and beverage industries in a certain region, it has not yet been able to motivate the growth of bigger industrial agglomeration significantly; meanwhile the competing power index has a positive correlation with the level of trust of 10% (ten percent) at the amount of 0.0502. This condition indicates that the higher the competing power index is in a certain region, it will motivate the occurrence of agglomeration in food and beverage industries.
5. Jointly, the free variables, namely the Manpower Cost (Wages), the Export Orientation, the amount of Output and the Competing Power Index give the significant influence to the significant **Chi-Square (4, N=114) = 30.97)**, with p>0.00. This output indicates that certain amounts of descriptive variables are able to give a contribution of **30.97%** (thirty point nine seven percent) in accelerating the occurrence of activity concentration or the agglomeration in activities of industrial economies.
6. The regional inter-correlation analyzed by using the Moran's index with the input in the form of the amount of manpower in the sector of food and beverage industries in 38 Regencies / Cities in East Java Province, have positive value, indicating that there has been a regional inter-correlation during the observation period of 2010 to 2012 and the highest is 0.256 indicating that there has been a positive spatial auto-correlation, but its correlation is weak, since it is closer to zero. It means that the regional inter-correlation among the regencies / cities as intended above is very weak, indicating that the manpower working in food and beverage industries derive from the aforesaid region itself and not depending on the manpower from other regions or independent manpower.

SUGGESTIONS:

In the scheme of improving the development of food and beverage industries in East Java Province and in increasing the attention and focus of the Stakeholders to seriously carry out the regional economic development by developing the basis sectors in their respective regions, particularly the food and beverage industries, the study on Process Hierarchy Analysis is required.

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