



## **SPATIAL INTERACTION ANALYSIS BETWEEN KENDARI CITY AND SOUTH KONAWE REGENCY**

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### **Abstract**

This study aims to: (1) To determine the spatial interaction of the driving factors of Kendari City and South Konawe District based on the attractiveness of Kendari City as a center of higher education (2) To find out the spatial interactions and the driving factors of Kendari City and South Konawe District based on the attractiveness of Kendari City as the center of the vegetable commodity market. This research uses descriptive analysis method, Location Quotient (LQ) and Gravity analysis. The results show (1) Spatial interaction and driving factors of Kendari City and South Konawe Regency based on the attractiveness of Kendari City as a center of higher education, it can be seen that the one with a very strong interval value is Ranometo District. While the Konda District has a fairly strong interval value and 20 other Districts have a non-strong interval value. The dominant motivating factor in choosing tertiary institutions is the ease of socializing. (2). The spatial interaction between Kendari City and South Konawe Regency based on Kendari City as the center of the vegetable commodity market can be seen that West Ranometo District and Konda District have very strong interval values, while Landono District has Strong interval values. The dominant driving factor that causes farmers to sell their agricultural products in Kendari City, especially the Baruga market, is because this market has a difference with other markets in Kendari City.

**Keywords:** Interaction, Region, City

### **A. Introduction**

Kendari City has a shift in livelihoods, which has shifted from agrarian to non-agricultural. The development of Kendari City was also supported by adequate transportation facilities and increased activities in the goods and services sector which were supported by more adequate service facilities. This development demands that Kendari City is still fulfilled the needs of the agricultural sector, so the interaction between Kendari City and Regencies that have potential for agricultural production is urgently needed, one of the Regencies in South Konawe Regency. Agricultural products from the Regency will be sold in the City due to the

presence of shopping centers, community service facilities that support the process of buying and selling in the community so that the people of the Regency and City need each other (Nas, 1986).

South Konawe Regency is one of the suppliers of primary needs in the form of vegetables for the people of Kendari City. Agricultural products from Konawe Regency are traded at Baruga Market which is a market that accommodates agricultural products from South Konawe District and has a relatively cheap price compared to markets in Kendari City.

The interaction between Kendari City and South Konawe Regency is not only from the agricultural sector, but the education sector also influences the interaction between the two regions. Kendari city has the largest state university in Southeast Sulawesi located in Kambu District. This university has a greater capacity for students compared to universities in Southeast Sulawesi, so there are a number of people in South Konawes Regency who choose to study in Kendari City, Kambu District, Halu Oleo University.

The reciprocal relationship between the two regions is a complementary relationship with each other, this applies to Kendari City and South Kanowe Regency. The condition of the two regions that interact will benefit or benefit from the relationship. The relationship of great intensity shows that the relationship between the two regions is very strong. This relationship is in the fields of economics, education, labor, and other fields.

The interaction between Kendari City and South Konawe Regency has a reciprocal relationship both from the agricultural sector and the education sector, so the purpose of this study is to determine the spatial interactions of the driving factors of Kendari City and South Konawe Regency based on the attractiveness of Kendari City as a center of higher education. The purpose of this study is to further determine the interaction of spatial and driving factors of Kendari City and South Konawe Regency based on the attractiveness of Kendari City as the center of the vegetable commodity market.

## B. Methodology

### 1. Research Design

This study has a population with a certain character that includes the character or characteristics possessed by the subject or object of research (Sugiyono, 2008). The population in the first objective of this study is students from South Konawe Regency who study at Halu Oleo University, amounting to 215 people (Table 1), and for the second population of research objectives, namely all Kendari City people who shop at Baruga Market.

**Table 1.** Population and Samples in South Konawe Regency

No	District	Population	Sample	Percentage (%)
1	Tinanggea	19	12	7,9
2	Lalumbu	8	5	3,5
.3	Andoolo	10	7	5
4	Buke	11	7	5
5	Palangga	9	6	4,2
6	South Palangga	1	1	0,7
7	Baito	1	1	0,7
8.	La Inea	2	1	0,7
9	Laeya	14	9	6,5
10	Kolono	3	2	1,5
11	Laonti	1	1	0,7
12	Moramo	8	8	5,2
13	North Moramo	9	6	4,2
14	Konda	45	29	19,5
15	Wolasi	5	3	2,2
16	Ranomeeto	43	28	18,4
17	West Ranometo	6	4	2,9
18	Landono	10	7	5
19	Mowila	4	3	2,2
20	Anggata	1	1	0,7
21	Benua	4	3	2,2
22	Basala	1	1	0,7
<b>Total</b>		<b>215</b>	<b>140</b>	<b>100</b>

(Source: Halu Oleo, 2016)

## 2. Instruments

The sample is part of a subject or object that represents the population. Sampling must be in accordance with the quality and characteristics of the population in the study so that the conclusions generated can represent the population (Arikunto, 2006). The sample used in this study is Accidental Sampling (accidental sampling). Sampling is based on the fact that they happen to occur. This study uses samples with anyone who happens to meet with researchers at the time of sampling will be used as a sample (Sugiyono, 2008). Samples for interaction between Kendari City and South Konawe Regency in the education sector can be seen in the calculation below:

$$\begin{aligned}
 n &= \frac{N}{N \cdot d^2 + 1} \dots \dots \dots (1) \\
 &= \frac{215}{215 \cdot (0.05)^2 + 1} \\
 &= \frac{215}{215.0,0025 + 1} \\
 &= \frac{215}{1.5375} = 140
 \end{aligned}$$

This study contained 215 populations that were used to complete the goal of spatial interaction in Kendari City and South Konawe Regency on the attractiveness of higher education. The sample in this study were 140 people (Table 1).

## 3. Technique of Data Analysis

Qualitative is a method used in the study of a group of people, an object, a set of conditions, a system of thought or events that occur now. The purpose of this research is to make a descriptive, object or subject description, painting systematically, factually and accurately about the facts, the characteristics of the relationship between the phenomena to be studied (Nazir, 1988). This analysis is used to determine the motivating factors or decide to continue studying at Halu Oleo University and/or the people of Kendari City who decide to shop for vegetables at the Baruga Market.

The basic concept of this analysis tool is to discuss the size and distance between two places, namely the center of growth with the surrounding area, to how far an area that is a center of growth affects and interacts with the surrounding area. Gravity analysis in this study is used to assess the strength of the relationship (closeness) between the two regions, where this region is considered as a mass that has an attractive attraction so that there will be an interrelated relationship between the two regions (Bintarto, 1989). In the 19th century, Carey and Ravenstein (Tarigan, 2004 in Farida 2017) saw that the law of gravity was closely related to the amount of community migration from a city. That is, the amount of migration into a city is closely related to the size of the city. The formula that calculates interactions in relations between regions is to use the gravity number applied by W.J. Reilly 1929 in Farida (2017), which is as follows:

$$I_{A.B} = k \frac{PA \cdot PB}{(d_{AB})^2} \dots \dots \dots (2)$$

Information:

- $I_{A.B}$  = Strength of the interaction between Kendari City and South Konawe Regency
- $K$  = Empirical constant number, value 1
- $PA$  = Total population of Kambu District
- $PB$  = Total population of 22 Subdistricts in South Konawe District
- $d_{A.B}$  = Distance of Kambu Subdistrict and 22 Subdistricts in South Konawe Regency

The population of Kambu Subdistrict was used in this study because the University which was used as research was located in Kambu Subdistrict, namely Halu Oleo University, while the driving factor that influenced someone choosing Halu Oleo University was using student data taken from Center for Technology and Information, Halu Oleo University. The

greater the gravitational value between districts as the center of economic growth with the surrounding area shows the closer interaction between the growth center and the surrounding area (hinterland).

1. The formula of analysis to determine the presentation of the results of the questionnaire according to (Supranto, 2007) is as follows:

$$P = \frac{F}{N} \times 100 \% \dots\dots\dots(3)$$

Information:

P = Percentage

F = Frequency of each answer the respondent has chosen

N = Number of respondents

2. The analysis formula used to determine the interval class according to (Sekaran, 2010) Namely as follows:

$$I = \frac{R}{K} \dots\dots\dots(4)$$

Information:

I = Class interval

R = Range

K = Many classes will be created

Location Quotient (LQ) analysis is used to find out the superior commodity sector produced by South Konawe Regency. LQ results are more than 1, the commodity can be sold outside South Konawe Regency because it has been fulfilled in the area (Hendayana, 2003 in Azwartika, 2013). The formulas of LQ are:

$$lQ = \frac{Xr/RVr}{Xn/RVn} \dots\dots\dots(5)$$

Information:

Xr : Production Value I in the District

RVr : Production Value I in Regency

Xn : Total Community Production in the District

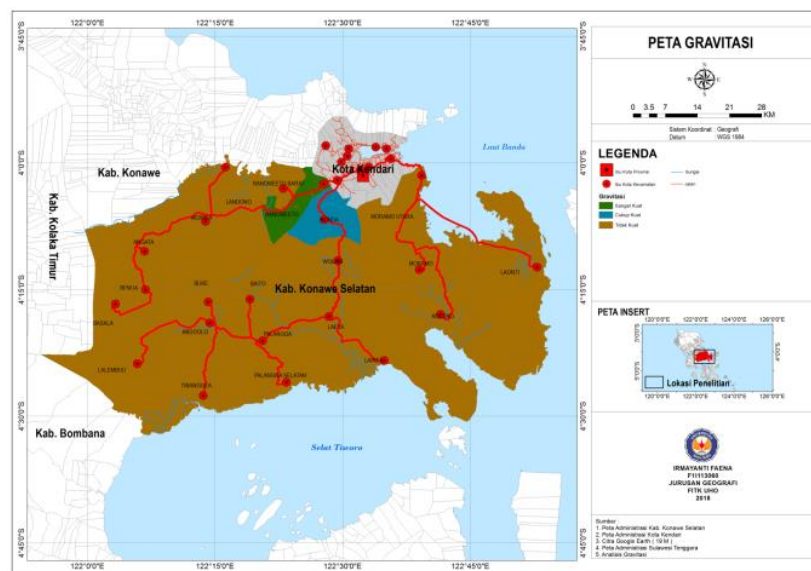
RVn : Total Commodity Production in Regency

## C. Findings and Discussion

### 1. Findings

- a. Spatial Interaction and Driving Factors of Kendari City and South Konawe Regency by Kendari City Higher Education Centers

Regional economic links between regions can be identified as economic interactions between growth centers and the surrounding area. The large interaction figures show a close relationship between the growth center and the surrounding area. The interaction is characterized by the movement of people, goods, and, money. The interaction can be realized in the form of economic and social service relations of the people in the region. Factors that make a person choose to pursue higher education include interest, motivation (Hurlock, 1993), parents (Syah, 1995), work (Sujak, 1990) and the environment (Arikunto, 2006). This factor will be developed as indicated by the research in Table 3.



**Figure 1.** Map of Results of Gravity Against Higher Education

**Table 1.** Results of Gravity Analysis of Kendari City and South Konawe Regency Towards Higher Education

No	District	Gravity	Strength of Interval Classes in Gravity Values
1	Ranometo	8.348.249	Very strong
2	Konda	2.522.356	Strong Enough
3	West Ranometo	608.065	Not Strong
4	North Moramo	522.142	Not Strong
5	Laeya	408.419	Not Strong
6	Mowila	254.926	Not Strong
7	Wolasi	206.683	Not Strong
8	Moramo	181.302	Not Strong
9	Landono	173.720	Not Strong
10	Angata	148.289	Not Strong
11	Palangga	120.599	Not Strong
12	Andoolo	109.768	Not Strong
13	Kolono	102.807	Not Strong
14	Tinangea	99.639	Not Strong
15	Laonti	91.066	Not Strong
16	Lainea	80.384	Not Strong
17	Buke	79.827	Not Strong
18	Benua	73.313	Not Strong
19	Lalembu	58.027	Not Strong
20	Baito	52.755	Not Strong
21	Basala	44.720	Not Strong
22	South Palangga	35.220	Not Strong

(Source: Analysis Results)

In Table 1 and Figure 1 it can be seen that a very strong gravity value is found in the District of Ranomeeto and for a strong gravity value it is found in Konda District. Interval strength class gravity values obtained by using equation 4, so that the interval values are in Table 2.

**Table 2.** Classification of Gravity Values of Kendari City and South Konawe Regency Towards Higher Education

Gravity Value Intervals	Classification
35.220 – 1.697.826	Not Strong
1.697.827 – 3.360.433	Strong Enough
3.360.434 – 5.023.039	Less Strong
5.023.040 – 6.685.646	Strong
6.685.647 – 8.348.253	Very Strong

(Source: Analysis Result)

The results of the analysis of regional interactions using the gravity method show that some districts tend educational attractiveness. Ranomeeto sub-district has a very strong gravity value and Konda sub-district is quite strong, while other sub-districts are not strong in interactions with education at Halu Oleo University. This study was strengthened by conducting interviews to find out the reasons for trends in educational attractiveness at Halu Oleo University (Table 1).

The results of interviews using a predetermined sample, that the attractiveness of education between South Konawe Regency and Halu Oleo University is because it is the largest university and is in great demand by students who want to continue their tertiary education in Southeast Sulawesi (Table 3).

**Table 3.** Factors Driving Students to Study at Halu Oleo University

No.	Driving Factors	Amount				Amount (%)
		Yes	%	No	%	
1	Easier to socialize	113	80,72	27	19,28	100
2	Easily get information	103	73,57	37	26,43	100
3	Various majors	93	66,42	47	33,58	100
4	Better quality	107	76,42	33	23,58	100
5	Amenities	98	70	42	30	100
6	Distance	110	78,57	30	21,43	100
7	Technological development	110	78,57	30	21,43	100
8	Service	107	76,42	33	23,58	100

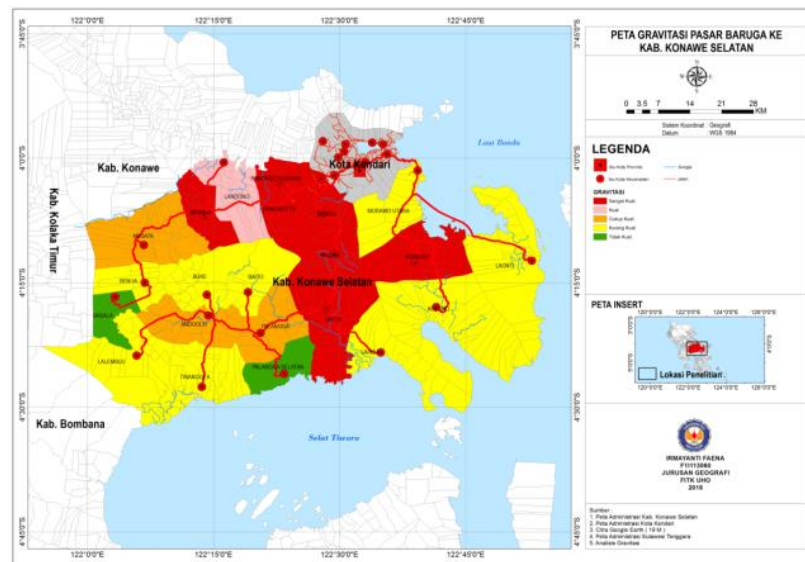
(Source: Analysis Result)

The driving factor, students from South Konawe decided to study at Halu Oleo University, mostly stating that it was easier to socialize, then the second factor, namely the distance between South Konawe and Kendari did not become a significant barrier because it could be traveled by using a motorcycle or four-wheeled vehicle. This is supported by the development of technology at Halu Oleo University faster than other universities in Southeast Sulawesi Province. The third factor that is considered is getting good service at Halu Oleo University and the quality is better compared to universities in Southeast Sulawesi Province.

## 1.2 Spatial Interaction and Driving Factors in Kendari City and South Konawe Regency by Kendari City as the Market Center for Vegetable Commodities

The results of calculations using the gravity method using the variable population and distance between districts can be seen as the interaction of each district as a center of growth with the surrounding District (hinterland). The following are the results of the interaction calculation using the gravity method.

The results of spatial interaction analysis using the gravity method showed several districts that tended the attractiveness of Kendari City as the center of the vegetable production market. In the picture two below shows that the red color shows a very strong interaction, pink indicates strong interactions, orange indicates less strong interactions, yellow indicates less strong interactions and green warrants weak interactions.



**Figure 2.** The Gravitational Map of the Baruga Market

**Table 4.** Gravity Analysis Results of Kendari City and South Konawe Regency Against the Baruga Market

No.	District	Gravity	Strength of Interval Classes in Gravity Values
1	Ranoometo	43.379.444	Very Strong
2	Konda	4.301.522	Very Strong
3	West Ranometo	539.529	Very Strong
4	Moramo	485.766	Very Strong
5	Laeya	326.188	Very Strong
6	Mowila	237.297	Very Strong
7	Wolasi	216.011	Very Strong
8	Landonono	155.479	Strong
9	Angata	125.984	Strong Enough
10	Palangga	103.199	Strong Enough
11	Andoolo	91.066	Strong Enough
12	Lalembu	83.658	Less Strong
13	Tinangea	80.087	Less Strong
14	Lainea	67.704	Less Strong
15	Kolono	65.816	Less Strong
16	Buke	65.337	Less Strong
17	North Moramo	61.613	Less Strong
18	Benua	60.541	Less Strong
19	Laonti	55.889	Less Strong
20	Baito	43.706	Less Strong
21	Basala	39.600	Not Strong
22	South Palangga	28.837	Not Strong

(Source: Analysis Result)

The results of gravity analysis in Table 4 show that very strong gravity values are found in the Districts of Ranomeeto, Konda, West Ranomeeto, Moramo, Laeya, Mowila, and Wolasi. Not strong interaction exists in two sub-districts namely Basala and South Palangga Subdistricts. Interaction between this study needs to be known, the reasons for the tendency towards the attractiveness of vegetable production in South Konawe Regency. In the interview process used in conducting the results of gravity, analysis can be seen in Table 7. In Table 4 to get the strength of the interval class gravity researchers uses equation 4 to produce a classification that can be seen in Table 6.

**Table 6.** Classification of Gravity Values of Kendari City and South Konawe Regency Against the Baruga Market

Interval of Gravity Value	Classification
28.837 – 27.248	Not Strong
27.249 – 65.659	Less Strong
65.660 – 84.071	Strong Enough
84.072 – 102.483	Strong
102.484 – 120.895	Very Strong

(Source: Analysis Result)

**Table 7.** Factors driving sales farmers in the Baruga market

No	Driving Factors	Amount				
		Yes	%	No	%	Total %
1	Baruga market is different from other markets	31	86,11	5	13,89	100
2	Product availability	29	80,55	7	19,45	100
3	Product price	33	91,66	3	8,34	100
4	Distance	33	91,66	3	8,34	100
5	Many are shopping at the Baruga market	30	83,33	6	16,67	100

(Source: Analysis Result)

The main factor farmers make buying and selling transactions in the Baruga Market because the price is cheaper for buyers and the price for farmers can be accommodated according to the target of the farmers. The distance between South Konawe and Baruga Market is closer to other markets in Kendari City, making it cheaper for transportation costs for farmers. All variables in the research that are indicators become a factor driving sales farmers in the Baruga Market. The study also looked for vegetable commodities that have a base value that can be sold from outside South Konawe. This was done to see the interaction between South Konawe and Kendari City on the scale of the commercial commodities (Table 8 and Figure 3).

## 2. Discussion

The results of the LQ analysis of vegetable commodities in South Konawe resulted in more subdistricts compared to non-based sectors. The sub-districts that have more base sectors are Baito, Laeyo, Wolasi, Ranomeeto, Landono, Mowila and Angata Districts; while other districts have fewer base sectors. Five sub-districts that have a base sector get strong and very strong gravity values and two other sub-districts have less strong gravity values. This indicates that there is a liquidity between the results of the gravity analysis and the results of the LQ analysis, although the Baito District has a less strong gravity value but it has a large commercial base that is traded in the Baruga Market, namely the commodity of long beans, cayenne peppers, tomatoes, keys, stews, and onions. Angata Subdistrict also has a smaller base value, but its commodities are mostly traded at Baruga Market including long beans, cayenne pepper, eggplant, beans, cucumbers, and squash.

**Table 8.** LQ Analysis of Vegetable Community in South Konawe

No.	Districts of South Konawe Regency	Long beans	Collards	Cayenne Pepper	Big Chili	Tomatoes	Eggplant	Snaps	Cucumber	Squash	Kale	Shallots	Basis	Non-Basis
1	Tinanggea	1,2	0,0	1,8	0,0	0,0	0,0	0,0	1,1	0,0	2,2	1,5	5	6
2	Lalembu	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	6,9	0,0	0,0	1	10
3	Andoolo	0,7	1,6	0,9	0,6	0,6	0,0	0,4	1,9	2,1	0,6	0,3	3	8
4	Buke	0,5	0,0	0,7	0,9	0,7	1,1	1,3	1,5	1,0	1,4	0,8	5	6
5	Palangga	0,0	0,0	0,6	0,0	1,2	1,2	0,0	1,2	2,1	1,0	1,1	5	6
6	South Palangga	0,0	0,0	7,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1	10
7	Baito	1,1	0,0	1,1	0,0	1,1	0,0	1,8	0,9	0,0	1,8	1,4	6	5
8	Lainea	2,0	0,0	1,9	0,0	0,0	0,0	0,0	0,0	3,9	0,0	0,0	3	8
9	Laeya	1,0	0,0	1,0	0,0	2,0	0,0	1,3	1,4	0,0	1,6	1,2	7	4
10	Kolono	0,4	0,0	1,8	0,0	1,7	0,0	1,0	1,4	1,4	0,0	0,8	5	7
11	Laonti	0,0	0,0	1,9	0,0	0,0	0,0	0,0	0,0	0,0	3,8	2,1	3	8
12	Moramo	0,8	0,0	1,6	0,8	1,0	1,2	0,0	0,9	0,9	1,4	0,9	4	7
13	North Moramo	0,0	0,0	1,4	0,0	0,0	4,2	2,9	2,8	0,0	0,0	0,0	4	7
14	Konda	2,3	3,9	0,4	2,5	4,0	0,8	0,9	0,0	0,7	0,6	1,0	5	6
15	Wolasi	3,3	7,3	0,5	4,7	0,6	1,5	1,1	0,0	0,0	1,1	0,9	6	5
16	Ranomeeto	1,3	0,0	0,6	1,9	1,0	1,2	0,6	0,5	1,0	1,0	1,5	7	4
17	West Ranomeeto	0,0	0,0	0,9	0,0	0,0	2,4	0,9	1,2	1,3	1,2	1,3	5	6
18	Landonono	1,0	0,0	0,7	1,7	0,0	1,0	1,3	1,9	0,0	0,0	1,8	6	5
19	Mowila	1,1	0,0	0,9	1,0	0,0	1,6	2,3	0,0	0,0	2,0	1,9	6	5
20	Angata	1,2	0,0	1,3	0,4	0,0	1,7	3,0	1,0	2,0	0,0	0,0	6	5
21	Benua	0,0	0,0	1,0	0,3	0,0	1,4	1,9	1,6	0,8	1,4	0,9	4	7
22	Basala	0,0	0,0	0,0	0,0	0,0	7,3	0,0	0,0	4,8	0,0	0,0	2	9

(Source: Analysis Result)



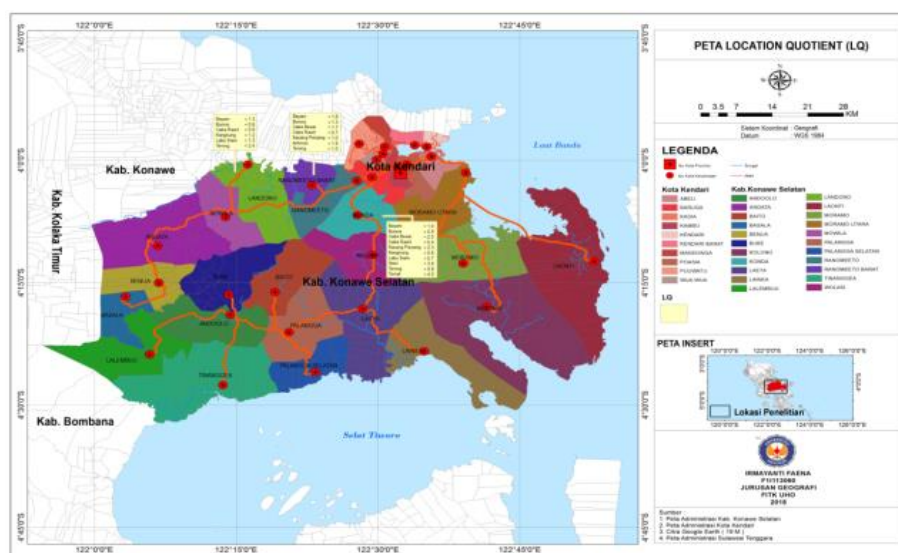


Figure 3. Map of LQ Baruga Market, South Konawe Regency

Baruga Market is a center for the sale of vegetable products based on the South Konawe Regency. Community motivating factors originating from South Konawe Subdistrict which have base values are:

a. Distance factor

Distance is divided into two parts, namely absolute and relative distances (Stafford, 2005). This research uses absolute distance or absolute distance. The driving factor of the farming community in South Konawe Regency, which in particular has a non-base value, comes to sell in Kendari City or Baruga Market because the Baruga Market location is easy to reach and the distance is not too far compared to other markets in Kendari City. Farmers from South Konawe Regency have vehicles to make it easier to travel long distances to sell their agricultural produce to the Baruga Market. Farmers do not sell their agricultural products in their own area because South Konawe is sufficient for basic commodities, so it needs to be channeled out of the district to be used for others.

b. Product Quality Factor

Quality of vegetables that originating from South Konawe Regency have good quality and fresh because from farmers directly as the first hand to sell at the Baruga market. The quality of vegetable production is a major element in the sale of products and the price offered is cheaper because it is directly from the farmers as a first hand. Product competitiveness can provide satisfaction to consumers or buyers (Armstrong, 2004).

## D. Conclusion

Spatial interaction and driving factors Kendari City and South Konawe Regency based on the attractiveness of Kendari City as a center of higher education based on the analysis results, the District of Ranomeeto has a very strong interval value, this is supported by questionnaire results that the driving factors are dominant when continuing education in Kendari City is easier to socialize. Non-dominant driving factors are the various majors provided.

The spatial interaction of Kendari City and Konawe Regency based on Kendari City as the center of vegetable commodity market can be seen based on the results of gravity analysis it can be seen that there are very strong in the Districts of Ranomeeto, Konda, West Ranomeeto, Moramo, Laeya, Mowila, and Wolasi and Strong interactions are found in Landono District. The dominant driving factor is that the Baruga market has a product price and distance of 33 or 91.66% while the non-dominant one is a product availability of 7 or 19.45%

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