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## **SUPPLY AND DEMAND AT TRADITIONAL MARKET IN SURABAYA**

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### **Abstract**

*This research is aimed to answer the research question i.e. how do the supply and demand of traditional market at Sopyonyono and Paing market in Rungkut sub district, Surabaya. Sopyonyono market is a traditional market which is located in Kalirungkut sub district while Paing market is located in Rungkut kidul sub district. The supply factors which are studied in this research are the number of market, the number of mini market, the number of restaurant and the number of mini market within 1000 meters radius. The demand factors in this research are studied by using the number of offices, the number of schools, the number of financial institution and the number of house of worship within 1000 meters radius. The calculation of the value of demand and supply has been conducted by using Index model which consist of 3 steps. First, the standardization of the absolute value of the number of objects within 1000 meters radius, second, the determination of the value of supply or demand of each indicator, third, the value of the standardization. The result shows that the*

*demand value either at Soponyono market or even at Paing market is good and higher than the supply value, therefore it is possible to build new market within 1000 meters radius from the market location*

### **Keywords**

Soponyono Market, Paing Market, Supply Value, Demand Value

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## **1. Background**

The changes of life patterns and public needs have made the occurrence of various shopping facilities in order to meet the public needs and desires. Market as one of the shopping facilities which has blended and had important place in public life. Market is not only a place in which buyers and sellers meet but it is also the place of social interaction and the representation of traditional values occurs. Traditional market as the place in which buyers and sellers meet is marked by the occurrence of direct transaction among them. The buildings in the traditional market are in the form of stalls and open-booths which are opened by the sellers or the traditional market management. Traditional market is the characteristics of a developing country. The less high income level and the economics of the people has made the people prefer to shop in traditional markets rather than modern markets. Nevertheless, along with the current development, the culture of the Indonesian people to go shopping at traditional market has started to change. Large and modern activities has penetrated to big cities in Indonesia. Many investors come to Indonesia to establish modern markets which can accommodate large activities. Many modern markets emerge in the globalization era. These modern markets are built with all of their advantages and facilities along with their fittings in trading public daily necessities. The presence of modern markets, particularly supermarket and hypermarket, is considered by various circles of society has suppressed the existence of traditional markets. There are 13,450 traditional markets with approximately 12.6 million small traders. The transaction in modern markets is not similar to traditional markets. In modern market, direct transaction is not conducted by buyers and sellers. On the other hand, buyers can perform the transaction by checking the price on the price tag which is printed on the goods by themselves or customers can be served by salesperson. Based on the problems above, a research which is entitled: SUPPLY AND THE DEMAND AT TRADITIONAL MARKET IN SURABAYA is required to be conducted.

## **2. Literature Review**

The traditional market is the place in which sellers and buyers meet to conduct direct transaction of goods and services. In general, the building of the traditional market consists of stalls and open booths which are opened by the sellers and the market management. Daily needs such as fishes, fruit, vegetables, eggs, meat, clothes, electronics, services and others are sold in the traditional market. In addition, cakes and other items are sold in the traditional market as well. The strengths of the traditional market is that the goods which are sold expensive in other areas are sold at affordable price and it is one of the triggers which improves the low-economic class. There are some weaknesses of the traditional market such as the place is less clean and the goods, which is sold by sellers, particularly the irresponsible one, is less credible. Such markets are still commonly found in Indonesia, particularly in Bali in which almost all villages have traditional market and it is generally located near residential areas in order to facilitate the buyers to reach the market. There are some characteristics of a traditional markets, i.e.:

1. Fresh Product.

Goods are sold in fresh condition in a traditional market. Unlike the traditional market, goods e.g. vegetables are sold in plastic packaging and kept in a freezer and in a watered container in order to make them look fresh.

2. High Solidarity among The Sellers

There is monopoli of goods among the sellers in the traditional market. The relationship among the sellers in the traditional market is like family. The sellers will help each other when there is a buyer who is looking for the goods he needs. Unlike traditional market, high competition is obviously seen in the modern market e.g. the promotion is offered among them.

3. Affordable Price

The price of the goods at the traditional price is affordable since the goods are directly come from their sources. Unlike the goods at the traditional market, the price of the goods at the modern market is more expensive due to the goods are not come from their sources and the sellers at the modern market prioritize in gaining profit.

4. Negotiable Price

The price of the goods at the traditional is not a fix price. The price of the goods at the traditional market is a negotiable price. The price can be negotiated by the sellers and the buyers.

5. Improved Cleanliness and Facilities

The premises at the traditional market are famous for their dirty and unhealthy. Currently, traditional markets has improved themselves. Traditional markets have made some improvements at their premises e.g. by making their premises clean and healthy and organized as well.

6. Available Anywhere and Anytime

Traditional market grows and develops naturally near the population whether it is small or large. Traditional market grows in all places and its existence is not limited to time.

7. Close Relationship between Sellers and Buyers

The relationship between sellers and buyers occurs. The relationship occurs due to the sellers and the buyers often meet each other. Therefore, the buyers know the sellers and vice versa. The buyers become the loyal customer of the sellers. Discounts are given by the sellers to the buyers when the buyers and the sellers have known each other very well.

Modern market

There is no significant differences between modern market and traditional market. But, the transaction between buyers and sellers is not directly occur in the modern market. The buyers only check the price on the price tag which is printed on the goods (barcode). All of the goods are placed inside the buildings and the buyers can purchase the goods by themselves or the buyers can be served by the salesperson. The goods which are sold on modern market are not only grocery food such as fruit, vegetables, meat. Most of the goods which are sold on modern market are preserved items. The strengths of the modern market are the hygiene of the goods which are sold on this market are guaranteed and it provides convenient shopping place. Meanwhile, the weakness of this market is the buyers cannot bargain the price of the goods which are sold in this market. The example of the modern market is supermarket and minimarket.

## **2.1 The Differences and the Similarities of Traditional Market and Modern Market**

### Similarities

Either traditional market or modern market sells food, such as vegetables, fruit, rice, fish, meat, and seasoning.

### Differences

1. The types of goods which are sold on traditional market are focused on the daily needs of food and clothing and primary needs whereas the types of goods which are sold on modern market consist of various kinds of premise, substitution and even exclusive goods.

2. Basically the sellers who sell goods in the modern market already have business experience and knowledge whereas the sellers who sell goods in the traditional market are depend on fate.
3. Modern market offers discount and freebies whereas traditional market does not have anything to offer.
4. Modern market is more hygiene than traditional market.
5. The buyers who come to the traditional market generally come from middle to middle-low economical class society. Meanwhile, the buyers who come to the modern market generally come from middle-up to high economical class society.
6. The buyers who come to modern market generally are the local people and the people who live far from the modern market whereas the buyers of the traditional market generally are the local people.
7. The amount of the capital of the sellers in the modern market is relatively larger than the sellers in the traditional market. The amount of the capital of the sellers in the traditional market is relatively low.
8. Bargaining cannot be performed in the modern market whereas the traditional market bargaining can be performed.

## **2.2 Previous Research**

Some studies on traditional markets and modern markets which had been carried out by previous researchers are as follows, Sigid Nugraha (2013), studied the distribution patterns of traditional markets and modern markets in Surakarta which had been done by using the Nearest Neighbor Analysis by seeking scale and the calculation process has been done by using geographic information system application. The result which has been obtained from the Nearest Neighbor Analysis has been done automatically by using ArcView shows that both traditional markets and modern markets have a grouped distribution pattern. This is possible due to most of the location of traditional markets and modern markets is not far from each other. The distribution of traditional markets and modern markets towards the center point of the City Hall of Surakarta has been applied as a reference to create a circle (ring) with an interval of one kilometer to the farthest point up to ten kilometers to determine the distribution of the market to the city center. The distribution of the market stated that the development or the distribution of the market does not depend on the area of Central Business District (CBD) since some markets have been established there before the establishment of the area whereas the establishment of modern market is influenced by or it is located on the main line which leads to the Central Business District (CBD). The function-

based originality does not give any influence to the traditional markets and the modern market will notice its connectivity to its function.

Pradwiyasma, V et.al (2013) has conducted observation on modern stores which has implemented independent sales and service system. The current establishment of modern stores has increased significantly. The establishment of modern stores in Jember city has improved rapidly, but some of the establishments of modern stores do not pay attention to the regulation of the establishment of modern stores. Facts on the field showed that some of the establishments of modern stores were close to the traditional stores and even the establishment of modern stores was facing each other, this condition could lead to the loss of traditional stores. This research has designed and built a geographic information system in order to map the distribution of modern stores. The geographic information systems are also used in the proces of the decision making. The decision results in a new recommended location of the establishment of modern store. The recommendation has been generated by using hierarchical analysis or the Analytical Hierarchy Process (AHP). It is expected that the recommendations can be used for the establishment location of the placement planning of a new modern store.

### 3. Research Location

The research location of Paing market and Soponyono market is located in Rungkut district Surabaya as it seen in figure 1.

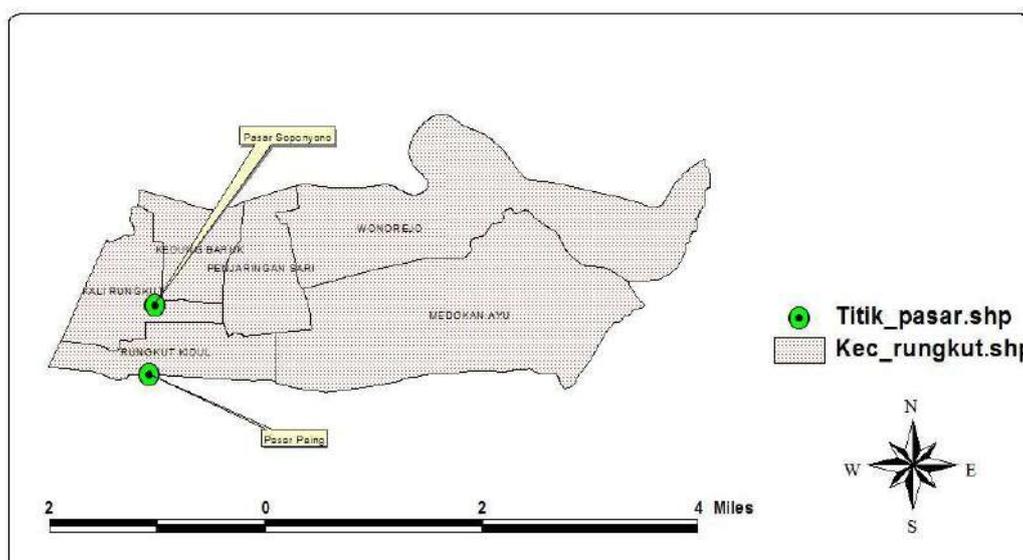


Figure 1: Paing market and Soponyono Market Rungkut district Surabaya

### 4. Research Methodology

#### 4.1 Data Collection

The data collection has been carried out by using room data and field data at Soponyono market and Paing market in Rungkut district. The room data has been collected by using Geographic Information System through Global Positioning System (GPS) meanwhile the field data has been collected by using field observation.

#### 4.2 Data Process

After the data has been tabulated, it will be tabulated by using the level supply and demand mass media by using model index.

#### 4.3 Index Model

Model is a simple representation from a phenomena or a system. Index model calculates an index value of each unit area which involves many criteria and scores (Kang Tsu Chang, 2008).

The formula to calculate the index value is as follows:

$$I_i = \sum_{i=1}^n W_i X_i$$

Information:

- $I_i$  : Index Value
- $N$  : Criteria
- $W$  : Weight
- $X$  : Standard Value

Generally there are 3 steps in calculates the Index value i.e.:

Step 1 : Evaluating the relative importance level of each criteria to the other criteria or scores.

Step 2 : Data standardization for each criteria.

Step 3 : Calculating the value of the Index by summing the multiplication result of the scoring with the standard value of each criteria.

#### 4.4 Index value of Supply

Supply from Soponyono market and Paing market at Rungkut district has been conducted by using activity approach in 1 kilometers radius of market area. The approachment has obtained 4 criteria's of supply as follows:

1. The number of markets within 1 km radius
2. The number of mini markets within 1 km radius
3. The number of restaurants within 1 km radius

4. The number of small stores within 1 km radius

The scoring of each criteria shows on table 1.

**Table 1:** Score illustration of 4 criteria of supply potency.

No	Criteria	Score
1	The number of markets within 1 km radius	0.32
2	The number of mini markets within 1 km radius	0.28
3	The number of restaurants within 1 km radius	0.25
4	The number of small stores within 1 km radius	0.15
	Total	1 (100 %)

First steps is to find out the absolute value of each objects at the 1000 meters radius which has been done by using Geographic Information System.

Second step is conduct the data standardization with the minimum value is 1 and the maximize value is 5.

Third step is aggregate data and summing the multiplication of scores value to the value of standardization with the following formula as follows:

$$I_i = \sum_{i=1}^n W_i X_i$$

Information:

- $I_i$  : Index Value
- $n$  : Criteria
- $W$  : Weight
- $X$  : Standard Value

With all three steps above where the index value to index of minimum supply is 1 and the maximum is 5. The Interpretation of an index value of marketing is as follows:

Supply / Offering Index	Interpretation
5	Very High
4	High
3	Average
2	Low
1	Very Low

#### 4.5 Index Value of Demand

The demand from Soponyono market and Paing Market at Rungkut district has been carried out by using the approach of activity around the market within 1 kilometer radius. With this approachment there are four criteria of demand as follows:

1. The amount of offices within 1 km radius
2. The amount of schools within 1 km radius
3. The amount of Financial Institutions within 1 km radius
4. The number of Worship Places within 1 km radius

The scoring for each of the criteria shows on Table 2.

**Table 2: Score of 4 demand criteria**

No	Criteria	Score
1	The number of offices within 1 km radius	0.32
2	The number of schools within 1 km radius	0.28
3	The number of financial office within 1 km radius	0.25
4	The number of Worship places within 1 km radius	0.15
	Total	1 (100 %)

The first step is to find the absolute value of each object in a radius of 1000 meters using a Geographic Information System.

The second step is to standardize the data with a minimum value which is 1 and a maximum value is 5.

The third step is the aggregate data or summing the summing the multiplication of scores value to the value of standardization with the following formula as follows:

$$I_i = \sum_{i=1}^n W_i X_i$$

Information :

- $I_i$  : Index Value
- $n$  : Criteria
- $W$  : Weight
- $X$  : Standard Value

With all three steps above where the index value to index of minimum supply is 1 and the maximum is 5. The Interpretation of an index value of marketing is as follows:

Supply Index	Interpretation
5	Very High
4	High
3	Average
2	Low
1	Very Low

## 5. Research Result and Discussion

### 5.1 Result

The research objects are Soponyono market and Paing market in Rungkut district Surabaya. The Soponyono market is located on Jalan Rungkut Asri Utara 2 Kalirungkut district Surabaya whereas the Paing market is located on Jalan Kalirungkut Rungkut Kidul district Surabaya. Soponyono market and Paing market are traditional markets which is located in one district i.e. Rungkut district Surabaya. Rungkut district consists of 6 districts as seen on table 3.

**Table 3:** List of Rungkut Sub-district, Surabaya

No	District	Wide Area (Ha)
1	Kali Rungkut	20.1
2	Rungkut Kidul	19.2
3	MedokanAyu	81.4
4	Wonorejo	70.7
5	Penjaringan Sari	18.8
6	Kedung Baruk	15.3
Total Area		225.5

Indicator and Score of supply shows on table 4.

**Table 4:** Indicator and Supply Score

No	Indicator	Score
1	The amount of market within 1000 meters radius	0.32
2	The amount of mini market within 1000 meters radius	0.28
3	The amount of small stores within 1000 meters radius	0.25
4	The amount of restaurant within 1000 meters radius	0.15
Total		1 (100%)

Indicator and Demand Score shows on table 5.

**Table 5:** Score of Demand Indicator Value

No	Indicator	Score
1	The amount of offices within 1000 meters radius	0.32
2	The amount of financial institution within 1000 meters radius	0.28
3	The amount of worship places within 1000 meters radius	0.25
4	The amount of schools within 1000 meters radius	0.15
Total		1 (100%)

The conversion of Value Standardization of Supply indicators as follows:

1. The amount of market within 1 km radius:

The amount of market within 1 km radius	Value
---	-------

4	5
3	4
2	3
1	2
0	1

2. The amount of mini market within 1 km radius:

The amount of mini market within 1 km radius	Value
$\geq 9$	5
7-8	4
5-6	3
3-4	2
1-2	1

3. The amount of restaurant within 1 km radius:

The amount of restaurant within 1 km radius	Value
$\geq 9$	5
7-8	4
5-6	3
3-4	2
1-2	1

4. The amount of small stores within 1 km radius:

The amount of small stores within 1 km radius	Value
$\geq 9$	5
7-8	4
5-6	3
3-4	2
1-2	1

There is value of standardization for the supply indicator shows on table 6.

**Table 6:** *The Value of Standardization of Supply Indicator.*

No	Indicator	Soponyono Market	The Value of Standardization	Paing Market	The Value of Standardization
1	The number of market within 1000 meters radius	1	1	1	1
2	The number of mini market within 1000 meters radius	11	5	11	5
3	The number of restaurant within 1000 meters radius	9	5	14	5
4	The number of small stores within 1000 meters radius	4	2	2	1

Conversion of value of standardization of Demand Indicator as follows:

1. The number of offices within 1 km radius:

The amount of offices within 1 km radius	Value
>=9	5
7-8	4
5-6	3
3-4	2
1-2	1

2. The amount of financial institution within 1 km radius:

The amount of financial institution within 1 km radius	Value
>=9	5
7-8	4
5-6	3
3-4	2
1-2	1

3. The amount of worship places within 1 km radius:

The amount of worship places within 1 km radius	Value
>=9	5
7-8	4
5-6	3
3-4	2
1-2	1

4. The amount of schools within 1 km radius:

The amount of schools within 1 km radius	Value
>=9	5
7-8	4
5-6	3
3-4	2
1-2	1

The Value of Standarization of Demand Indicator Soponyono market and Paing Market:

No	Indicator	Soponyono Market	Value of Standardization	Paing Market	Value of Standardization
1	The number of offices within 1000 meter radius	10	5	9	5
2	The number of schools within 1000 meter radius	7	4	6	3
3	The number of worship places within 1000 meter radius	6	3	7	4

4	The number of financial institution within 1000 meter radius	3	2	7	4
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Model Index value of Supply and Demand

a. Index value of Supply for Soponyono Market

No	Indicator	Score	Value of Standardization	Score * Value of Standardization
1	The number of market within 1000 meters radius	0.32	1	0.32
2	The number of mini market within 1000 meters radius	0.28	5	1.4
3	The number of restaurant within 1000 meters radius	0.25	5	1.25
4	The number of small stores within 1000 meters radius	0.15	2	0.3
Index Value of Supply Soponyono Market				3,27

b. Index value of Demand for Soponyono Market

No	Indicator	Score	Value of Standardization	Score * Value of Standardization
1	The number of offices within 1000 meter radius	0.32	5	1.6
2	The number of schools within 1000 meter radius	0.28	4	1.12
3	The number of worship places within 1000 meter radius	0.25	3	0.75
4	The number of financial institution within 1000 meter radius	0.15	2	0.3
Index value of Demand for Soponyono Market				3.77

c. Index Value of Supply for Paing Market

No	Indicator	Score	Value of Standardization	Score * Value of Standardization
1	The number of market within 1000 meters radius	0.32	1	0.32
2	The number of mini market within 1000 meters radius	0.28	5	1.4
3	The number of restaurant within 1000 meters radius	0.25	5	1.25
4	The number of small stores within 1000 meters radius	0.15	1	0.15
Supply Index Value for Soponyono Market				3.12

d. Index Value of Demand for Paing Market

No	Indicator	Score	Value of Standardization	Score * Value of Standardization
1	The number of offices within 1000 meter radius	0.32	5	1.6

2	The number of schools within 1000 meter radius	0.28	3	0.84
3	The number of worship places within 1000 meter radius	0.25	4	1
4	The number of financial institution within 1000 meter radius	0.15	4	0.6
Index Value of Demand for Soponyono Market				4.04

## 5.2 Discussion

The Index Value of Demand of Soponyono market is high when it is compared to the Demand index so that in the area of Soponyono market it is possible to build a new market with more detail and real survey. The Index Value of Demand of Paing market is high when it is compared to the Demand Index so that in the area of Paing market it is possible to build new market with certain and real survey by the external parties which is neutral. This research contributes method of the demand and supply measurement with the Model Index method for the accuracy and the appropriateness of the data so that it requires further research.

The results of the research of Similarities and differences when it is compared to the previous research are as follows, The differences with other researchers i.e. Aditya Sigid Nugraha (2013) by using Geographic Information System Analysis. Aditya Sigid Nugraha (2013) applied Nearest Neighbor Analysis in order to find out the separation pattern meanwhile the research of Pontjo et al (2016) applied Count Point Analysis and Index Model for Demand index and market supply. The similarities are the research object is market.

The differences with the research of Vandha P et al (2013) that it used Geographic Information System. Vandha P et al (2013) applied Analytical Hierarchical Process (AHP) in order to produce recommendation of new market while in the research of Pontjo et al (2016) used Count Point Analysis and Index Model for demand index and market supply. The similarities are the research object is market.

## 6. Conclusion and Suggestion

### 6.1 Conclusions

It can be concluded that this research has answered the question i.e.: How do the supply and demand of traditional market at Soponyono and Paing market. The techniques which has been used to solve the problem is done by integrating the statistical techniques and geographic information systems. Statistical techniques has been used to plan the score and the value of standardization of each indicator of supply and demand. Geographic Information System has been used to collect the data object coordinates, overlay analysis, to calculate the number of objects within a certain radius. The result of value of demand index is high when it is compared to the supply index of market at Soponyono market and Paing markets.

## **6.2 Suggestion**

In accordance with the research conclusions it is still possible to establish new markets around the Soponyono market and Paing market. Nevertheless, the legally observation, public conveniences, and others are still to be done. The limitations of this research is the adequacy of the data is still low. This research has been contributed by the Index Model method as one of the method to calculate the demand and supply index which is able to implement for many kinds of research object.

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