

## Pattern Analysis of Cluster and Market Orientation (Religious Tour Area of Gus Dur's Grave)

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Article Info	ABSTRACT
<p><b>Article history:</b></p> <p>Received Jul 12<sup>th</sup>, 2017 Revised Aug 20<sup>th</sup>, 2017 Accepted Oct 26<sup>th</sup>, 2017</p> <hr/> <p><b>Keyword:</b></p> <p><i>Islamic Tour, Tebuireng, Cluster, K-Means, Market orientation</i></p>	<p>Economic phenomena that occur in the region of sharia tourism needs to be reviewed to see the characteristics of a developing economy. Cluster analysis is a method in the stretcher on this study, as a study of the development of Islamic tourism in the area of Islamic tourism Gus Dur's grave Tebuireng. This research aims to determine the characteristics of religion stakeholder stakeholders, also to describe the visitors &amp; business actors based on the variables of interest to the market by using K-Means cluster. From the results of data processing in get cluster 1 is a product that majority in production in Jombang, both typical Jombang and not typical Jombang. Furthermore, the product on cluster 2 is a product not typical of Jombang which is not produced in Jombang and produced in Jombang. Then the product on cluster 3 is a product not typical of Jombang which is not produced in Jombang. And for the study of market orientation, the model of equation that is formed is the business structure and economic scale of the large street vendors (X1), investment orientation is also large (X2), then there are contracts and commitment of business owners with suppliers (X3), and there is cooperation between street vendors with outsiders (X5), and there is a lending unit (X7), it is concluded that it will create PKL with market-oriented performance.</p> <p style="text-align: right;"><i>Copyright © 2017 Green Technology. All rights reserved.</i></p>

### INTRODUCTION

The area of Gus Dur's Grave (the fourth president of Indonesia) became one of the religious tourism destinations for religious tourists of Indonesia. With its creation, it indirectly turn the wheels of the economy around the grave area.

The growth of informal sector, like street vendors, is one of the forms of community elasticity in an effort to earn income and provide for the family. However, if the development is not planned and placed in the right location, it will cause such problems as like irregularities faces of sharia tourism areas, traffic congestion, garbage buildup and many other problems. In accordance with the economic law, the street vendors tend to take place in a strategic location with consumer crowds, so it tends not to consider the urban spatial layout. They tend to occupy locations that are not intended, such as sidewalks or road bodies that can disrupt traffic flow.

Like the proverb stated that "no sugar no ant", the market as a center of economic activity in a city becomes an attractive space for street vendors to offer goods and services although they have to occupy public spaces and cause problems [1].

Many years later, after Indonesia was independent, pedestrian roads were used by traders to sell. In the old days, the name was merchant traders, but now it becomes a street vendor. In the fact, looking up to the history, it should be named as a five-foot trader. In a Presidential Regulation No. 125/2012 concerning with Coordination of Structuring and Empowerment of street vendors, chapter 1 number 1, it is explained that street vendors, hereinafter abbreviated as street PKL (Pedagang Kaki Lima), are business actors doing trading business by using the means of moving business or no-moving business, using urban infrastructure, social facilities , public facilities, land, and government or private building that are temporary/non-permanent.

According to McGee and Yeung (1977), street vendors have the same meaning as 'hawkers', which are defined as people who offer goods and services for sale in public places, especially on the roadsides and sidewalks. Similarly, Soedjana (1981) defines street vendors as a group of people offering goods and services

for sale on sidewalks or on the edge/side of the road, around shopping centers/shops, markets, leisure/entertainment centers, office centers and centers education, either permanent or semi-permanent, informal or semi-official status and performed either morning, noon, evening or night.

The proposal written by [2] talking about boarding school can be seen as follows: "As a santri city, Jombang became one of the goals of the youth who want to gain knowledge of religion, not only the science of religion, but also the general science, because the boarding school in Jombang also has undergone many changes not only salafiyah boarding school, but also many modern boarding schools. There are also boarding schools that implement salafiyah system with modern systems, such as Tebuireng Boarding School, Rejoso Peterongan Boarding School, Denanyar Boarding School, and Tambak Beras Boarding School. According to Nasir (2005: 87) classifies Islamic Boarding School into four, namely (1) salaf, which means an Islamic Boarding School with salaf and classical education system by applying 90% religious curriculum and 10% general curriculum, (2) Developing Islamic Boarding School, which means semi developed islamic boarding schools that applied 70% religious curriculum and 30% general curriculum, (3) Modern Islamic Boarding School (Khalaf), which means developing boarding school that organize general and religion education system from the basic level to the level of university (4) ideal boarding school, which means a boarding school like modern boarding school equipped with various skills that include agriculture, engineering, livestock, fishery, quality banking but still maintain its trademark as a Islamic school that is still relevant to the needs of the community and its development, so that alumnus really have certain title as khalifah fil ardhi. " [2]

A cluster process is a character seen from the manufacturing industry from large, medium and small industries, and households. Cluster is the geographical concentration of the same manufacturing sub-sector. The cluster emerges as a result of the cluster process (clustering process), a cluster process called a network (network) which later developed into industrial district (Kuncoro, 2002). Industrial cluster patterns proposed by Markussen, based on his studies in the United States, the business structure variables and economies of scale, investment decisions, partnerships with suppliers, cooperative networks with employers in clusters, markets and labor migration, linkages of local cultural identity, and the role of government, the Markussen cluster pattern is divided into four. They are the Marshallian district, Hub and Spoke district, satellite district, and Stateanchored district. [3]

## RESEARCH BENEFITS

There are some benefits of this research. They are:

1. To know the pattern of clusters of emerging economies that occur in Islamic tourism
2. As a consideration to manage the economy of Islamic tourism area in Tebuireng Jombang.
3. As a proof between theory and actual practice in the field.

## RESEARCH METHOD

K-means clustering is one of the non-hierarchical data clustering methods that classifies data in the form of one or more clusters/groups. The data that have the same characteristics are grouped in one cluster/group and the data having different characteristics are grouped with other clusters/groups, so the data in one cluster/group has a small variation level (Agusta, 2007).

Based on Santoso (2007), the steps to do clustering by using K-Means method are:

- a. Choose the amount of k cluster.
- b. There are many ways to do k center cluster initialization but the most often done is by doing it in randomly. Cluster centers are assigned initial values with random numbers.
- c. Allocate all data/objects to the nearest cluster. The proximity of two objects is determined by the distance of the two objects. The same with the proximity of a data to a particular cluster, it is determined the distance between the data with the cluster center. In this stage, it is necessary to calculate the distance of each data to each cluster center. The most distance between one data and one particular cluster will determine which data to enter in which cluster. To distance all data to each point of cluster center can use Euclidean distance theory. It formulated as follows:

$$D(i, j) = \sqrt{(X_{1i} - X_{1j})^2 + (X_{2i} - X_{2j})^2 + \dots + (X_{ki} - X_{kj})^2} \dots (1)$$

dimana:

$D(i, j)$  = Jarak data ke  $i$  ke pusat cluster  $j$

$X_{ki}$  = Data ke  $i$  pada atribut data ke  $k$

$X_{kj}$  = Titik pusat ke  $j$  pada atribut ke  $k$

- d. Recalculate cluster center with current cluster membership. The cluster center is the average of all data/objects in a particular cluster. If desired, it can also use the median of the cluster. So, the mean is not the only size that can be used.
- e. Reassign each object by using the new cluster center. If the cluster center does not change again then the clustering process is complete. As an alternative, return to step number 3 until the center of the cluster does not change anymore.

The K-Means algorithm is the best algorithm in the Partitional Clustering algorithm and is most commonly used among other Clustering algorithms because of its simplicity and efficiency [1].

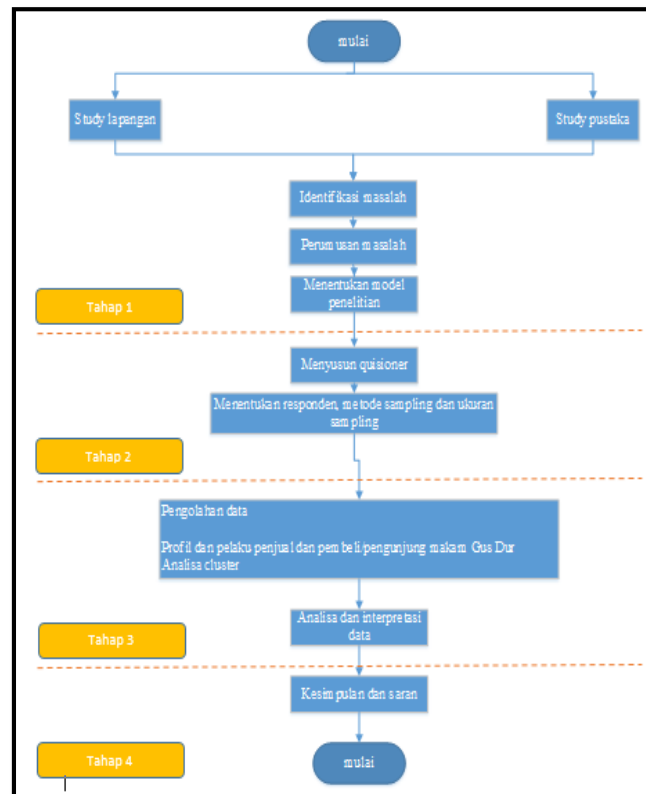


Figure 1. Flow diagram of the research

Market orientation is one part of marketing. Marketing is an activity that gives direction to all business/commercial activities that include a marketing mix in which the products (goods, services, and ideas) marketed are the embodiment of a concept that undergoes a process of development and production aimed at the end user (Hibertus, 2007). While Kotler (1980) stated that marketing is a social and managerial process that makes individuals and groups get what they need and want through the creation and exchange of mutual products and value with others. In some market orientation, it is necessary to know the type of market to enter, including in its characteristics. Those can make clear direction about the market orientation of the resulting product, as for the market orientation is meant for the product.

Customer orientation and competitor orientation include all activities involved in obtaining information about buyers and competitors on the intended market and deploying through the business. Customer orientation is the core of market orientation according to Never and Slater (1994) which also means as an adequate understanding of customer's target by putting customer interest in the first order while not negating other stakeholders such as owners, managers and employees with the aim of creating value superior to buyers continuously. While competitor orientation is a company's effort to understand the strengths and weaknesses short-term competitors and long-term capabilities and strategies owned by competitors.

The relationship between the Biggest Buyer Network and Market Orientation which is market-oriented are judged to have higher market knowledge and better customer-related capabilities. This ability is seen to guarantee the company to gain higher profits compared to less market-oriented companies (Narver and Slater, 1990). The buyer network has an important meaning to develop business products. When the marketing network has been obtained, then any product produced by small and medium enterprises is no longer needed to find prospective buyers, even it is possible for prospective buyers to come by itself (Riswido, 2007). The buyer is the party that uses the output produced by a company.

Based on Kotler (1980), there are five kinds of buyer. They are:

1. Konsumen Maket  
Individuals and households who buy goods and services for personal consumption.
2. Industrial Market  
Groups/Organizations that purchase goods and services for their production processes to gain profit or achieve other goals.
3. Reseller Market  
Groups/Organizations that purchase goods and services to be resold for profit.
4. Government Market  
Government bodies that purchase goods and services to produce public services or to move goods and services to others in need.
5. International Market  
Buyers from overseas include consumers, manufacturers, resellers, and foreign governments

This type of buyer is developed to be an indicator of the strong relationship of the craftsmen 's network with the buyers used in this study as measured by the intensity, contract and commitment established. (Choirunnisa, 2012).

## RESULT AND DISCUSSION

This research used SPSS 20 software to analyze more in the process of research. Here is the interpretation SPSS 20 analysis. The choosing cluster in religious tourism area of Gus Dur's Grave is taken from SPSS 20 result. the criterion of the most appropriate number of clusters is if the number of clusters has the least ratio value (V2). The following table results of the ratio value of variance ratio of the cluster results for street vendors, products, visitors Gus Dur tourist area.

### 4.1 Cluster analysis.

Table of comparison score between ratio variant and the seller.

Jumlah Cluster	Varians within ( $V^2_w$ )	Varians between ( $V^2_b$ )	Varians ( $V^2$ )
1	<b>0.313</b>	<b>0.897</b>	<b>0.349</b>
2	0.285	0.098	2.901
3	0.282	0.143	1.978
4	0.218	0.170	1.283

Table of ANOVA result to analyze the seller cluster.

	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
S1.Asal pedagang	.007	1	.100	98	.067	.797
S2.Jenis kelamin pedagang	.007	1	.253	98	.026	.871
S3.Status pernikahan pedagang	1.042	1	.234	98	4.446	.038
S4.Usia pedagang	3.082	1	.407	98	7.567	.007
S5.Pendidikan pedagang	6.407	1	.717	98	8.940	.004
S6.Lama usaha dari pedagang	.282	1	.753	98	.374	.542
S7.Status usaha dari pedagang	3.375	1	.504	98	6.699	.011
S8.Bidang usaha dari pedagang	.282	1	.387	98	.728	.396
S9.Asal modal awal usaha	3.082	1	.167	98	18.462	.000
S10.Nilai modal awal usaha	7.707	1	.380	98	20.257	.000
S11.Jumlah karyawan dari pedagang	13.500	1	.401	98	33.707	.000
S12.Penghasilan bersih perbulan	171.73	1	.820	98	209.39	.000
	5				4	

<b>S13.Status tempat usaha dari pedagang</b>	<b>.602</b>	<b>1</b>	<b>.512</b>	<b>98</b>	<b>1.176</b>	<b>.281</b>
S14.Alat komunikasi yang digunakan pedagang	.882	1	.218	98	4.045	.047
<b>S15.Alat transportasi yang digunakan pedagang</b>	<b>3.082</b>	<b>1</b>	<b>.905</b>	<b>98</b>	<b>3.404</b>	<b>.068</b>
S16.Jaringan listrik yang digunakan pedagang	4.507	1	.487	98	9.253	.003
<b>S17.Kelayakan peralatan usaha yang digunakan</b>	<b>.082</b>	<b>1</b>	<b>.234</b>	<b>98</b>	<b>.349</b>	<b>.556</b>

Table of comparison score between ration variant and the product.

<b>Jumlah Cluster</b>	<b>Varsians within (<math>V^2_w</math>)</b>	<b>Varsians between (<math>V^2_b</math>)</b>	<b>Varsians (<math>V^2</math>)</b>
<b>1</b>	0.549	1.250	0.440
<b>2</b>	<b>0.448</b>	<b>3.980</b>	<b>0.112</b>
<b>3</b>	0.356	1.642	0.217
<b>4</b>	0.282	0.686	0.410

Table of result of ANOVA to analyze product cluster

	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
P1.Jenis produk yang dijual	9.949	2	1.590	96	6.258	.003
<b>P2.Pengetahuan asal produk yang dijual</b>	<b>.551</b>	<b>2</b>	<b>.218</b>	<b>96</b>	<b>2.534</b>	<b>.085</b>
P3.Prosentase kandungan produk asli jombang yang dijual	118.604	2	.697	96	170.263	.000
P4.Asal bahan baku produk yang dijual	2.652	2	.202	96	13.107	.000
P5.Asal produk yang dijual pedagang	6.755	2	.512	96	13.188	.000
<b>P6.Jumlah jenis produk yang dijual pedagang</b>	<b>.337</b>	<b>2</b>	<b>.832</b>	<b>96</b>	<b>.405</b>	<b>.668</b>
P7.Daya laku produk per hari	4.084	2	1.165	96	3.505	.034
P8.Cara mendapatkan produk	39.585	2	.838	96	47.228	.000

Table of comparison between ratio variant and the visitor.

Jumlah Cluster	Varians within ( $V^2_w$ )	Varians between ( $V^2_b$ )	Varians ( $V^2$ )
1	0.253	0.083	3.053
2	<b>0.192</b>	<b>0.561</b>	<b>0.342</b>
3	0.154	0.128	1.203
4	0.137	0.158	0.866

Table of ANOVA result to analyze religion tour visitor cluster.

	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
V1.Jenis kelamin pengunjung	.089	2	.253	172	.351	.704
V2.Usia pengunjung	.172	2	.384	172	.447	.640
V3.Asal pengunjung	1.875	2	.175	172	10.693	.000
V4.Tipe pengunjung	.029	2	.179	172	.164	.849
V5.Frekuensi kunjungan per tahun	2.580	2	.573	172	4.504	.012
V6.Budget uang yang dimiliki pengunjung	86.529	2	.443	172	195.114	.000
V7.Produk yang sering dibeli pengunjung	92.007	2	.400	172	230.139	.000
V8.Nilai pembelian dari pengunjung	5.196	2	.442	172	11.762	.000
V9.Pengetahuan pengunjung tentang produk asli jombang	.234	2	.122	172	1.922	.149

#### 4.2 Market Orientation

In this research, identification of cluster patterns is based on model variable of Markusen. Based on Markusen's research in US (1996), he stated that there are four cluster system; they are Distrik Industri Marshallian Distrik Hub and Spoke, Distrik Satelit dan Distrik State-anchored.

Table identification of Street Vendors cluster pattern of tebuireng religious tourism area based on variable markusen.

Variabel	Keterangan
X1.Struktur bisnis dan skala ekonomi	Didominasi oleh industri kecil dan
X2.Orientasi investasi	industri rumah tangga
X3.Kontrak dan komitmen antara pemilik usaha dan penyedia produk,	Lokal
X4.Tingkat kerjasama antar sesama kelompok PKL	Relatif Kuat
X5.Tingkat kerjasama kelompok PKL dengan pihak luar,	Relatif Kuat
X6.Pasar dan migrasi tenaga kerja	Relatif Kuat
X7.Unit tempat peminjaman dana	Berlimpah dan migrasi tenaga kerja ke
X8.Peranan pemerintah lokal	dalam kluster PKL area wisata religi cukup tinggi.
X9.Peranan asosiasi dagang	Tidak Ada .

reference: Wimba Agung Prasetya, 2011.

From the clarification of the cluster pattern above, it can be determined including which pattern of the four cluster patterns posed by Markusen.

Variabel	Marshallian	Hub & spoke
X1. Struktur bisnis dan skala ekonomi	✓	
X2. Orientasi investasi	✓	
X3. Kontrak & komitmen antara pemilik usaha & penyedia produk,	✓	
X4. Tingkat kerjasama antar sesama kelompok PKL		✓
X5. Tingkat kerjasama kelompok PKL dengan pihak luar,		✓
X6. Pasar dan migrasi tenaga kerja	✓	
X7. Unit tempat peminjaman dana		
X8. Peranan pemerintah lokal		
X9. Peranan asosiasi dagang		✓

#### 4.3 Logistic regression model.

The testing the significant variables in the model of independent variables that influence the dependent variable will be tested to know whether their influence significantly affects the dependent variable or not.

The following is the test result

Variables in the Equation								
	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Step 1 <sup>a</sup> X1	1.566	.693	5.109	1	.024	4.786	1.231	18.604
X2	-2.729	.891	9.377	1	.002	.065	.011	.374
X3	-1.229	.580	4.495	1	.034	.293	.094	.911
X4	-.698	.655	1.137	1	.286	.497	.138	1.796
X5	2.149	.813	6.983	1	.008	8.578	1.742	42.238
X6	.941	.770	1.497	1	.221	2.564	.567	11.584
X7	-2.317	.785	8.708	1	.003	.099	.021	.459
X8	-.984	.546	3.244	1	.072	.374	.128	1.091
X9	.846	.836	1.025	1	.311	2.331	.453	11.995
Constant	-.046	1.115	.002	1	.967	.955		

a. Variable(s) entered on step 1: X1, X2, X3, X4, X5, X6, X7, X8, X9.

The equation of logistic regression model built from Marshallian variable test result, hub & spoke street vendors of religious tourism area. This equation to predict the value of market-oriented performance or not based on the independent variables significantly influences the above. The result of logistic regression equation model is:

$$\hat{p} = \frac{(e^{1,566}x_1 + e^{-2,729}x_2 + e^{-1,229}x_3 + e^{2,149}x_5 + e^{-2,317}x_7)}{1 + (e^{1,566}x_1 + e^{-2,729}x_2 + e^{-1,229}x_3 + e^{2,149}x_5 + e^{-2,317}x_7)}$$

If all independent variables are given a value of 1, where the value 1 is the coding of the business structure and the large economic scale for X1, the investment orientation is large for X2, there are contracts and commitment of business owners with suppliers for X3, there is cooperation between street vendors with outsiders for X5, and there is a lending unit for X7. Then the prediction value of the logistic regression model on the market orientation performance of street vendors is.

$$\hat{p} = \frac{(e^{1,566} * 1) + (e^{-2,729} * 1) + (e^{-1,229} * 1) + (e^{2,149} x_5 + (e^{-2,317} * 1))}{1 + \{(e^{1,566} * 1) + (e^{-2,729} * 1) + (e^{-1,229} * 1) + (e^{2,149} * 1) + (e^{-2,317} * 1)\}}$$

$$\hat{p} = 0,933.$$

The result of prediction value is 0.933 where > 0,5 then it means close to 1, where prediction = 1 means performance oriented market. Based on the equation model, if the business structure and economic scale of the street vendors are large (X1), then the investment orientation is also large (X2), then there is contract and commitment of business owner with supplier (X3), and there is cooperation between street vendors with outsiders (X5), and there is a lending unit (X7), it is concluded that it will create street vendors with market-oriented performance.

## CONCLUSION AND SUGGESTION

### 5.1 Conclusion

Based on the result of data, the conclusion of this research are:

1. The cluster system of religious tourism site in Tebuireng Jombang is the cluster of Marshallian and Hub & Spoke.
2. Based on the logistic regression analysis, there are 5 variables having big influential to the market orientation. They are x1, x2, x3, x5, x7.

### 5.2 Suggestion

From the result of this research, we can suggest to reanalyze the market orientation system as a consideration to determine the policy of good management in religious tourism site in Tebuireng. For the next researcher, it can be taken as a future consideration to find the solution to manage the development of religious tourism site in Tebuireng.

## REFERENCES

- [1] B. Budiman, "Kajian Lingkungan Keberadaan Pedagang Kaki Lima Di Kawasan Banjaran Kabupaten Tegal," 2010.
- [2] H. Supratno, "Pendidikan Kesehatan Lingkungan Dalam Perspektif Islam (Studi Kasus Pondok Pesantren Di Kabupaten Jombang)".
- [3] R. Choirunnisa, "Analisis Pola Klaster Dan Orientasi Pasar (Sentra Industri Kerajinan Logam Desa Tumang Kecamatan Cepogo Kabupaten Boyolali)".
- [4] L. Zahrotun, "ANALISIS PENGELOMPOKAN JUMLAH PENUMPANG BUS TRANS JOGJA MENGGUNAKAN METODE CLUSTERING K-MEANS DAN AGGLOMERATIVE HIERARCHICAL CLUSTERING (AHC)," *Jurnal Informatika*, vol. 9, 2015.
- [5] A. Widayanti, "Analisis Kluster untuk Mengelompokkan Performansi Mahasiswa Fakultas Ilmu Terapan Ditinjau dari Bidang Akademik dan Non Akademik," *Jurnal Teknologi Informasi*, vol. 1, pp. 229-231, 2017.
- [6] D. Safitri, T. Widiari, Y. Wilandari and A. H. Saputra, "Analisis Cluster pada Kabupaten/Kota Di Jawa Tengah Berdasarkan Produksi Palawija," *Media Statistika*, vol. 5, pp. 11-16, 2012.
- [7] S. Laeli, "Analisis Cluster Dengan Average Linkage Method Dan Ward's Method Untuk Data Responden Nasabah Asuransi Jiwa Unit Link".
- [8] F. S. Islami, "Analisis Pola Klaster, Formasi Keterkaitan Dan Orientasi Pasar (Sentra Industri Krupuk Mie Desa Harjosari Lor Kecamatan Adiwerna Kabupaten Tegal)".
- [9] K. H. Hidayatullah and others, "ANALISIS KLASSTER UNTUK PENGELOMPOKAN KABUPATEN/KOTA DI PROVINSI JAWA TENGAH BERDASARKAN INDIKATOR KESEJAHTERAAN RAKYAT," *Jurnal Statistika Universitas Muhammadiyah Semarang*, vol. 2, 2014.
- [10] Febriana, "Analisis Klaster K-Means Dan K-Median Pada Data Indikator Kemiskinan (Studi Kasus Data Indikator Kemiskinan Kabupaten Di Indonesia Tahun 2009)".



- [11] I. Fatimah and J. Nugraha, "Analysis of Quantitative Structure and Solubility Relationship for Organophosphate Active Compounds Linear Model and Cluster Model Approach," *Jurnal ILMU DASAR*, vol. 8, pp. 91-102, 2007.
- [12] A. Fadliana, "Penerapan metode Agglomerative Hierarchical Clustering untuk klasifikasi Kabupaten/Kota di Provinsi Jawa Timur berdasarkan kualitas pelayanan keluarga berencana," 2015.
- [13] B. Dwi L, "Analisis Tipe – Tipe Strategi Pada Usaha Kecil Keramik Dan Gerabah Dinoyo Malang".
- [14] M. U. Burhan, A. Suman, M. Pudjiharjo and N. Soetjipto, "ANALISIS EKONOMI TERHADAP STRUKTUR, PERILAKU, DAN KINERJA PASAR PUPUK DI JAWA TIMUR (Kasus di Kabupaten Lumajang dan Kabupaten Ngawi)," *Journal of Indonesian Applied Economics*, vol. 5, 2012.
- [15] E. Bakdiyono, "Pemetaan Dan Pengembangan Klaster Industri Mebel Menggunakan Analisis Swot (Studi Kasus: Kelurahan Gilingan Kecamatan Banjarsari, Surakarta)".
- [16] E. N. Aisyah, "Klaster Industri Mebel Klender," 2011.