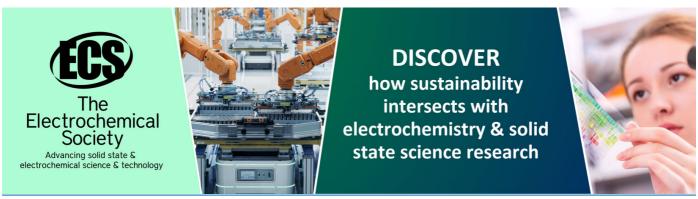**PAPER • OPEN ACCESS**

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Two Step Cluster Analysis for Tourist Segmentation Coastal Object for Green Marketing Strategy

Nurjannah[1,4]*, Darmanto[1,4], Solimun[1,4], Ani Budi Astuti[1,4], Adji Achmad Rinaldo Fernandes[1,4], Luthfatul Amaliana[1,4], Indah Yanti[2,4], Riyanti Isaskar[3,4]

[1]Statistics Department, Faculty of Mathematics and Natural Sciences, University of Brawijaya
[2]Mathematics Department, Faculty of Mathematics and Natural Sciences, University of Brawijaya
[3]Social Economic Department, Faculty of Agriculture, University of Brawijaya
[4]Kelompok Kajian Pemodelan Statistika Aplikasi di Bidang Manajemen, Faculty of Mathematics and Natural Sciences, University of Brawijaya

*Corresponding author: nj.anna@ub.ac.id

Abstract. Regional autonomy causes the Government of Malang Regency needs to increase local revenue, one of them by maximizing the existing tourism potential, such as Balekambang Beach and Batu Bengkung attractions. The purpose of this study is to determine the grouping of tourists formed based on demographic segmentation and satisfaction of tourists who visit the two beach attractions. The statistical analysis that can be used for grouping objects is cluster analysis. For mixed data, the combination of metric and non-metric grouping data can be performed with Two Step Cluster Analysis. The population in this study is all tourists Balekambang beach and Batu Bengkung, Malang regency. Using the rule of tumb, the sample size for this study is 120 samples. Sampling technique in this research use nonprobability sampling method with accidental base and quota sampling. This research applied two step cluster analysis using log-likelihood distance. The results of this study showed that Balekambang Beach and Batu Bengkung Beaches each formed three optimal clusters, while the tourists from the two coastal joints formed two optimal clusters. Overall, the tourist clusters formed on the joint and each coast have low satisfaction rates.

Keywords: Two Step Cluster, Tourist Segmentation, Coastal Object.

1. Introduction

Cluster analysis refers to one of the multivariate techniques of which objective is to group objects with similar characteristics [1]. In general, this analysis can be divided into two, namely Hierarchical Cluster and Nonhierarchical Cluster. Hierarchical Cluster is applied when number of cluster to develop has not been unidentified yet, while Nonhierarchical Cluster is applied when the number of cluster has been identified. Agglomerative methods work by grouping similar objects into one cluster; divisive method is at the opposite of the agglomerative. Both hierarchical and non-hierarchical method can only work for data with the same scale, for example metric or non-metric data only. Two Step Cluster is statistical analysis works for data with different scale or combination between metric and non-metric data. Objective of the study is to describe optimum cluster developed from data with different scale obtained from Balekambang Beach visitors, Batu Bengkung Beach visitors and combination of the two based on demography and customer (visitor) satisfaction. The advantage of this research compared to previous

research is this research obtaining the optimal number of clusters using two step cluster analysis, without using non-linear main component analysis techniques and applied to the tourism sector. It is expected that from this study, optimal clusters can be formed based on certain characteristics possessed by tourists in each cluster.

Green Marketing is marketing that uses environmental issues as a strategy to market products. Green marketing within the company includes several things such as the production process, pricing process, promotion process, and distribution process. This is in accordance with the statement [2] "green marketing as the movement which is directed towards organization production of products is environmentally responsible" [3].

2. Literature Review

2.1. Tourism Management

Referring to the Act Number 10 of 2009, tourism relates to any activities in attraction spots supported by various facilities and services provided by the community, businessmen, government and local government.

In the context of tourism, tourists cannot be neglected as they are the major elements in tourism activities. As pointed out by Setiawan [7], tourists are subjects who travel from their houses to visit and stay in other places for more than 24 hours to; fist, enjoy their leisure time, vacation, and holiday and for health-purposes, learning and religious activities; Second, for business purposes, family visit and other tasks as well as conferences. The success of tourism development in an area highly depends on the number of tourists visiting an attraction.

Basically, any aspect that motivates a person to travel will be followed by other necessities that should be taken into consideration such as the attractiveness of certain tourism spot and its facilities. Overall, the attractiveness of certain tourism spot drives ones' willingness to visit the place. By implementing good environmental awareness and local tourism management either by the community or by non-government parities, the attractiveness of certain spot will be enhanced, allowing the area to explore its potentials and attracting more tourists to come.

2.2. Market Segmentation in Relation to Green Marketing

Green marketing is an idea within the context of marketing management that is oriented to the management of environmentally-friendly marketing. Green marketing is an innovation made to respond to the increasing rate of environmental damages due to factory production activities. Companies hold the responsibility to maintain the environmental sustainability. In the 90s, the idea of green marketing was first introduced and developed as a fresh topic that relates with consumer's motivation and their effectiveness, cooperative work and strategic alliances. The greed marketing is a marketing program that concerns a relatively broad area of environment-based marketing including company policies, marketing practices and procedures which explicitly emphasize on the environmentally-friendly business that generate earning and facilitate transactions as the major organizational and individual goals [10]. This research focuses on an element of green marketing; market segmentation. In the context of marketing, each individual has certain behaviors and characteristics in making purchases. Different consumer behavior shows that the market of certain product is rather heterogeneous. Consequently, it would be difficult for companies or service providers to serve the whole market with different consumers' characteristics.

Within the attempts to give consumers satisfactions and meet their expectations, companies or service providers need to categorize their consumers based on their needs and characteristics. The category is called market segment, while the categorization is referred to as market segmentation [8]. This view is supported by Kotler and Keller [6] who stated that market segmentation is the categorization of consumers based on the similarity of their characteristics and needs.

In food industry, the categorization of restaurants should be based on certain needs and expectations. Kivela [9] explained in an article entitled "Restaurant Marketing: Selection and Segmentation in Hong Kong", consumers select restaurants based on the segmentation of the restaurants and based on their income level and types of jobs.

The rapid development of trend among consumers demands companies to create clear distinction between their products or services and the ones offered by competitors. Every company has the willingness to start implementing the market segmentation and targeting for their products to meet the needs of the consumers and to give added-value to their products compared to competitors' products. Kotler and Keller [6] mentioned several types of market segmentation.

 a. Geographical Segmentation
    Geographical segmentation groups the market based on geographical units such as federal countries, regional areas, regencies, cities or residences. A company might decide to focus on one or several geographical areas for certain need and expectation.
 b. Demographical Segmentation
    This segmentation groups the market based on various variables such as age, sex, income level, job, education level, and so on.
 c. Psychographic Segmentation
    This segmentation groups consumers based on their social class, life style and look.
 d. Behavior Segmentation
    In this segmentation, consumers are grouped based on the situation, benefits, and status.

2.3. Tourists' Satisfaction

Satisfaction is defined by Kotler and Keller [6] as the pleasure or displeasure felt by consumers when they compare their product performance and their expectations. If the product performance could not meet their expectation, consumers would not be satisfied. Whereas, when the product meets their expectations, consumers would be satisfied. Meanwhile, the term satisfaction is explained by Zeithaml et al., in Setiawan [7] is referred to consumers' evaluation of certain product or service whether or not it has met their expectation. Based on those views, a red line is drawn that consumer satisfaction is consumers' expression that appear based on the result of comparing certain product performance and their expectations.

In the context of tourism, tourists' satisfaction refers to their experiences during their trip including accommodation, weather, natural environment, social environment, etc. There are some attributes of satisfaction in the context of tourism as mentioned by Chi and Qu in Setiawan [7] as follows.

1. Lodging, refers to the dimension of service for tourists in the form of physical object.
2. Attractions, relates to any attractions of a tourism spot.
3. Shopping, refers to the availability of shopping centers or souvenir counters in a tourism spot.
4. Dining, refers to the completeness of culinary centers such as restaurants or street vendors.
5. Activities and Events, refer to any cultural events that can be enjoyed in a tourism sopt.

Accessibility, refers to the easiness of access to reach various spots in a tourism object.

3. Research Methods

In this research, primary data were obtained from the questionnaires distributed to a number of tourists in Balekambang Beach and Batu Bengkung Beach. The data contained tourists' perceptions related to their satisfaction visiting the place and consumers' demographical segmentation aspects (sex, age, address, income level, education background and occupation). This research was conducted in Balekambang Beach and Batu Bengkung Beach, *Jalur Lintas Selatani¸* Malang Regency. The population of this research was infinite because the number of visitors could not be determined. Sampling was done using non-probability sampling technique based on accidental sampling and quota sampling. The obtained data were then analyzed using Two Step Cluster Analysis as follows.

3.1. Two Step Cluster Analysis

Two Step Cluster is type of analysis that groups objects based on two stages [4]. Two stages of Two Step Cluster are as follows:

1. Pre-Clustering

   The first stage of two step cluster is pre-clustering. Pre-clustering is conducted to develop sub-clusters from each object of the variable. Method implemented in pre-clustering is sequential clustering. Factors that affect result of basic sequential clustering are θ score (threshold) and maximum sub-cluster. θ is one of the factors that determine number of sub-cluster. At the beginning, θ (threshold) is zero and transformed into the lowest Log-Likelihood ratio between sub-clusters. Maximum sub-cluster refers to total number of objects. Pre-clustering works by developing Cluster Feature (CF) Tree.

2. Hierarchical Cluster of Subcluster

   The following step is to categorize sub-clusters in the real clusters. Type of method that works for the categorization is Hierarchical Cluster with agglomerative method [4]. Type of ratio in the Two Step Cluster analysis is different from other cluster analyses. Two Step Cluster analysis uses Log-Likelihood ratio.

3.2. Log-Likelihood Ratio

Log-Likelihood ratio refers to ratio used when data consists of continuous and categorical variables [5]. Log-Likelihood ratio between the ith and j^{th} cluster is defined as:

$$d(i,j) = \xi_i + \xi_j - \xi_{\langle i,j \rangle} \tag{1}$$

with

$$\xi_s = -N_s \left(\sum_{k=1}^{K^A} \frac{1}{2} \log(\hat{\sigma}_k^2 + \hat{\sigma}_{sk}^2) + \sum_{g=1}^{K^B} \widehat{E}_{sk} \right) \tag{2}$$

and

$$\widehat{E}_{sk} = - \sum_{l=1}^{L_k} \frac{N_{skl}}{N_s} \log \frac{N_{skl}}{N_s} \tag{3}$$

In which:

$d(i,j)$: ratio between the ith and j^{th} cluster; ξ_i: i^{th} cluster variance; s: i^{th}, j^{th} or combination between i^{th} and j^{th} cluster symbol; ξ_j: j^{th} cluster variance; $\xi_{i,j}$: i^{th} and j^{th} cluster variance; K^A: number of continuous variable; K^B: number of categorical variable; L_k: number of category in the kth (categorical variable); N_s: number of object in the ith, j^{th} or combination between i^{th} and j^{th} cluster; ξ_s : variance in i^{th}, j^{th} or combination between i^{th} and j^{th} cluster $\hat{\sigma}_k^2$: indicator for the kth continuous variable; $\widehat{E}_{sk}$: estimated score of ith, j^{th} or combination between i^{th} and j^{th} cluster in the kth continuous variable; N_{skl}: number of object of ith, j^{th} or combination between i^{th} and j^{th} cluster in the kth categorical variable taken from the lth category; $\hat{\sigma}_{sk}^2$: indicator of variance in the ith, j^{th} or combination between i^{th} and j^{th} of the kth continuous variable

3.3. Optimal Cluster

Optimal cluster is determined based on the lowest BIC score or the highest ratio of distance measure. The formula to measure BIC is as follows [5]:

$$BIC(J) = -2 \sum_{j=1}^{J} \xi_j + m_J \log(N) \tag{4}$$

with

$$m_J = J\left(2K^A + \sum_{k=1}^{K^B} L_k - 1\right) \tag{5}$$

in which:

BIC(J)   : BIC for total number of cluster (**J**); J:1,2…,J; m_J: ratio in cluster-j developed during the hierarchical clustering stage.

4. Findings and Discussion

Prior to conducting two step cluster analysis, the first stage is to decide scale for each indicator, for example nominal, ordinal and interval scale or ratio. Based on the data discussing segmentation among Balekambang and Batu Bengkung Beach visitors, sex (X1), city of origin (X3), and occupation (X4) has nominal scale because they consist of list of names while background of education (X5) has ordinal scale because it consists not only list of name but also order (rank). Customer (visitor) satisfaction (X7) has interval scale because it consists of the same order (rank) and ratio, while income or allowance has ratio because they have an exact order, ratio and threshold.

Two indicators to identify optimal cluster in the two step cluster analysis based on demography and customer satisfaction are the highest Log-Likelihood (ratio of distances measures) or lowest BIC for Balekambang and Batu Bengkung Beach and combination between these two beaches.

Based on the two step cluster, the lowest Bayesian Information Criterian (BIC) for Balekambang Beach is 556.21 found on number of clusters three and that of Batu Bengkung Beach is 544.64, also found on numbers of clusters three. These show that total optimal cluster for each beach is three clusters. Furthermore, the lowest BIC for the combination between the two beaches is 1057.49 found on number of clusters two. It means total optimal cluster for the combination is two clusters. Visitors of each beach have distinct demography and contribute to the clusters. Demography (occupation) has the most significant contribution towards optimal cluster of each beach.

Table 1. Two Step Cluster Analysis Results

Balekambang Beach		
Number of Cluster	Number of Object	Percentage
1	27	45.0%
2	20	33.3%
3	13	21.7%
Total	60	100%
Batu Bengkung Beach		
Number of Cluster	Number of Object	Percentage
1	22	36.7%
2	14	23.3%
3	24	40.0%
Total	60	100%
Combination between Balekambang and Batu Bengkung		
Number of Cluster	Number of Object	Percentage
1	57	47.5%
2	63	52.5%
Total	120	100%

Table 1 showed optimum clusters developed after the two step cluster analysis. Based on Table 1, it can be concluded that members of each of the cluster are quite similar. The first cluster of Balekambang beach is 45% or 27 individuals, the second cluster is 33.3% or 20 individuals and cluster 3 is 21.7% or 24 individuals. On the other hand, the first cluster of Batu Bengkung beach is 36.7% or 22 individuals,

the second cluster is 23.3% or 14 individuals and the third is 40% or 24 individuals. The first cluster of the combination between Balekambang and Batu Bengkung beach is 47.5% or 57 individuals and the second one is 52.5% or 63 individuals. Once the optimal clusters have been developed, the following step is to make interpretation towards each of the optimal clusters in order to describe characteristics of each of the clusters.

After the optimal clusters (the lowest SIC) have been developed, the following procedure is making interpretation about each cluster of Balekambang Beach, Batu Bengkung Beach and combination between Balekambang and Batu Bengkung Beach. Table 2 described result of the interpretation.

Table 2. Balekambang Beach Visitor's Characteristics from Each Cluster based on Categorical Variables

Variable	Category	Number of Individual per Cluster		
		1	2	3
Sex (X_1)	Male (1)	22	5	2
	Female (2)	5	15	11
Place of Origin (X_3)	East Java (1)	27	18	12
	Central Java (2)	0	1	0
	West Java (3)	0	0	0
	Banten (4)	0	0	1
	Yogyakarta (5)	0	1	0
	DKI Jakarta (6)	0	0	0
	Others (7)	0	0	0
Occupation (X_4)	Student/University Student (1)	0	0	13
	Private Employee (2)	14	0	0
	Government/State-Owned Enterprise Officer (3)	13	6	0
	Entrepreneur (4)	0	14	0
	Professional (5)	0	0	0
	Retiree (6)	0	0	0
	Others (7)	0	0	0
Background of Education (X_5)	Elementary School	0	3	0
	Junior High School	1	0	0
	Senior High/ Vocational School	10	8	10
	3-year Diploma	0	0	0
	Bachelor Degree	16	8	3
	Master's Degree	0	1	0
	Doctorate Degree	0	0	0

Based on Table 2 and 3 discussing the optimum clusters consisting of Balekambang Beach's visitors and were developed based on the lowest Bayesian Information Criterian (BIC), it can be concluded that:
1. The first cluster consists of 27 visitors consisting of 22 female visitors and 5 male visitors whose age is approximately 29 years old. Different from other clusters, this cluster is dominated by male visitors.

All visitors in this cluster are from East Java considering the geographical location of this beach and they have low customer satisfaction. Most of or 16 visitors in this cluster have Bachelor's degree, different from cluster three in which most members or 10 individuals are senior high school or vocational school graduates. Most individuals in the first cluster work as private employees or in State-Owned Enterprises and thus, their average income is 1,533,000 rupiahs.

2. The second cluster consists of 15 male visitors and 5 female ones whose age is approximately 35 years old. Most of the visitors in the cluster are from East Java and some are from either West Java or Yogyakarta. The visitors in this cluster have low customer satisfaction similar to those in the first and third cluster. In other words, the beaches management is unable to meet some of the indicators of the customer satisfaction. In the second cluster kedua, most visitors graduated from senior high or vocational school. The highest background of education in the second cluster is Master's degree and the lowest is elementary school. The visitors in this cluster generally work as entrepreneurs or at State-Owned Enterprises and as the result, their income is higher compared to that of the first and third cluster. These entrepreneurs and employees make 2,392,000 rupiahs. As the consequence, they are more consumptive rather than the visitors in the first and third clusters.

3. Characteristics of visitors in the third cluster are similar to those in the second cluster. The third one is dominated by male visitors who have low customer satisfaction. Most of them are 20 years old, the youngest among the first and second clusters. Most visitors in this cluster graduated from senior high and vocational school; only three have Bachelor's degree. Most individuals in the second cluster are students whose average income is 657,600 rupiahs, the lowest one among the other clusters. Most of them come from East Java and only one came from Banten. This information that very few people who live outside East Java know this beach. Therefore, the management should improve their means of promotion to attract more domestic or international visitors.

Table 3 Balekambang Beach Visitor's Characteristics from Each Cluster based on Continuous Variables

Variable	Cluster	N	Average
X$_2$: Age	1	27	29 years 2 months
	2	20	35 years 9 months
	3	13	19 years 9 months
X$_6$: Income	1	27	1,533,333 rupiahs
	2	20	2,392,500 rupiahs
	3	13	657,692 rupiahs
X$_3$: Customer Satisfaction	1	27	1.82 (low)
	2	20	1.94 (low)
	3	13	1.83 (low)

Based on the characteristics of the three clusters, it can be concluded that the first cluster is "Cluster Pelancong," that consists of individuals who visits the beach for recreational purpose, the second cluster is "Cluster Wiraswasta Mapan" that consists of entrepreneurs, professionals, government officers and well-educated individuals and the third cluster is "Cluster Remaja atau Anak Muda," that consists of students and individuals below 20 years old.

Based on Table 4 and 5 discussing the optimum clusters consisting of Batu Bengkung Beach's visitors and were developed based on the lowest Bayesian Information Criterian (BIC), it can be concluded that:

1. Different from the second and third cluster, the first cluster is dominated by female visitors (22 female visitors). There are only 5 male visitors in this cluster. Most visitors came from East Java while some others came from Central and West Java. All of these visitors have low satisfaction level.

In general, this cluster consists of senior-high/ vocational school students (15 individuals) and junior high school student (1 individual). These students' average income is 1,411,318.

2. The second cluster is dominated by male visitors (8 male visitors). There are 6 female visitors in this cluster. The members of the second cluster are ± 26 years old. The majority came from East Java; only one visitor came from another island. Similar to those in the first cluster, the visitors in the second cluster also have low customer satisfaction. The second cluster consists of senior high/vocational school graduates and college graduates. In other words, background of education of the second cluster is better than that of the first (junior high school) and third cluster (elementary school). In general, the visitors in this cluster work as entrepreneur whose average income is 3,100,000 rupiahs, the highest among the three cluster. As the result, these visitors tend to be more consumptive compared to those in the first and third clusters.

Table 4. Batu Bengkung Beach Visitor's Characteristics from Each Cluster based on Categorical Variables

Variable	Category	Number of Individual per Cluster		
		1	2	3
Sex (X_1)	Male (1)	22	6	0
	Female (2)	0	8	24
Place of Origin (X_3)	East Java (1)	17	13	15
	Central Java (2)	2	0	1
	West Java (3)	3	0	2
	Banten (4)	0	0	1
	Yogyakarta (5)	0	0	0
	DKI Jakarta (6)	0	0	1
	Others (7)	0	1	4
Occupation (X_4)	Student/University Student (1)	20	0	24
	Private Employee (2)	0	1	0
	Government/State-Owned Enterprise Officer (3)	2	0	0
	Entrepreneur (4)	0	3	0
	Professional (5)	0	0	0
	Retiree (6)	0	0	0
	Others (7)	0	0	0
Background of Education (X_5)	Elementary School	0	0	1
	Junior High School	1	0	0
	Senior High/ Vocational School	15	8	21
	3-year Diploma	0	0	1
	Bachelor Degree	6	6	1
	Master's Degree	0	0	0
	Doctorate Degree	0	0	0

3. The third cluster consists of ± 21 years old male visitors who have low customer satisfaction. Most of them are senior high/ vocational school graduates. They mainly are students, similar to the first cluster, and their average income is 997,916 rupiahs, the lowest among the three clusters. The visitors

in the third cluster came from East Java and other provinces such as West and Central Java, Banten, Jakarta and other islands outside Java.

Based on the characteristics of the three clusters, similar to Balekambang Beach, it can be concluded that the first cluster is "Cluster Pelancong (=traveler)," the second cluster is "Cluster Wiraswasta Mapan (=Success Entrepreneur)" and the third cluster is "Cluster Remaja atau Anak Muda (=Teenagers)."

Table 5 Batu Bengkung Beach Visitor's Characteristics from Each Cluster based on Continuous Variables

Variable	Cluster	N	Average
Age (X_2)	1	22	20 years 6 months
	2	14	26 years 6 months
	3	24	21 years 2 months
Income (X_6)	1	22	1,411,318 rupiahs
	2	14	3,100,000 rupiahs
	3	24	997,916 rupiahs
Customer Satisfaction (X_7)	1	22	1.90 (low)
	2	14	1.75 (low)
	3	24	2.11 (low)

Based on Table 6 and 7 discussing the optimum clusters consisting of both Balekambang and Batu Bengkung Beach's visitors and were developed based on the lowest Bayesian Information Criterian (BIC), it can be concluded that:

The first cluster consists of 57 visitors (30 female visitors and 27 male visitors). They are ± 31 years old. Most came from East Java but some came from Yogyakarta (1 visitor) and another island (1 visitor). Their income is 2,417,000 rupiahs or higher than that of the second cluster and thus, they are more consumptive than the visitors in the second cluster. Most of them work as private workers. 32 visitors graduated college while some graduated junior high school. It means the first cluster has higher background of education compared to the second cluster, which is dominated by senior-high/ vocational school graduates.

The second cluster consists of individuals whose age is ± 21 years old, younger than the first cluster. Different from the first cluster, this cluster is dominated by male visitors (36 visitors). There are also 27 female visitors in this cluster making the total members of the second cluster 63 visitors. All these visitors have low customer satisfaction. 47 of them came from East Java, 5 from West Java, 2 from Banten, 4 from Central Java, 4 from other islands outside Java and one from Jakarta. 52 visitors are senior-high or vocational school students whose average income is 927,000 rupiahs, different from the first cluster which is dominated by private employees. Based on the data, it can be concluded that the first cluster is categorized as "Cluster Pelancong Mapan," while the second cluster is "Cluster Remaja atau Anak Muda."

In general, all clusters or all visitors of Balekambang Beach, Batu Bengkung Beach and both beaches have low customer satisfaction. They are thinking that the management has yet been able to meet some indicators that affect customer (visitor) satisfaction. Therefore, the management of both Balekambang and Batu Bengkung Beach should improve their facilities and service. The management should also take into account the demography of the visitors in each of the cluster in order to increase customer

satisfaction and invite more visitors to Balekambang and Batu Bengkung Beach, Malang Municipality, East Java.

Table 6. Batu Bengkung and Balekambang Beach Visitor's Characteristics from Each Cluster based on Categorical Variables

Variable	Category	Number of Individual per Cluster	
		1	2
Sex (X1)	Male (1)	30	27
	Female (2)	27	36
Place of Origin (X3)	East Java (1)	55	47
	Central Java (2)	0	4
	West Java (3)	0	5
	Banten (4)	0	2
	Yogyakarta (5)	1	0
	DKI Jakarta (6)	0	1
	Others (7)	1	4
Occupation (X4)	Student/University Student (1)	0	57
	Private Employee (2)	25	0
	Government/State-Owned Enterprise Officer (3)	15	6
	Entrepreneur (4)	0	0
	Professional (5)	0	0
	Retiree (6)	0	0
	Others (7)	0	0
Background of Education (X5)	Elementary School	3	1
	Junior High School	1	1
	Senior High/ Vocational School	20	52
	3-year Diploma	0	1
	Bachelor Degree	32	8
	Master's Degree	1	0
	Doctorate Degree	0	0

Table 7. Batu Bengkung and Balekambang Beach Visitor's Characteristics from Each Cluster based on Continuous Variables

Variable	Cluster	N	Average
Age (X2)	1	57	31 years 6 months
	2	36	20 years 7 months
Income (X6)	1	57	2,416,666 rupiahs
	2	36	927,761 rupiahs
Customer Satisfaction (X7)	1	57	1.86 (low)
	2	36	1.91 (low)

5. Conclusions and Suggestions

5.1. Conclusions
Conclusions that can be taken in this study are as follows:
1. Based on demographic segmentation and tourist satisfaction, tourist data from Balekambang Beach and Batu Bengkung Beach formed three optimal clusters in grouping tourists. While the optimal group is formed by a combination of tourists from Balekambang Beach and Batu Bengkung Beach, which are two clusters. All clusters formed from the results of two steps cluster analysis on each coast have a low level of satisfaction.
2. Data of Pantai Balekambang tourist forms three optimal clusters. In the second cluster, there were 15 male tourists with low satisfaction levels. In this cluster, 35 years 9 months old with an average income of Rp.1,630,000 found in the second cluster. The last level of education of tourists in this cluster is SD, SMA / SMK and Srata-1 who work as civil servants and entrepreneurs who come from the province of East Java.
3. The low level of satisfaction is also felt by the three optimal clusters, which are formed in the Batu Bengkung Beach tourists. The tourists of Batu Bengkung Beach have 24 male-dominated tourists as many as 32 male tourists with an average tourist income of Rp.997,916 who have low satisfaction. Male tourists in this cluster have an average age of 21 years 3 months and most of them live in East Java. Most of the last education level of tourists is high school or vocational school and all of them work as students or students.
4. The characteristics of tourists in the combination of Balekambang and Batu Bengkung Beaches formed two optimal clusters, which had a low satisfaction level where of the two clusters formed, in the second cluster it was 52.5% or as many as 63 tourists mostly aged 20 years 7 months who worked mostly as students / students who are income-earning or have an average allowance below under Rp.1,000,000 who come from most of the provinces of East Java and at least come from DKI Jakarta which have the last educational background in elementary, junior high, vocational, diploma-3 and undergraduate.

5.2. Suggestions
Based on the results of this research analysis some suggestions that can be given are as follows:
1. The manager of Balekambang and Batu Bengkung Beach in improving the quality of service is suggested to be in accordance with the demographic characteristics of tourists and several indicators (lodging, attraction, shopping, dining, activities and events, accessibility and environment) that influence tourist satisfaction.
2. For further research, it can add marketing mix variables and use additional analysis such as Biplot analysis in describing the grouping of the same characteristics graphically the coastal object of the Southern Cross Line, Malang Regency, East Java.

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