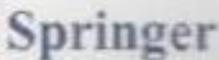


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Clustering Residents Based on Perceptions Towards Tourism Growth in Yogyakarta, Indonesia

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ABSTRACT

The development of tourism sector in the region will deliver benefits for local community including to increasing of level sales, opening more jobs, increasing the ability of people in learning foreign languages, encourage repair of facilities and infrastructure, but in the other hand it has negative impacts on local residents like congestion, pollution, noise, and rise in criminal cases. Yogyakarta, as a tourism destination faces the same problem. The tourism growth in that place makes raises the pros and cons among the community. Some people more pleased with the increasing number of tourist arrivals to their area because it gives the direct impact for their economic but others people show their objection for its negative impact especially for the traffic. Therefore, a study in Yogyakarta - Indonesia was conducted to identify and analyze the resident perception as the variable considered for the local government to arrange the policy toward tourism development. 180 questionnaires were completed from 200 respondents approached. The respondents drawn from different walks of residents by considering various aspects such as age, occupation, distance between home and nearest tourism object, income, origin, and so on. Non hierarchy clustering method -K-means cluster- is used to analyze and identify the respondent's perceptions of the tourism growth. From the calculation using SPSS 16, it is found that there are three clusters formed based on eight variables, namely: possitive residents (47%)-people who are delighted and enjoying the tourism environment ,negative residents (21%)-people who do not like with the tourism especially for its impact in traffic and opportunist residents (32%) - people who are agree that tourism causes traffic but they are not care about that because they get benefit impact from tourism activities for their income. Concluded from the data clustering, it is informed that the growth of the tourism to Yogyakarta has provided more benefits than costs to the residents.

INTRODUCTION

Yogyakarta is one of the tourist destinations for domestic and foreign travelers besides Bali, Bandung, Lombok and so on. Attractive Tourist Places in Yogyakarta are ighly variable includes such historical tourism temple, sites, beach tourism, travel shopping, nature, hotels and so forth. Yogyakarta tourism potential to continue to grow as a tourist attraction not only because the already growing old, but now also begun to emerge new objects visited by many tourists (Abdullah, 2013). The number of tourist arrivals to Yogyakarta each year continues to increase as shown in the following figure:

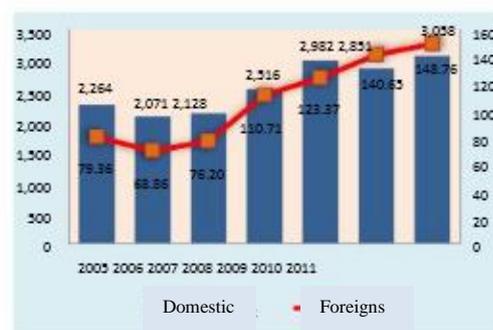


Fig 1. Graphics of Tourism Arrival in Yogyakarta 2005-2011 (Source:BPS)

The growing of tourism sector in a country or region will have a positive impact on increasing its economy, where one indicator is the increase in local government revenue (Ratrisari and Wahyono, 2012). Similarly, the impact of the tourist area of Yogyakarta, the tourism sector has become one of the most significant contributors to local government revenue, Sumbarja (2011) Yogyakarta legislators stated that 38% of revenue comes from tourism sectors. Thus the impact of tourism industry for socio-economic development makes this sector as one of Yogyakarta's vision for 2005-2025, namely "Making of Yogyakarta as a leading tourist destination in Southeast Asia" (Long-Term Regional Development Plan, 2005).

In addition to providing a positive impact on household incomes and local, tourist arrivals also provide other positive effects such as opening up more jobs, increasing the ability of people in mastering of foreign language, encourage repair of facilities and infrastructure and so on. But in the other hand the rise of travelers could give a negative impact such as congestion, pollution, noise, rise in criminal and forth (Sharma and Dyer, 2012).

These two effects trade off certainly shape the perception of its own for local people of Yogyakarta where public perception is very important for the development of the tourism industry (Cengiz, 2012). In general, according to Cohen (1984) the public perception of travelers formed through the following phases:

- Euphoria. Tourist arrivals were well received, with an abundance of hope. It occurs in the early phases of the development of tourism in a tourist destination.
- Apathy. Communities receive tourists for granted, and the relationship between public relations with tourists dominated by commercialization.
- Annoyance. It is already almost reached saturation point, and people are starting get annoyed with the presence of tourists.
- Antagonist. Society has demonstrated his displeasure to the public and seen tourists as a source of the problems.

Related to the tourism industry in Yogyakarta, it is important to assess how exactly the public response to the arrival of tourists. This information is required as input for the preparation of the development plan of Yogyakarta tourism industry. Besides that, it is also important to be examined how the people of Yogyakarta mapping linear to the phase of public perception. That is the focus of this study so that will be arranged a planning scheme development of the tourism industry in Yogyakarta. Mapping perception in this study will be carried out by any of data mining techniques, namely clustering. Clustering technique is used because it can provide information about groups of objects that have the same profile or certain characteristics. Thus, the resident profile can be obtained based on their perceptions of tourist arrivals in Yogyakarta.

LITERATURE REVIEW

Studies on the analysis of local perceptions in tourist arrivals mostly done in countries that have tourists attracted objects to be visited. Turker and Öztürk (2013) studied the perceptions of local communities in tourist arrivals in Turkey Mountain National Park Kure (TNGK). Survey conducted by the research approaches in three cities (Pinarbasi, Azdavay and Şenpazar) located in the buffer zone TNGK. A two-page questionnaire were conducted, along with structured interviews with 207 residents, local governments, and NGO members between January to March 2011. Two main conclusions can be reached from the study: first, TNGK population has a neutral or slightly positive perception towards tourism. Second, the location of the affected residents felt on tourism, with people living in Pinarbasi observe the positive impact of tourism higher than the population Azdavay and Şenpazar. By spreading the 299 questionnaires, Marzuki (2012) studied the impact of the main tourist arrivals in the region Pukhet Thailand by using Principal Component Analysis. The results show that there are four major economic impacts, they are: 1. Gain 2. Higher cost of living, 3. Economic costs, and 4. Supporting local economy. Mensah (2012) studied the perceptions of local residents as a result of tourist arrivals in the region Tafi, Atome Ghana. Using the method to face survey to 197 residents aged 18 and over result that tourist arrivals have a positive impact on the local population and the sustainability of endangered animals in the tourist areas. Chan (2011) use cluster analysis to map communities based on their perceptions of the annual activities in Macao. Through the results of 714 questionnaires showed that approximately the resident of Macao

divided into three groups, the first group is the resident who feel that Macao 's annual activities have a positive impact on people's lives in terms of economic and social. The second group believes that in addition, the positive impact of tourist arrivals Macao also bring negative impacts such as pollution, noise and so on. The last group consists of people who are not overly concerned about Macao travelers and more focused on his own personal life to Macao than think of a greater impact than existence itself Macao.

RESEARCH OBJECTIVES

The purpose of this study is to analyze resident's perception of growth in tourist arrivals in Yogyakarta by using k-means clustering techniques.

METHOD

The first stage of this research is a preliminary study includes an analysis of the problem to obtain an overview of the system to be studied. The next step is the distribution of questionnaires. Samples were taken from the people of Yogyakarta were randomly starts from communities around the tourism areas to the people who live far from the tourism attractions. The number of correspondents who surveyed a total of approximately 200 people, spread evenly in every region.

The questionnaire contained questions about what things are perceived by the public as the impact of tourist arrivals in Yogyakarta include positive and negative impacts as well as the expectations of the people associated with the concept of Yogyakarta as an area for tourists. Some variabels that wants to be known in this survey is divided into two main groups, namely:

1. Profile correspondents include gender, age, occupation, and domicile.
2. Perceptions rating includes: a response to the arrival of tourists, gains, losses and so on.

Furthermore, cluster analysis is done to classify people based on their perceptions of the travelers. This is done to determine the distribution map of the community so that profiling policies related to the tourist industry in Yogyakarta will run maximally. Clustering technique that is used in this research is non hierarchy cluster (k-means cluster). It is choosen because k-means clustering algorithm is more prominent since its intelligence to cluster massive data rapidly and efficiently (Yedla, et.al.2010)

RESULT

Respondent's Profile

From 200 distributed questionares, only 180 respondents who completed the form. It is consist of 117 male and 67 female. In term of age, it is dominated by the resident in age between 20-30 as much as 34% and resident in age between 30-40 as 26%, the next row is people between 15-20 and 40-45 as 155 and the last people in age over 50 years as 10%. Nearly 67% is the native of Yogyakarta and the rest 33% is people from other cities who live in Yogyakarta where about 43% from the respondent have been lived in Yogyakarta for more than 15 years, 13% in the leght between 15-20 years, 14% between 10-15 years, 12% between 5-10% and 18% have been lived in Yogyakarta for less than 5 years. 51% of the were living in more than 5 km away from center of the town. In the term of main occupation, the residents distribute in five groups, they are: students 38%, officer 27%, bussiness man 17%, seller 9%, and others 9%. From the survey, more than 67% has annual income less than 2 million IDR. The questionere wal also asked about the activity of the respondent when holiday, nerally 29% of thes said that stay in home is the best activitiy during the holiday, 21% work as usual, 18% join with the tourist visiting tourism objects, 16% visit their family, 6% visit tourism object outside Yogyakarta, and about 11% do others activity such as shopping, eat with familiy to the restourant, plaing in the city park, and so on.

Response to the tourist

To investigate the general response from the resident a question was asked. It is about the perception from people to the arrival of the tourists. Nearly 79% of the resident like with the growth of the tourism and only about 21% feel dislike with that.

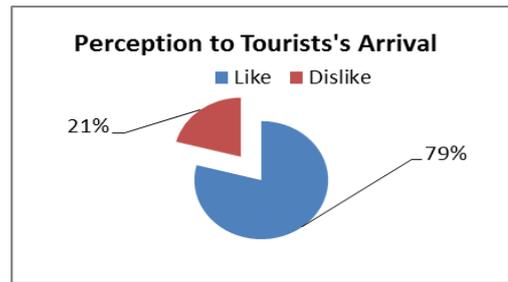
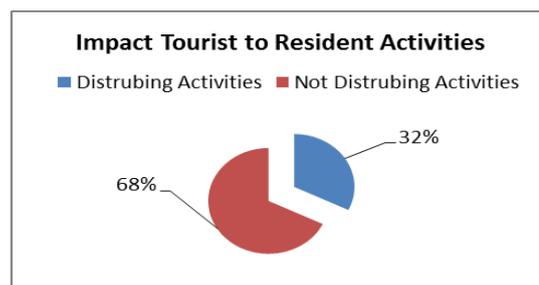


Fig 2. Graphic of Resident's Perception to Tourist's Arrival

Specific to the impact of tourists to resident activities, it is only nearly 32% from the respondents who feel that the tourists disturb their daily activities, but most of them (68%) said that they do the activities as well as other days although from the questionnaire it is also known that only 23% of the respondent get the direct additional income from tourist's arrival.



Pic 3. Graphic of Impact of Tourist's Arrival to Residents Activities

Respondent's Cluster

The result from computation process using SPSS 16 is shown in the table 1. It show that respondent can be group in three cluster where profile for each cluster is as follow:

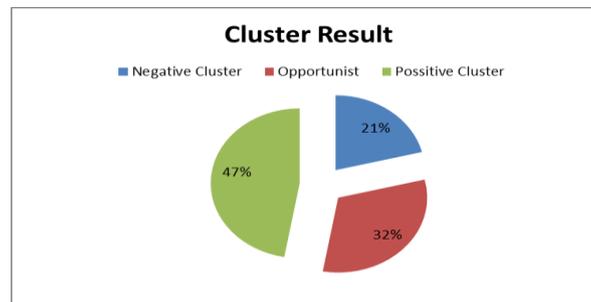
Table 1. Result of Clustering Using K-means Algorithm

Initial Cluster Centers			
	Cluster		
	1	2	3
Zscore(Job)	1.52296	-1.21837	1.52296
Zscore(Nattive)	-.69634	1.42809	-.69634
Zscore(Age)	-.61979	-1.45234	1.87787
Zscore(Distance_to_center)	1.63666	1.63666	-.91767
Zscore(Leght_of_stay)	.94295	-1.59983	.94295
Zscore(Activities_inholiday)	1.68447	-.55320	-1.11262
Zscore(Response_to_tourism)	1.96046	-.50725	-.50725
Zscore(Impact_of_tourism_forincome)	-1.80761	.55014	.55014
Zscore(Impact_of_tourism_foractivities)	-1.46489	.67885	.67885
Zscore(Response_to_traffic)	-.53304	-.53304	1.86562

Number of Cases in each Cluster	
Cluster 1	38.000
Cluster 2	57.000
Cluster 3	85.000
Valid	180.000
Missing	.000

- Cluster 1. Consist of 38 members where the people that belong to this group are the residents who lives in Yogyakarta as native and stay near from the center of the city. They have been lived for more than 10 years in Yogyakarta where there is not any significant impact of tourism in their activities and their income. Tourims only caused traffic congestion and piles of garbage for Yogyakarta, so that it is better for them to stay at home when the holiday comes For this cluster, it can be called as **negative cluster** to describe their profile.
- Cluster 2. Consist of 57 members where the people that belong to this group are the residents who lives in Yogyakarta as migrants and stay in place that far from the downtown. They are agree that tourism causes traffic but they are not care about that because they get benefit impact from tourism activities for their income. **Opportunist cluster** can describe their profile.
- Cluster 2. Since it consists of 85 members, this group becomes the biggest cluster of the residents. People that belong to this group are the residents who lives in Yogyakarta as native and have been lived for more than 15 years. They stay in near the center of the city and accept benefit from the tourism. They are not agree that tourism is one of contributors for jam traffic because sometime they enjoy the holiday with the tourist visiting any tourism object. For this cluster, it can be called as **positive cluster** to describe their profile.

These three cluster can be describe in a graphic as follow:



Pic. 3. Clustering Result

FURTHER RESEARCH

This study has identified the resident of Yogyakarta based on their perceptions of tourist arrivals. Most of the natives feel disturbed by the increasing tourist activity in the city of Yogyakarta (21%) others find it helpful in terms of revenue (47%) and other community groups are not concerned with the tourist activity (32%). This study has several limitations, among others: the numbers of respondents who are still few and have not been able to reach all levels of society in Yogyakarta, grouping variables are limited, relatively short study period and so on. For the future it is still very large opportunities for other similiar studies that will be able to know with more details about the public response Yogyakarta tourist or otherwise of other studies that classify tourists based on their perceptions of resident of Yogyakarta.

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