Tourist Movement Patterns between Tourism Sites in DKI Jakarta

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Abstract. Jakarta as the capital city of Indonesia is one of tourist destinations in Indonesia. Various attractions in this city is triggering tourists to visit, even when their movement is limited. This movement limitation is caused by traffic jam and the lack of supply from public transportation provided. This study aims to analyze the difference of tourist movement patterns based on distance, mode of transportation, and tourist typology in DKI Jakarta. The method used in this research is direct interview and observation which analyzed with spatial descriptive analysis. The result of the research shows that the majority of tourists in Jakarta only visit one tourist attraction or move in single point pattern with the type of individual mass tourist according to the distance among tourist attractions, time to pass by traffic jam point, and selected transportation mode.

1. Introduction
Humans movement or mobility on earth always continues because of the needs that must be met by humans, ranging from the primary, secondary, to tertiary needs. The movement of humans as well as other objects from one place to another will illustrate the relationships created between these places. Similarly, in terms of tourism as a tertiary need, to be able to visit an attraction, human needs to move from place of origin to destination. Tourist movements can form certain patterns based on the points of tourist destinations [1], the routes taken to visit a destination [2], as well as from the duration of tourists visiting the objects [3]. These patterns, according to [4], are also influenced by the characteristics of tourists who visit the attraction.

The tourism sector is one of the sectors that contribute significantly to the Indonesian economy. The impact of tourism on the national Gross Domestic Product (GDP) in 2014 is Rp. 391.49 trillion, or 4.01% of the national GDP. This caused the central government to make the tourism sector one of the main revenue sectors. One of the efforts undertaken by the Provincial Government of DKI Jakarta to increase tourist visits to Indonesia, especially to Jakarta, is creating Enjoy Jakarta program. This program is hoped to improve the welfare of its population, as well as to attract tourists on visiting Jakarta. According to [5], in 2013 the number of foreign tourists visiting Jakarta was 2,313,742 persons, while domestic tourists amounted to 17,097,669 persons.

The high interest of tourists visiting Jakarta cannot be separated from the attraction presented by the city itself. As a gateway city as well as one of the tourist destinations, Jakarta has tourism objects that are adapted to its own history and culture in addition to other artificial tourist objects. Tourism in Jakarta can be categorized as urban tourism, because it is classified as a city that has the characteristics of the capital city, the center of a metropolitan city or a city full of history, has the oldest part of a city, has a waterfront area that is equipped with urban facilities, entertainment center, family playground, and
tourist service center [6]. These characteristics can be seen from the many and varied tourist attractions in Jakarta, ranging from museums, amusement parks, or shopping centers. According to the Department of Tourism and Culture of DKI Jakarta, there are at least 71 museums, 1 amusement park, and 30 shopping centers scattered throughout Jakarta.

The number of tourist attractions in Jakarta makes Jakarta is not enough to be surrounded in just a day. In addition to its large territory, the movement of tourists is also limited to the available time and the distance that must be taken from one tourist attraction located in one part of the administrative city to the another attractions in another administrative cities. One of the causes of limited tourist movement is the transportation conditions in Jakarta that have not been quite supportive, especially from the aspect of transportation mode. The availability of public transportation in Jakarta can still be said to be very less because it has not been able to meet the needs of its population. In terms of quantity, there has been an increase of bus fleets (both small and large) as many as 1,411 buses from 2013 to 2014. But the addition of this fleet is also accompanied by increasing number of motor vehicles for the last 5 years, mainly from motorcycles and passenger cars (Statistics Transportation of DKI Jakarta, 2015). This causes the decreasing services of public transportation due to crowded roads by private vehicles. In addition, in terms of quality, public transportation is still considered bad for its unsafe and inconvenience due to its late arrival hours.

2. Methodology
This study discusses tourism activities in DKI Jakarta that has various objects to visit, but in this study only classified into three types, namely artificial nature attractions, theme park attractions, and historical sites attractions. The unit analysis are tourist attractions and tourists found in the tourist attraction. Both units will form a relationship between tourist attractions indicated by the movement of tourists who form a certain type. These types can be either single or multiple point types. From the tourist attractions unit, three classifications of tourist attractions has a distance that must be passed before tourists reach the tourist attraction. The distance is divided into two, namely the distance metric (actual distance) and travel time (the time required to reach the attraction) which is also influenced by the mode of transportation used by tourists. While from the tourist unit, the considered thing is tourist’s characteristics consisting of tourist typology. The outline of this study is as follows (see Figure 1).

![Figure 1. Outline](image-url)
This research is supported by both primary and secondary data. Primary data used is field data obtained from observation and interviews of respondents assisted with the questionnaire. Primary data is the tourist movement type, the mode of transportation used by tourists, as well as tourist typology. While the secondary data used is administration data of Jakarta, type and location of tourist attractions, also the number of tourist attractions visitors.

Data processing includes the processing of primary and secondary data that have been obtained. Secondary data is processed into administrative map and map of tourist attractions distribution of DKI Jakarta by using software ArcGIS 10.1. While the primary data in the form of tourist typology is determined by looking at travel planning (itinerary), choice of residence, choice of attractions, and the number of travel companions. However, in this study, the choice of attractions is neglected because all attractions in Jakarta are considered famous. The next stage is to identify the mode of transportation that tourists use and the time required to get to the tourist attraction, to identify the order of travel in tourist movement. After that, the categorization of tourist movement is done based on the theory of [1], that is single pattern and multiple pattern. The final step is to make a map of tourist movement pattern.

The analysis used in this research is descriptive spatial analysis. Spatial analysis is used to see the pattern of tourist movements that are formed in tourist attractions, while descriptive analysis is used to obtain the relationship between tourist’s characteristics and their movement pattern. In answering research questions about tourists movement pattern based on distance and mode, the type of movement was descriptively analyzed by describing them using the order of tourist visits matrix and the primary-secondary attractions, thus can be known the most type formed in the tourist attractions. After that, spatial analysis was done to find out the pattern that tourists formed during the trip.

3. Research Area Overview
DKI Jakarta Province has 5 administrative cities with an area of 649.71 km². These administrative cities consist of East Jakarta, West Jakarta, South Jakarta, North Jakarta, South Jakarta and Central Jakarta. The city is adjacent to the south and east with Depok City, Bogor Regency, Bekasi City and Bekasi Regency in the west, Tangerang City and Tangerang Regency in the west, Java Sea in the north. Geographically, Jakarta is located between 6°12' South Latitude and 106°48' East Longitude.

In terms of transportation, inadequate service of public transportation and traffic congestion are still major transportation problems in Jakarta. According to Transportation Department, congestion occurring in Jakarta is caused by increasing number of vehicles, unregulated road users, also because of the unchanged length and width of the road segment. In 2013, the number of motorcycles has reached 16,072,869 units. The amount is not proportional to the length of the Jakarta road which is only 6,955,842.26 meters, and results in a motorcycle that actually only has 0.43 meters capacity to move along on the streets of Jakarta.
4. Results and Discussion

4.1. Tourist Characteristics

Based on the survey results, in general, tourists in Jakarta ranged from age 15 to 50 years, with a ratio of 28.57% male and 71.43% female. While most tourists main activities are students with 55.10% percentage, followed by employees 34.69%, then teachers, civil servants, and others. Meanwhile, if viewed from the region of origin, more than half number of tourists came from Jakarta, with the amount 65 people from 98 respondents. While the rest came from various regions, both from areas around Jakarta such as Tangerang, Depok, and Bekasi, as well as those located quite far from Jakarta, such as Bandung, Kuningan, Solo, Serang, and Rangkasbitung.

In general, tourists as individuals who visit a tourist attraction can be classified into several types of typology, ie drifter, explorer, individual mass tourist, and organized mass tourist [7]. The drifter type is not making a fixed travel plan because they prefer to plan its own journey, choosing to stay at a local resident's home, and go to an unfamiliar tourist attraction. The explorer type sometimes makes travel plan and sometimes does not, with high flexibility to not fixate on schedules that have been made, as well as choosing to stay at a friend's house in the area of destination or home of local residents, although both drifter and explorer choose to go to a tourist attraction that has not been famous. While those who are the individual mass and organized mass tourist types will submit the travel plans to the travel agents (large or small), with differences in the flexibility of changing travel schedules and the number of travelers. The determination of the characteristics of tourists based on these four categories is ethical or in accordance with the perspective of the researcher. This is because a tourist can change their characteristics according to the situation and conditions they are experiencing.

According to the field survey, most tourists in DKI Jakarta consist of individual mass tourist type (48.98%) and organized mass tourist (28.57%). While the rest, which is as much as 22.45% is the explorer type. While the drifter type is not found in Jakarta, due to the non-fulfillment of tourist requirements to be classified in this classification.

4.2. Tourist Movement Type

Based on field survey, most tourists in DKI Jakarta only form one point (single point movement type) within their day trips. This type of movement begins from the residence of tourists to the destined attraction sites. Based on the percentage, tourists who only visited 1 tourist attraction has a percentage of 79.6%, while tourists who visit 2-3 attractions has 20.4% percentage.

Tourists who only visited one tourist attraction encountered in the location of the attraction used as sampling. While tourists who visit 2-3 attractions or even more encountered in the first or second tourist attraction of their destination. However, the second to third tourist attraction destined by tourists is an attraction that is still in the same administrative city. Thus tourists who visit 2-3 attractions can form a pattern of multiple point movement with the type of chaining loop, which is the type of movement where tourists visit multiple destinations without repetition of travel routes.
In relation to the duration spent on each tourist attraction, tourists who only visit 1 tourist attraction or have a single point movement tend to spend longer time in the attraction, compared to tourists who have plans to visit 2-3 other attractions. Although it may also depend on the number of attractions that are provided by a site and the area of the attraction itself. For example, for cultural attractions such as museums, the length of time spent there only ranged between 60-120 minutes because the activities that can be done at the museum is just looking around while trying to learn something from the objects in the museum. While in the tourist attraction of a recreational park that usually has a larger area, tourists will spend 120-180 minutes because of the extra time required to explore the site.

4.3. Transportation towards Attractions

The high accessibility in DKI Jakarta caused varied transportation modes. When traveling, the most widely used transportation mode by tourists in DKI Jakarta is private vehicles. A total of 43.87% of visitors from tourist attractions surveyed using private vehicles, especially when visiting with friends and family, or if the attraction is located far enough from the respondent’s residence to be reached by public transport. Personal vehicles can be either motorbike or private car.

In addition to private vehicles, the most widely used transportation mode by tourists in DKI Jakarta is Transjakarta bus or busway. Transjakarta bus is chosen because of its wide accessibility. There are several corridors of Transjakarta bus route that end near or even at the tourism site itself, such as corridor V Kampung Melayu - Ancol, corridor VI Dukuh Atas 2 - Ragunan, and corridor IX Pinang Ranti - Pluit. If the corridor of Transjakarta bus route does not end in a tourist attraction, tourists can continue the journey on foot or take public transportation in the form of small buses such as mikrolek or KWK. In addition to the wide accessibility coverage, other benefits that can be gained from choosing Transjakarta buses as a mode of transportation is the cheaper cost than using a private vehicle.

As for another transportation mode used in Jakarta is electric train (KRL). This mode is an alternative
mode for tourists whose residence is closer to the train station than to Transjakarta bus stop. The advantages of using this transportation mode is free from congestion that may trap private vehicles, Transjakarta buses, and public transport because they have special lanes.

4.4. Distance between Attractions

The distance between tourism sites and tourist residence also the inter-attractions distance in Jakarta should be a consideration for tourists to visit a tourist attraction. Distance becomes a thing that tourists consider in Jakarta because it will affect the travel time. In addition, the high likelihood of congestion in Jakarta will also affect travel time to a tourist attraction.

Tourist attractions located in the same administrative city such as Taman Mini Indonesia Indah and Pancasila Sakti Museum are not located too far from each other (see table 1). However, based on the conducted survey, tourists in DKI Jakarta tend to settle in one visited tourist attraction. If it is viewed based on the travel time needed to reach a tourist attraction, then most tourists have to spend 1-2 hours on the way from his residence due to traffic jams.

| Administrative City | Tourism Sites | Distance between the sites (in km) | Fastest travel time (in minutes) |
|---------------------|---------------|-----------------------------------|---------------------------------|
| Jakarta Timur       | Taman Mini Indonesia Indah, Museum Pancasila Saksi, Museum Sejarah Jakarta | 7.2 | 20 |
| Jakarta Barat       | Museum Tekstil, Taman Impian Jaya Ancol, Museum Bahari, Taman Wisata Alam Angke Kapuk | 7.8 | 20 |
| Jakarta Utara       | Taman Impian Jaya Ancol, Museum Bahari, Taman Wisata Alam Angke Kapuk | 14.1 | 30 |
| Jakarta Selatan     | Kebun Binatang Ragunan, Museum Satria Mandala, Monumen Nasional (Monas) | 14 | 30 |
| Jakarta Pusat       | Museum Nasional Indonesia (Museum Gajah) | 0.85 | 5 |

The close distance between one tourist attraction and another tourist attraction does not make the tourists choose to visit 2 attractions in the same day, even for tourist objects with a very close distance such as the National Monument (Monas) and the National Museum (Elephant Museum). Both of these attractions can be reached within 5 minutes interval because they are only separated by a road segment, namely Jalan Medan Merdeka Barat. However, according to survey results, not all tourists who visit Monas also visit the National Museum. This is due to the museum short open hours that makes tourists failed to visit.

4.5. Tourist Movement Pattern based on Metric Distance

The distance between tourism sites that varies from one to another, also from one city administration to another city administration, causing some tourism sites to be gathered or located adjacent and some are spread or located far apart. The distribution of this tourism sites can affect the tourist movement pattern.
Table 2. Cross-tab table between movement type and tourist typology based on metric distance

| Movement Type | Explorer | Individual Mass | Organized Mass | Distance |
|---------------|----------|-----------------|----------------|----------|
| Single        | 4        | 11              | 9              | Dispersed|
|               | 13       | 27              | 14             | Adjacent |
| Multiple      | 2        | 1               | 1              | Dispersed|
|               | 3        | 9               | 4              | Adjacent |

Based on the distance between the tourist attractions, the majority of tourists who make a single point movement on dispersed and adjacent tourist attraction is the individual mass tourist type. In the dispersed tourist attraction or located far apart, tourists of this type choose to only visit 1 tourist attraction due to their reluctance to move to another tourist attraction. While on the tourist attraction that is located adjacent, the interest to the attractions around is smaller than the tourist attraction that is being visited. Thus tourists choose to stay in one tourist attraction only.

Tourists who do multiple points movement on dispersed tourist attractions is dominated by the explorer type. These are the tourists who are free to move anywhere without worrying about itinerary. While tourists who do multiple points movement in the adjacent tourist attraction is dominated by individual mass type. This type of tourist who moves multiple points is caused by limited amount of time, usually tourists who come from outside Jakarta and are employees. So to save time, the adjacent tourist attractions and the most interest ones can be visited at once.

4.6. Tourist Movement Pattern based on Travel Time

Based on the distance to the tourist attractions, tourists take time for less than 1 hour and between 1-2 hours to get to the tourist attraction. If tourists are doing a single point movement, the travel time is calculated from the tourist residence. Meanwhile, if the movement is multiple points, travel time is calculated from the first tourist attraction visited by tourists.
Table 3. Cross-tab table between movement type and tourist typology based on travel time

| Movement Type | Explorer | Individual Mass | Organized Mass | Travel Time |
|---------------|----------|-----------------|----------------|-------------|
| Single        | 1        | 9               | 3              | <1 hour     |
|               | 17       | 28              | 20             | 1-2 hours   |
|               | 2        | 2               | 2              | >2 hours    |
| Multiple      | 3        | 8               | 4              | 1-2 hours   |
|               | 0        | 1               | 2              | >2 hours    |

Tourists with individual mass type dominate the single point movement whose travel time is less than an hour and between 1-2 hours. Single point movement is done because the destined tourist attraction is in the congestion prone areas so that tourists are reluctant to move to another tourist attraction. This type of tourists are mostly students who come from Jakarta.

In the multiple points movement, the explorer and individual mass type who took less than 1 hour to get to the attraction has the same proportion. While tourists who travel between 1-2 hours are dominated by tourists with individual mass type. This relates to the time spent at a tourist attraction. Tourists with individual mass and explorer type have flexible itineraries, so the time spent on moving from one tourist attraction to another can be adjusted.

Figure 5. Tourist movement pattern based on travel time map

The difference of travel time is caused by the existence of congestion points in Jakarta area. Tourists who want to go to the tourism sites can choose a detour to avoid congestion, although it may spend more time. In Jakarta, there are 23 main congestion points that must be passed by Jakarta residents to move...
from one place to another. These points are mostly located in Central Jakarta, which is the location of government offices and economic center of Jakarta.

4.7. Tourist Movement Pattern based on Transportation Mode

Transportation mode is necessary for tourists to reach a tourism site. The number of diverse transportation modes with various advantages and disadvantages make tourists can choose the mode of transportation in accordance to their wishes and abilities.

Table 4. Cross-tab table between movement type and tourist typology based on transportation mode

| Movement Type | Explorer | Individual Mass | Organized Mass | Transportation Mode |
|---------------|----------|-----------------|---------------|---------------------|
| Single        | 10       | 18              | 11            | Private             |
|               | 7        | 20              | 12            | Public              |
| Multiple      | 2        | 1               | 0             | Private             |
|               | 3        | 9               | 5             | Public              |

From the table above, it can be seen that the type of single point movement is dominated by tourists with individual mass typology, both using private and public transportation modes. This is because in the single point movement, the targeted object is single and does not require means to move. So using public and private transportation modes will not be much different.

While in the multiple points movement, tourists who use private transportation modes are dominated by tourists with explorer typology. This is due to the more flexible use of private vehicles to move from one site to another compared to public transportation. Tourists who use public transportation modes are dominated by tourists with individual mass typology because they choose to visit famous tourism sites. Tourists of this type consist of students and employees from Jakarta who visit with friends. Well-known tourist attractions are usually equipped with well-provided public transportation means to be easily reached from various directions. Thus, tourists of this type prefer to use public transportation modes.

Figure 6. Tourist movement pattern based on transportation mode map
5. Conclusion

Based on the results and discussion above, the majority of tourists in Jakarta only visit one tourist attraction or move in single point type. If viewed based on the distance between attractions, both on dispersed and adjacent tourist attraction, tourists move in single point type. However, on dispersed tourist attractions, the type of tourists who visit is the type of individual mass and explorer, while on the adjacent tourist attraction the encountered tourist type is the individual mass tourist. Based on the travel time, tourists who more than 1 hour to travel will move in single point with individual mass type, whereas tourists who travel less than 1 hour can move either single or multiple point with varied tourist type of explorer and individual mass. And based on the modes of transportation used, tourists who use public transportation mode is the tourists who make single point movement with individual mass type, while the tourists who use private transportation mode and choose to do the multiple points movement is the explorer type.

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