Household shopping behavior in Depok City

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Abstract. Distribution of malls in Depok City is not even throughout the city. Most malls are located in the city center. Distance between malls is relatively close. While most malls are in the center of the city, quite a lot of residential areas are located far from them. The aim of this study is to determine the patterns of shopping behavior of family household needs in Depok City. Respondents are obtained by distributing questionnaires to households throughout the city using systematic random sampling method. The result shows that households choose a regional mall that is more complete than other malls in choosing shopping site to buy their needs, even though the distance is farther. This happens especially if the shopping activities are carried out with other activities, such as entertainment. Variables that influence shopping behavior are length of stay and type of transportation mode. The variables that are taken into account as the main consideration are completeness of facilities and types of goods that are sold. The conclusion of this study shows that close distance to malls does not affect household behavior in shopping. However, shopping behavior is influenced by the household’s knowledge of the area and accessibility of transportation modes.

1. Introduction

The emergence of e-commerce has created new behavior in shopping activities. Online shopping allows people to buy goods via the internet. Based on the iPrice report, in 2017 there was an escalation of Gross Merchandise Value (GMV) on shopping online activity in Southeast Asia, compared with a couple of years before [1]. GMV is the total value of goods that were traded by people in a period. It shows that online shopping is getting popular in Southeast Asia, including Indonesia.

The rise of online shopping behavior has the potential to make retail stores and shopping malls experience a declining number of customers. Shopping malls still need development to keep their consumers feeling good and comfortable [2]. In Chengdu, China several segments of customer have shifted from conventional shopping behavior to online shopping behavior [3]. Although shopping centers have been deserted in several places, some developers were still building new shopping malls in Indonesia, one of which is the Pesona Square Mall, which was built at the end of 2018 [4]. This proves that shopping malls are still in demand in Indonesia, especially in Depok. However, the locations of the malls tend to be quite close between one mall and the other. As a result, the shopping malls are not evenly distributed throughout the city. Most shopping malls are located in the city center, whereas quite a lot of residential areas are located far from the center. Consequently, competition is not only happening between malls and e-commerce, but also between the malls that are located relatively close to each other.
This research intends to discover the characteristics of consumers who are still buying conventionally in a shopping mall in Depok. The characteristics used in this paper are the length of stay, household income, modes of transportation, and trip purpose. Based on previous research, a shopping mall can have two or more segments at once [5].

2. Research Methods
The research sample was obtained by distributing questionnaires in homes located around shopping malls in Depok. The sampling method is done by a systematic random sampling method by drawing a straight line through the center of the city that has many shopping malls and passes through two arterial roads, namely Jalan Raya Bogor and Jalan Margonda Raya. This method was chosen because it is suitable for samples that have certain characteristics [6]. In this study, the targeted respondents were family decision-makers (father or mother).

In 2017, Depok had 545,065 families [7]. Referring to Slovin formula with a degree of confidence of 90%, the minimum number of samples should be 100 respondents. In this study, we obtained 103 respondents who were randomly distributed to 12 different locations at each point along the research line that had been previously made. Sampling locations are placed at about 1 km from each point to represent the people who live near Shopping Malls as a whole.

This study used 4 variables to determine consumer segments. These variables consist of the length of stay, household income, mode of transportation, and trip purpose. Length of stay, household income, and trip purpose have been shown to have a relationship with shopping place selection based on distance in research into consumer behavior in TV purchases in Depok [8]. Mode of transportation has a significant influence on distance in Batik Bangle research [9]. In other studies, household income affects the mobility of people. The higher the household income, the mobility will be further [10], that can affect the family more varied in choosing shopping location.

Distance is used to describe spatial patterns that occur as a result of community shopping mall selection. The distance is calculated based on the closest distance between the customer's original location and the location of the selected shopping mall. The closest distance measurement is done through the Google Maps Directions API. We used the Google Maps Directions API because the route calculation obtained provides the most efficient calculation of the existing combination of routes. The variables considered in these calculations are travel time, distance, and the number of turns [11].

Using the Coefficient Contingency test, we attempt to explain how the characteristics of the consumers correlated with the distance in terms of selecting a shopping mall. The dependent variables in this study are characteristics such as the length of stay, household income, mode of transportation, and trip purpose. The independent variable in this study is the spatial variable, the distance between the respondent original location and the selected mall.

3. Shopping Activity
Figure 1 shows the percentage of total purchased items by consumers. In general, goods that are mostly bought (above average) are apparel, cosmetics, FMCG, and electronic devices. These items are the main items that must be available in a mall. Items that are rarely purchased (below average) include food, household equipment, footwear, accessories, and books. These items are additional items that can increase the variety of goods in the mall.

The top 3 market shares by category in the mall are apparel, cosmetics, and FMCG (excluding cosmetics, household equipment, and foods). These items are classified as non-durable goods. Consumers usually purchase these items regularly. Based on these findings, the best way for retailers to do to increase the number of buyers is to provide such goods.
Figure 1. Purchased Items by Consumers

Figure 2. Static of Shopping Mall Visitors

3.1 Shopping Mall Visitors
Figure 2 explains the order of shopping malls based on the number of visitors. The top 3 malls with the highest number of visitors respectively are Margo City, ITC Depok, and Pesona Square. The most chosen mall by the surrounding community is Pesona Square, while the mall chosen by people who live far away from the city center is Margo City. Although new in Depok, Pesona Square has proven to be able to attract a large number of consumers from the surroundings. Compared to Margo City that has been established for a long time, hence its already large market, for consumers who choose a short distance Pesona Square has more visitors. Moreover, ITC Depok and Dmall are also proven to be able to nail more consumers than the average number that visit other malls.

Location wise, as shown in Figure 3, Margo City lies on the arterial road, whereas Pesona Square is not. As a consequence, Margo City has better accessibility than Pesona Square. For shopping malls more accessible location means more visitors [12]. This explains why Margo City is visited more by people who come from long distances compared to Pesona Square. Similarly, ITC Depok and Dmall are located on the same arterial road as Margo City, which then enable them to get a fairly high number of customers as well.
Figure 3. Distribution of Shopping Malls

Besides on Margonda Raya street, shopping malls can also be found on Raya Bogor street. However, they are not as many as those on the Margonda Raya. These malls consist of Cimanggis Square, Mall Cimanggis, and Giant Cimanggis. Unlike the malls on Margonda Raya street, these malls have fewer visitors. Based on previous research conducted with the Hotelling theory approach, competition between two or more adjacent shopping malls will make the prices of goods cheaper [13]. In other studies, the affordability of goods (low prices) will increase the number of consumers to come [14]. That could explain the difference between shopping malls on the two roads. The number of shopping malls in the particular area relates to the number of consumers who come.

3.2 Correlation Between Characteristics and Distance

Contingency Coefficient test is performed to identify the relationship between the characteristics of consumers with the spatial variable. As a result (Table 1), there is a relationship between distance and length of stay, mode of transportation, and trip purpose. Such results are in line with previous studies, which shows that a consumer who buys a TV correlates with length of stay and trip purpose [8]. Consumers who want to buy Batik Bengle are also influenced by distance [8]. Meanwhile, household income does not affect selection of mall based on distance. This result seems to contradict that of previous research on consumer behavior of people in Depok [8]. Another study has found that income affects mobility [10]. Based on those findings, it seems that household income only increases the number of destinations, but it does not affect mall selection.

Table 2 shows the percentage of total respondents based on variables. Most respondents are those who have lived in the area for a long time, with an income of below IDR 10 million, are motorbike users, and whose pattern of travel is multi-trip. Based on distance, most consumers (which is about 49%) choose a market that is far from their original location. That is possible because Depok has good accessibility, so people are free to choose any shopping mall based on their own preference without any difficulty in terms of transportation.

Consumers who traveled less than 3 kilometers are those who take into consideration the closest distance between their home to the mall. On the other hand, consumers who traveled more than 5 kilometers did not take the closest distance into consideration. Between both, consumers who did not take the closest distance into consideration are dominant in this study.
Table 2. Percentage of Respondent based on Variables

| Variables | Values                  | Percent (% of Respondents (n=103)) |               |
|-----------|-------------------------|------------------------------------|---------------|
|           |                         | < 3 km | 3 - 5 km | > 5 km | Total |
| Length of Stay | A1: < 10 years         | 19%    | 9%      | 24%    | 52%   |
|           | A2: >= 10 years         | 6%     | 17%     | 24%    | 48%   |
|           | Total                   | 25%    | 26%     | 49%    | 100%  |
| Household Income | B1: < 5 million        | 12%    | 10%     | 12%    | 33%   |
|           | B2: 5 - 10 million      | 7%     | 9%      | 26%    | 42%   |
|           | B3: 10 - 15 million     | 7%     | 5%      | 7%     | 18%   |
|           | B4: > 15 million        | 0%     | 3%      | 4%     | 7%    |
|           | Total                   | 25%    | 26%     | 49%    | 100%  |
| Mode of Transportation | C1: Public transportation | 0%    | 2%      | 0%     | 2%    |
|           | C2: Ojek (motorbike taxi)| 1%    | 1%      | 5%     | 7%    |
|           | C3: Private Car         | 4%     | 10%     | 23%    | 37%   |
|           | C4: Private Motorbike   | 20%    | 14%     | 20%    | 54%   |
|           | C5: By foot             | 0%     | 0%      | 0%     | 0%    |
|           | Total                   | 25%    | 26%     | 49%    | 100%  |
| Trip Purpose | D1: Single Trip         | 13%    | 14%     | 15%    | 41%   |
|           | D2: Multi Trip          | 13%    | 13%     | 34%    | 59%   |
|           | Total                   | 25%    | 26%     | 49%    | 100%  |
As a consequence, consumers prefer malls that are far from their original location. However, a careful observation on each market segment shows that segments with the highest frequency are those that choose the closest market. Figure 4 shows the top five segments, which include A1B1C4D2, A2B2C4D2, A1B3C3D1, A2B1C4D1, and A1B2C4D2. None of them chooses a mall located far away from their original location.

Our finding shows that there are two contradictory facts. In general, most people don’t take the closest distance into consideration when choosing shopping malls. A detailed look at the top segments reveals that the top-five of them are patterned to choose the closest mall. Finally, consumers who choose the closest mall tend to be homogeneous. Meanwhile, consumers who do not take the closest distance into consideration show a range of variations. In other words, it tends to be heterogeneous.

The segment with the highest frequency and takes the closest distance into consideration is A1B1C4D2. This segment represents consumers who have lived in the area for less than 10 years, with low income, use a motorbike, and have a multi-trip purpose. This segment is interpreted as a family of newcomers and medium-low household income that want to get entertained at the mall. Besides shopping, they visit the mall to have fun. In other studies, this segment is similar to the young enthusiast cluster whose purpose of going to the malls is for shopping, spending free time, and enjoying a vacation at the same time [5]. According to our findings, this segment’s purpose in going to a mall is for entertainment activities.

The segments with the highest frequency but do not take the closest distance into consideration are A2B2C4D2, A1B2C4D2, and A2B2C2D2. Based on their characteristics, these segments represent families that stay in a mall for a long time and want to shop while enjoying leisure time. In other studies, this segment is similar to the senior hostelry seekers cluster who have a lot of leisure time and want to entertain themselves. Those segments have variety leisure and entertainment purpose [5]. According to our findings, the segments that travel over a long distance to the mall are very selective in choosing a mall.

We find variation between segments that take into count the closest distance and those that don’t take it into account. Differences arise in the characteristics of the length of stay. Newcomer families mostly choose the closest mall. In contrast, the families that stay for a long time tend to choose malls that are far away. That can be affected by the knowledge of the place. Based on a study, the length of stay could be the best predictor in measuring consumers’ place attachments [15]. The longer a person stays...
in one place, the more knowledge about his environment will ultimately affect the mobility and selection of one's activities.

For segments that either take into account the closest distance or don’t, their destination is mostly multi-trip. That demonstrates that the purpose of their trip is not just for shopping, but also for other activities. Referring to a previous research, shopping malls can be used as a place to socialize (social life) and to fill leisure time [16]. Additionally, a mall that is clean, comfortable, has a large parking area, and has recreation areas can attract consumers to come [17]. Lastly, the shopping mall is not only used for shopping, but also for socializing and entertainment activities by the people in Depok.

4. Conclusion
This interactive mapping activity produces a map of environmental conditions, an evacuation route map, and a map of flood-prepared areas based on survey results using GPS and a blind map filled by each. This method has been proven to be able to provoke participants’ memories and extract the unconscious information. The participants’ sense of belonging and togetherness is increasing. Before they participated in the community map development, most participants were not aware of hydrometeorology hazards. By joining this activity, their awareness improves. Active community involvement is better than interview and filling the map attributes method. Building mental maps so far can be explored and enrich information. This finding is in line with the results of research by Gueben-Veniere [13], which shows that community participation-based map development activity complements the result of interviews and map making by other research groups. The result indicates that individual’s activity space is not necessarily within the individual mental maps. Both activity space and mental maps are correlated with individual’s travel pattern factors. The mental map has a positive influence on the formation of activity space.

This study analyses the characteristics of consumers who still shop conventionally at shopping malls. Our finding is that many visitors prefer to choose shopping malls that are located close to other malls. The consumers who live far from the shopping malls prefer to choose a shopping mall with better accessibility. Newcomer families prefer shopping at the nearest shopping mall. In addition to shopping, consumers also go to the shopping mall to do other activities, such as socializing and spending leisure time.

The limitation of this study is the location. Since Depok has good accessibility, people who live far from shopping malls can easily access them. To address this limitation further research should be conducted in the city with poor accessibility in order to get more profound results.

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