

## Characteristics OF TRAVELING USING A PRIVATE CAR OF EMPLOYEE CLASS IN Mercubuana University, Jakarta

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**ABSTRACT:** Congestion often occurs in front of MercuBuana University campus located at road South Meruya, West Jakarta. Traffic density increases especially during rush hour in the morning and afternoon. This is caused by the use of roads conducted simultaneously by students, lecturers, employees and all campus activity. The study was conducted at MercuBuana University using questionnaire survey method of 50 samples. Sampling was conducted for 1 week of college's effective time by distributing questionnaires to each department in Purposive Sampling. The data obtained is processed using SPSS software. The results showed that students of MercuBuana University were more using private cars where the average distance is 5 - 15 km of travel time more than 30 minutes and have pocket money is more than 2 million rupiah. The frequency of students using private cars is 2 times a week, where students have no other purpose because according to their college schedule. The time lag between student departure and college admission time is less than 60 minutes. Based on the results of Pearson Correlation and Chi Square test that there is a significant relationship between the choice of mode of private car with mileage, travel time and pocket money.

**KEYWORDS** -Transport Demand Manajemen (TDM), Pearson Correlation, Regression, Chi square.

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### I. INTRODUCTION

Jakarta as the capital of the country is a city that has very high mobility. Every day a person travels not only on a work trip but also performs other activities such as school, college, taking children to school and shopping. The journey is done alone or together with either family members or others. This results in an increase in traffic volume on the road as the activity occurs at about the same time.

Currently it can be said that the work trip is also a school trip or college trip. This resulted in the amount of traffic on the road is very crowded, because the volume of traffic is not in accordance with the capacity of existing roads.

### II. TRAFFIC CONDITIONS

Kembangan Sub-district is one of the areas in West Jakarta that is very vulnerable to traffic jams, such as on South Meruya road. The condition also occurred on the campus of MercuBuana University located at road of Meruya South, West Jakarta. Traffic density increases especially during rush hour in the morning and afternoon. This is caused by the use of roads conducted simultaneously by students, lecturers, employees and all campus activities. The road is also the main road used by the general public going to works, schools and other places. The situation is exacerbated by an increase number of students each year. Where is directly proportional to the increase of traffic density at the campus location. (Fig.1)



**Fig. 1 Location map of MercuBuana University**

### III. ACCESSIBILITY AND MOBILITY

Accessibility is a concept that combines: a geographical land use system with a transport linking system, where land-use changes that create zones and geographical distances in a region or city will be readily linked by the provision of transport infrastructure (Black, 1981).

The distance factor together influences the transport condition factor. The distance factor is caused by the land use arrangement, while the transportation condition factor reflects the travel time, cost, land use intensity and income.

Mobility can be interpreted as the level of travel smoothness and can be measured through the number of trips (movement) from one location to another as a result of the high level of access between the locations.

Ofyar Z. Tamin (2000), the definition of transportation planning is the movement of people or goods involving many modes of transportation. And that the National Transport System (SISTRANAS) owned by Indonesia is the concept of inter-modal integration system of transportation, with its basic definition namely:

- a. The journey is a one-way movement from the original zone to the destination zone, in which case the walk is included.
- b. House-based movement is the movement of one or both of its zones (origin or destination) that is to the home.
- c. Non-home based movements are movements where the place of origin and destination has nothing to do with the home.
- d. The rise of movement is the number of moves generated by a zone in unit of time.
- e. The pull of movement is the number of movements that come / attracted to a zone in the future per time unit.

### IV. METHODOLOGY

The methodology used is to use the survey method implemented by distributing questionnaires conducted by purposive sampling or sampling considerations. The sample used is the students who are waiting for the lecture at the next hour, are doing the task in the atrium / library or have finished college.

The time of the individual survey was conducted during the 2-week effective period (not in the college holiday period). The sample taken in this research is divided into 2 categories, that is:

1. Data of student's by travel mode selection.
2. Data of student's by travel time selection

### V. ANALYSIS AND DATA PROCESSING

#### 5.1 Identify Gender

From the results of questionnaires distributed to 50 respondents, got the percentage of the number of students more dominant to male that is as many as 35 people with percentage of 70% while female only as 15 people with percentage of 30%.

#### 5.2 Identification of Residential Areas

The highest number comes from Tangerang area with 40% percentage, Tangerang area has 36% percentage, South Jakarta area, Central Jakarta and North Jakarta has a percentage of 4%, East Jakarta has a percentage of 0%, and other districts (Bekasi, Cikarang, Bogor) have a 12% percentage.

#### 5.3 Distance Identification

The distance depends on the student's residence with the location of the campus of MercuBuana University. Mileage less than 5 km from student residence to campus that is equal to 16%, distance from 5 - 15 km is equal to 44% and 40% is more than 15 km .

#### 5.4 Identify Student Pocket Money

Student pocket money per month is 32% for student pocket money per month less than 2 million rupiah and more than 68% for student pocket money per month.

#### 5.5 Identification of Student Parent's Work

The largest percentage of student employment as entrepreneurs with 38 percent, 36 percent worked as private employees, 16 percent worked as civil servants and 10 percent others.

#### 5.6 Identification of Great Earnings of Parents

After conducting a survey through the distribution of questionnaires, obtained data about the income of parents of students per month. Parent income is less than 10 million per month has a percentage of 54%. The value is greater than the parent income more than 10 million per month which has a percentage of 46%.

#### 5.7 Identify the Length of Travel Time

Each student's journey to the campus has different variations in the duration of the journey. The length of the journey less than 30 minutes to the campus has a percentage of 38%, and more than 30 minutes which only has a percentage of 62%.

#### 5.8 Identify Average of Using a Private Car

The percentage for identifying the average of students using private cars 2 times is 58% and 3 times a week is 24% and 18% for student frequency using private cars almost every day.

#### 5.9 Identify Other Goals of Going to Campus

From the results of questionnaires is 76% of students / respondents have no other purpose when heading to campus.

#### 5.10 Identify Pause Time between Departure and Lecture Time

The percentage for identification of time lags departs with the lecture time is 80% less than 60 minutes, 14% between 60 - 120 minutes and 6% more than 120 minutes.

#### 5.11 Interpretation of Hypothesis Testing

Based on the provision made interpretation of correlation, judging from the magnitude of significance it can be decided correlation that

1. The relationship between the type of mode and the distance of the correlation coefficient is -0.250 and its significance is  $0.040 < 0.05$  which means there is correlation ( $H_0$  is rejected,  $H_1$  accepted).
2. The relationship between the type of mode and the travel time of the correlation coefficient is -0.182 and its significance is  $0.102 > 0.05$  which means no correlation ( $H_0$  accepted,  $H_1$  rejected).
3. The relationship between modal types with pocket coefficient correlation is 0.098 and its significance is  $0.249 > 0.05$  which means no correlation ( $H_0$  accepted,  $H_1$  rejected).
4. The relationship between the distances traveled with the travel time correlation coefficient is 0.498 and significance  $0.000 < 0.05$  which means there is correlation ( $H_0$  rejected,  $H_1$  accepted).
5. The relationship between mileages with pocket coefficient correlation is -0.131 and significance  $0.183 > 0.05$  which means no correlation ( $H_0$  accepted,  $H_1$  rejected).
6. The relationship between travel times with pocket coefficient correlation is -0.184 and its significance is  $0.101 > 0.05$  which means no correlation ( $H_0$  accepted,  $H_1$  rejected).

The table below is a correlation matrix of dependent variables (independent).

**TABEL 5.7 PEARSON CORRELATION AND SIG. (1-TAILED)**

	Type of Moda	Mileage	Travel time	Allowance
Type of Moda	1.000	-0.250	-0.182	0.098
Mileage	-0.250	1.000	0.498	-0.131
Travel time	-0.182	0.498	1.000	-.184
Allowance	0.098	-0.131	-0.184	1.000
Type of Moda	.	0.040	0.102	0.249
	0.040	.	0.000	0.183
Travel time	0.102	0.000	.	0.101
Allowance	0.249	0.183	0.101	.

## 5.12 Analysis of regression

**TABEL 5.12 RESULTS OF COEFFICIENTS REGRESSION TEST**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.000	0.00		8.586E5	0.000
Mileage	-4.117E-7	0.00	-0.208	-1.270	0.210
Travel time	-1.963E-7	0.00	-0.068	-0.411	0.683
Allowance	1.749E-7	0.00	0.058	0.402	0.689

From table 5.12 column B in constant is 1,000, while mileage is -0.0000004117, travel time is -0.0000001963 and pocket money is 0.0000001749. So the regression equation is as follows:

$$Y = 1,000 - 0.0000004117 X_1 - 0.0000001963 X_2 + 0.0000001749 X_3$$

Where:

Y = type of mode, X<sub>1</sub> = mileage, X<sub>2</sub> = travel time, X<sub>3</sub> = allowance

## 5.13 Chi Square Analysis

Interpretation of Chi Square Test results are as follows:

## 1) The relationship between the type of mode and distance

From the results obtained Chi Square count value of 5.375. Chi Square value of the table seen in the statistical table Chi Square with significance of 0.05 and df = 2 of 5.9904 and the probability value seen on the Pearson Chi Square line of 0.069 Because Chi Square counts <Chi Square table (5.375 <5.9904) and significance value > 0.05 (0.069 > 0.05), then H<sub>0</sub> is accepted. Then it can be concluded that there is no relationship between the type of mode and distance traveled.

## 2) The relationship between the mode type and the travel time

From the statistical test results obtained Chi Square value of 1,665 counts. Chi Square value of the table seen in Chi Square statistics table with the significance of 0.05 and df = 1 of 2.7107 and the probability value seen on the Pearson Chi Square line of 0.019.

Since Chi Square calculates the <Chi Square table (1.665 <2.7101) and the significance value > 0.05 (0.197 > 0.05), then H<sub>0</sub> is accepted. So it can be concluded that there is no relationship between the type of mode and travel time.

## 3) The relationship between mode and allowance

From the results of statistical tests, obtained Chi Square value of 0.480 count. Chi Square value of the table seen in the statistical table Chi Square with significance of 0.05 and df = 1 of 1.3201 and the probability value seen on the line Pearson Chi Square of 0.488.

Since Chi Square calculates the <Chi Square table (0.480 <1.3201) and the significance value > 0.05 (0.488 > 0.05), then H<sub>0</sub> is accepted. So it can be concluded that there is no relationship between the type of mode and pocket money.

**VI. CONCLUSION**

Based on the analysis and data processing of 50 respondents about the characteristics of the University of MercuBuana students traveling using private cars, the following conclusions can be shown:

## 1. Characteristics of students from respondent data are:

- Sex more dominant to male gender that is as much 35 people with percentage 70%.
- Housing is more dominated by West Jakarta with a percentage of 40% larger than Tangerang, South Jakarta, East Jakarta, North Jakarta and Central Jakarta.
- Percentage of student pocket money per month is 68% for an average allowance per month >Rp 2.000.000,00.
- Employment of student parents as entrepreneurs has the largest percentage of 38%.
- Income of student's parents per month <Rp 10.000.000,00 has the biggest percentage that is 54%.

## 2. Characteristics of student travel are:

- Mileage 5 - 15 km from student residence to campus has the largest percentage of 44%.
- The length of trip to campus is more dominant at > 30 minutes with 62% percentage.
- The frequency of students using private cars is 1 week 2 times with a percentage of 58%.

- More students have no other goal on the way to campus with a percentage of 76%.
  - Student lag time with 80% entry time for lag time of <60 minutes.
  - The reason students prefer to depart at the time because it is in accordance with the existing lecture schedule with a percentage of 48%.
3. Based on Pearson Correlation test results, Regression and Chi Square note that there is no significant relationship or relationship has a significant degree of relationship between the choice of type of private car mode with mileage, travel time and pocket money.
4. From the results obtained Regression test results are:
- The coefficient of determination is 0.070 which means the effect of mileage, travel time and pocket money of 7% against the choice of private car mode.
  - The regression equation is:  

$$Y = 1,000 - 0.0000004117 X_1 - 0.0000001963 X_2 + 0.0000001749 X_3$$
5. By looking at the purpose of this Final Project it can be seen that students of the University of MercuBuana more that use private cars where the average mileage is 5 - 15 km with travel time taken > 30 minutes and have pocket money that is >Rp 2,000,000 . The frequency of students using private cars is 2 times a week, where students have no other purpose than to go to the campus of the University of MercuBuana because according to their college schedule. The time lag between student departure and college admission time is <60 minutes, so it can be concluded that students tend to come to campus to coincide with the time of admission.

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