Analysing the Influence of Cognitive, Affective, Conative, and Motivation Aspects on Train Passenger’s Deviant Behaviour: Commuter Line, Indonesia

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Abstract. Commuter Line in Jakarta and surrounding cities became the best public transportation for urban choice. However, there are still many problems related to behavior deviations. There are several forms of deviant behavior found, such as pickpocketing, sexual abuse, smoking, aggressive passengers, eating and drinking in the carriage, and priority seat abuse. The purpose of this paper is to analyze whether there is a significant influence among the cognitive, affective, conative, and motivation aspects of passengers simultaneously and partially to deviant behavior. Mixed-Method research is conducted to understand behavior aspects. Sequential exploratory research model is used with the main focus to explore a phenomenon of train passenger deviant behavior and divided into two stages. The first stage is the collection of qualitative data using observation and in-depth interview methods. The second stage is collecting quantitative data with the survey and distributing questionnaires methods. Multiple linear regression and triangulation analysis are used in this study with several tests such as hypothesis test and coefficient of determination test. The results showed some implication about passenger deviant behavior based on four aspects: cognitive, affective, conative, and motivation. The conclusions explained cognitive, motivation and, conative aspects show very strong influence on deviant behavior.

1. Introduction
Wesley Woodson [1] argued that the transportation space should pay more attention to the characteristics of passengers, which are attitude and behavior. Understanding passenger attitudes and behavior is important to anticipate operational and service problems. Sears [2] suggested that there were three components to seeing the form of attitudes, including the cognitive, affective, and conative. Based on the small findings in the pre-research stage, they showed that the relationship between cognitive and affective passenger behaviors can be in one direction, but not always compatible [2]. Most of the passengers have anomie so the use of facilities and regulations in the station sometimes becomes biased. Passengers no longer know which one can be said to be 'correct' and which one is 'wrong' in using the facility. This research was conducted to enrich the patterns of Commuter Line passenger’s deviant behavior both in stations and train cars based on three components coupled with motivation aspect [3].

The study of train passenger’s behavior has been carried out starting from the passenger’s behavior during boarding [4] and forms of commuter line passenger deviant behavior up the train roof [5]. Other research studied how passengers did affordances and adaptation in Commuter Line trains [6] and also
how passenger behavior is viewed from policy implementation of facilities and infrastructure within the station [7]. Research on passenger behavior modeling using regression analysis has also been carried out [8] but the factors used have not been specific regarding deviant behavior itself. From the various studies above, this paper tries to combine and complement the research of passenger behavior in terms of the passenger's deviant behavior aspects. How does the cognitive, affective, conative, and motivation aspects influence the passengers deviant behavior? Does each variable partially influence the deviation? How about the simultaneous influence? If there are any relations, what is the power of the relation? And which variables mostly influence passengers deviant behavior?

2. Methodology
This study used a quantitative approach. Data collection is done by a survey method with questionnaire instruments. The distribution of questionnaires was conducted to complete the analysis of quantitative data. Data is also collected to strengthen data interpretation/tabulation. Respondent data in this study can be analyzed descriptively to find out the characteristics of respondents and deviant behavior factors based on three components (cognitive, affective, and conative) and an additional component which is motivation aspect. The questionnaire was distributed to passengers using the Tangerang-Duri route with the intention that passengers who were given a questionnaire were willing to respond according to the questions asked. The scale used in this study is the Likert scale to measure attitudes, opinions, and passenger perceptions of deviant behavior that occurs.

| Table 1. Likert Scale Answer Sheet |
|-----------------------------------|
| Answer | SD | D | Do | A | SA |
| Score  | 1  | 2 | 3  | 4 | 5  |
| a      | Strongly Disagree           |
| b      | Disagree                    |
| c      | Doubtful                    |
| d      | Agree                       |
| e      | Strongly Agree              |

2.1. Population and Sample
The population in this study were passengers on weekdays and weekends observed at peak and off-peak hours. The sample in question is a portion of the Commuter Line population of the Tangerang-Duri route whose characteristics are to be investigated and can represent the entire population. Sugiyono [9] explained that one technique in drawing samples must be represented by using the Slovin formula below.

\[
n = \frac{N}{1 + Ne^2}
\]

n = sample/total respondent
N = population
e = the percentage of sampling accuracy errors that can still be tolerated

| Table 2. Research Population |
|-----------------------------|
| Time | Average Passenger in Station | Tangerang | Duri |
| Weekdays | Peak | 2670 | 3751 |
|         | Off-Peak | 1530 | 2458 |
| Weekend | Peak | 1774 | 1846 |
|         | Off-Peak | 1121 | 1507 |
| Average Passenger | 1773 | 2390 |
| Population (1+2) | 4163 |
The population in this study was 4163 passengers. The population is the sum of the average passengers at Tangerang and Duri Station on weekdays and weekends. Data was collected through initial observation by manual counting. Samples were taken based on random sampling techniques where researchers provide equal opportunities for each member of the population (passengers) to be chosen randomly. Sampling data can also be taken incidentally [9] which is the determination of respondents by chance (whoever meets the surveyor can be used as a sample). Percentage of allowance used is 10% and the results can be rounded up so that the number of samples is 110 respondents.

2.2. Variables
In this study, there are four independent variables (Cognitive, Affective, Conative, and Motivation) and 1 dependent variable (Passenger Deviant Behavior). The variables are operationalized as follows:

| Variable                  | Indicator                                      |
|---------------------------|-----------------------------------------------|
| Cognitive                 | a. Knowledge about deviant behavior            |
|                           | b. Understanding of regulations                |
|                           | c. Understanding of station and train facilities|
|                           | d. Understanding of space and time resources   |
| Affective                 | a. The response of deviant behavior            |
|                           | b. Reaction to deviant behavior                |
|                           | c. Passenger amenities                         |
|                           | d. Passenger safety                            |
| Conative                  | a. Passenger action to deviant behavior         |
|                           | b. Passenger readiness to deviant behavior      |
|                           | c. Passenger anticipation to deviant behavior   |
| Motivation                | a. Passenger basic needs fulfillment           |
|                           | b. Passenger opportunity in committing deviant behavior |
| Passenger Deviant Behavior| a. Understanding of regulation/norms           |
|                           | b. Regulation socialization                    |
|                           | c. Passenger tolerance                         |
|                           | d. Station and train facilities                |
|                           | e. Space and time limitation                   |

2.3. Analysis
The questionnaire data was processed through the tabulation and Statistical Package for the Social Sciences (SPSS) program. The results of processing data will be analyzed using multiple linear regression and hypothesis test. Multiple linear regression is used because of several aspects that will be tested. This analysis is the most suitable for the research model.

Multiple Linear Regression Analysis is a method of analysing correlation between cause and effect relations and making predictions for the topic by using the relation [10]. The multiple linear regression analysis in this study aims to determine the magnitude of the influence of four independent variables namely Cognitive (X1), Affective (X2), Conative (X3), and Motivation (X4) on the dependent variable namely Deviant Behavior (Y). The multiple linear regression equation models used in this study are as follows:

\[ Y = \alpha + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + \varepsilon \]  

Y : Dependent Variable
α : Constanta Coefficient
\( b_{1,2,3,4} \) : Regression Coefficient \( X_1, X_2, X_3, X_4 \)
\( X_1 \) : Cognitive
\( X_2 \) : Affective
\( X_3 \) : Conative
\( X_4 \) : Motivation
\( \varepsilon \) : Error

2.3.1. Hypothesis Test. The hypothesis test is divided into two methods, which are t-test (partial) and F test (simultaneous). The t-test, known as the partial test, is conducted to determine the effect of the independent variable (X) on the dependent variable (Y) separately / one by one / each [11]. According to Ghozali [12], the t-test is said to be significant if the value of \( t \) count > \( t \) table or significance value (p-value) < probability. This F test is also often referred to as a simultaneous test, to test whether the independent variables used in the model are able to explain changes in the value of variables [12]. F test is said to be significant if the value of \( F \) count > \( F \) table or significance value (p-value) < probability. The description of the calculation can be seen in the ANOVA table.

3. Results and Discussions
The distribution of the questionnaire was carried out during approximately two months (December 2018 until January 2019). The questionnaire was distributed to complement the primary data needs that had been identified through observation and semi interviews with both passengers and PT. KCI. The results of distributing questionnaires can be in the form of characteristics of respondents' profiles and tabular data filling in questions to be tested with multiple linear regression analysis.

3.1. Respondent Profile
Respondent profile data describes the characteristics of 110 respondents. The profile of the respondents can be elaborated through the identity of the respondents based on the characteristics of age, gender, occupation, and time of Commuter Line usage.

![Figures](a) Respondent by Age
![Figures](b) Respondent by Gender
![Figures](c) Respondent by Profession
![Figures](d) Respondent by Time of Using Train

**Figure 1.** Total Respondent by Age, Gender, Profession, and Time of Using Train.
Based on the survey results, respondents in this study had the youngest age range of 18 years to the oldest 65 years. Most of the respondents were passengers aged 21-30 years as many as 59 people (53.6%) and passengers aged 31-40 years as many as 24 people (21.8%) and passengers aged 41-50 years as many as 12 people (10.9%). This distribution shows that respondents are dominated by productive age passengers. Productive age passengers usually work in the Jakarta area and come from the suburban areas (Tangerang, Depok, Bogor, and Bekasi). Based on research from the Ministry of Transportation, most workers in productive age in Jakarta prefer to use public transportation modes rather than private vehicles, most of them using Commuter Line. Based on gender, the respondents in this study were dominated by women as many as 65 people (59.1%). Meanwhile, there were 45 male respondents (40.9%). Therefore, Commuter Line in Indonesia is mostly used by women.

The results of the observation also showed that on the Tangerang-Duri route, woman passengers were dominated especially by mothers carrying children during off-peak hours. The types of professions identified were Army/Police, Civil Servants, private employees, entrepreneurs, laborers, freelancers, students/college students, housewives, and others. The majority of respondents worked as private employees as many as 49 people (44.5%). The next most respondents were housewives as many as 18 people (16.4%) and students/college students (12.7%). Of the 110 respondents, 75 passengers were daily workers (68.2%) and 35 passengers did not work (31.8%). Time of using train is divided into weekdays (working days), weekends, and both (weekdays and weekends). 43 respondents (39.1%) used the Commuter Line only on weekdays. 31 respondents (28.2%) used the Commuter Line only on weekends who are usually dominated by passengers carrying families. While as many as 36 respondents (32.7%) used the Commuter Line on both weekdays and weekends.

3.2. Multiple Linear Regression Model

Based on the table, the values in the table output are included in the following terms of multiple linear regression.

\[ Y = (\alpha) + (X_1)0.929 - (X_2)0.019 - (X_3)0.746 + (X_4)0.589 \]  

Equation (3) shows a constant value of (28,671), it can be interpreted that if the value of other independent variables is 0, then the value of the dependent variable (deviant behavior without being influenced by the independent variable) is equal to (28,671). Cognitive variable coefficient (X1) is 0.929; meaning that every increase of 1 unit in Cognitive variable, will increase deviant behavior by 0.929 units, assuming other independent variables are fixed values. Beta Standardized Coefficients Cognitive variable (X1) of 0.540 means that Cognitive variables have a positive influence of 54% on deviant behavior variables (Y). The Affective variable coefficient (X2) is -0.019; meaning that every increase of 1 unit in Affective variable, will reduce deviant behavior by 0.019 units, assuming other independent variables are fixed values. Beta Standardized Coefficients Affective variable (X2) of -0.016 means that Affective variables have a negative effect of 1.6% on variable deviation behavior (Y). The Conative variable coefficient (X3) is -0.746; meaning that every

| Model | Unstandardized Coefficients | Standardized Coefficients | t | Sig. |
|-------|-----------------------------|---------------------------|---|-----|
|       | B                           | Std. Error                | Beta                      |     |     |
| 1 (Constant) | 28.671 | 6.445 |                  | 4.448 | .000 |
| Cognitive      | .929  | .141  | .540            | 6.610 | .000 |
| Affective      | -.019 | .095  | -.016           | -.206 | .837 |
| Conative       | -.746 | .191  | -.320           | -3.914 | .000 |
| Motivation     | .589  | .240  | .229            | 2.451 | .016 |

Beta Standardized Coefficients Cognitive variable (X1) of 0.540 means that Cognitive variables have a positive influence of 54% on deviant behavior variables (Y). The Affective variable coefficient (X2) is -0.019; meaning that every increase of 1 unit in Affective variable, will reduce deviant behavior by 0.019 units, assuming other independent variables are fixed values. Beta Standardized Coefficients Affective variable (X2) of -0.016 means that Affective variables have a negative effect of 1.6% on variable deviation behavior (Y). The Conative variable coefficient (X3) is -0.746; meaning that every
increase of 1 unit in Conative variable, will reduce deviant behavior by 0.746 units, assuming the other independent variables are fixed values. Beta Standardized Coefficients Conative variable (X3) is -0.320, which means that the Conative variable has a negative influence of 32% on the deviant behavior variable (Y). Motivation variable coefficient (X4) is -0.589, meaning that every increase of 1 unit in Motivation variable, will increase deviant behavior by 0.589 units, assuming other independent variables are fixed values. Beta Standardized Coefficients Motivation variable (X4) of 0.229 means that the Motivation variable has a positive effect of 22.9% on deviant behavior variable (Y).

The multiple linear regression model above shows that Cognitive variable (X1) and Motivation variable (X4) are positively related to deviant behavior. Meanwhile, Affective variable (X2) and Conative variables (X3) are negatively related to deviant behavior. Based on Beta Standardized Coefficients, the most influential variable to deviant behavior is the Cognitive variable (X1). This can be seen in the form of passenger behavior due to a lack of understanding of the rules and norms in the station and train. After analyzing the independent variables that influence deviant behavior as explained by Sears [2], all variables simultaneously influence behavior deviations. Cognitive variables have the greatest influence indicating that aspects of knowledge and understanding of passengers in implementing rules and norms are important to be discussed further. Imron and Harianto’s research [13] also showed that human cognitive factors greatly determine the form of deviations made. Sujatmiko and Harianto’s research [5] also showed that there are several motives that cause passengers deviant behavior in train cars. Four of the five motives found by Sujatmiko & Harianto [5] explained that they (passengers) were more influenced by cognitive aspects and passenger motivation than effective aspects. Partially, affective variables show no significant effect on deviant behavior. For this reason, effective variable should be substituted with the variable that has a predominant influence such as the motivation variable. The addition of motivational variable from Maslow [3] can finally explain that deviant behavior was positively carried out to meet the needs of the passengers themselves. Deviant behavior also tends to occur because of the special or urgent motivation of these passengers.

### 3.3. Coefficient of Determinant Test

The coefficient of determination shows how much the percentage of the regression model is able to explain the dependent variable.

| Model | R    | R Square | Adjusted R Square | Std. Error of Estimate |
|-------|------|----------|-------------------|------------------------|
| 1     | .668 | .447     | .426              | 4.08145                |

The limit of $R^2$ is $0 \leq R^2 \leq 1$ so that if $R^2$ equals zero (0), it means that the dependent variable cannot be explained by the independent variable simultaneously, whereas if $R^2$ is equal to 1, it means that the independent variable can explain the dependent variable simultaneously. Table 5 shows that the correlation between the dependent variables Deviation Behavior and the four independent variables, in general, is 0.668. This shows that the Cognitive, Affective, Conative, and Motivation variables towards Deviant Behavior are in a strong category. The Adjusted R Square value is 0.426 (42.6%). This shows that the variation of the independent variables used in the model (cognitive, affective, conative, and motivation) is able to explain 42.6% of the variation in the behavioral deviation variables, while the remaining 57.4% is explained by other variables not included in this research model.

### 3.4. Hypothesis Test

The partial test results (t-test) can be seen in Table 4. Conclusions can be drawn based on the following requirements: If the t count is greater than t table or p-value is smaller than 0.1, then hypothesis 0 is rejected and the initial hypothesis is accepted which means the independent variable affects the dependent variable. Based on table 4, the t count of cognitive variables is 6.610, motivation variable is
2,451, conative variable is -3,914, and the significance value is 0,000. The t table value can be seen from the statistical table with a significance of 0.1 and degrees of freedom (df) n-k-1 or 110 - 4 - 1 = 105. With the 2-sided test the results are obtained for t table of 1,289 / -1,289. That is, t count> t table (6.610, 2,451, -3,914> 1,289 / -1,289) and significance value < from α (0,000 <0,1). Therefore, it can be concluded that Cognitive and Motivational variables partially influence the deviation of the Commuter Line passenger behavior. Positive t count value, means that the increasing assessment of the cognitive aspects and motivation of a passenger will increase deviant behavior.

The results of calculations on the conative variables show a negative t count, which means that the increased assessment of the conative aspects of a passenger will reduce behavioral deviations. On the other hand, Affective variable shows the value of t count is -0.206 and the significance value is 0.837. The t table value can be seen from the same statistical table. That is, t count < t table (-0.206 <-1,289) and significance value > of α (0.837> 0.1). Then it can be concluded that the Affective variable partially does not affect Commuter Line passenger deviant behavior. In addition to the t-test, the F test is used to determine whether the independent variables simultaneously influence the dependent variable or not. The hypothesis 0 is accepted if F count ≤ F table and the hypothesis is rejected if F count> F table. The F test results obtained after the processed data are presented in the following ANOVA table.

| Model       | SST  | df  | Mean Square | F      | Sig     |
|-------------|------|-----|-------------|--------|---------|
| Regression  | 1411 | 4   | 352.9       | 21.189 | .000b   |
| Residual    | 1749 | 105 | 16.6        |        |         |
| Total       | 3160 | 109 |             |        |         |

Based on the ANOVA table above, the calculated F value is 21,189. F table can be seen in the statistical table using a significance level of 0.1 and df 1 (number of variables - 1) or 4-1 = 3 and df 2 (n-k-1) or 110-4-1 = 105. Results obtained for F table amount to 2,136. That is, the value of F count> F table (21,189> 2,136), then hypothesis 0 is rejected and the initial hypothesis is accepted. Therefore, it can be concluded that the Cognitive, affective, conative, and motivation variables simultaneously influence the Commuter Line passenger deviant behavior. Based on the F test table above, the significance value of the Cognitive variable (X1), Affective variable (X2), Conative variable (X3), and Motivation variable (X4) is 0,000 < value of α (0,1) so that all independent variables together have an effect on the Commuter Line passenger deviant behavior at stations and train cars.

4. Conclusions
Deviant behaviors in this study are interpreted specifically as all forms of passenger behaviors that violate the rules and norms that apply both in the station and train cars. Previous research about deviant behavior discussed irregularities in train cars by linking passenger motives to behavior. There has been no discussion about the relationship between the effects of deviant behavior aspects. Cognitive, motivation, and conative aspects show a very strong influence on passenger deviant behavior. The tendency of these deviant behaviors can ultimately show the lack of cognitive abilities of Commuter Line passengers accompanied by a strong motivation to fulfill their needs. Future research is expected to be able to include other aspects such as the social, cultural, and economic aspects of passengers, which can influence deviant behavior.

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Acknowledgements
This article is part of Grant of International Publications for Students Final Project of Universitas Indonesia: Urban Public Transportation and Planning.