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Analysis of Factors Influencing Non-Compliance with Traffic Regulations for Motorcycle Users of Mathematics Students UNP

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Abstract. The number of violations in 2019–2022 on motorcycle vehicle types concluded that vehicle violations in Padang City experienced fluctuations. The number of violations is relatively high for students. Based on this incident, this research aims to discover the factor analysis model and forming factors that influence non-compliance with motorcycle traffic regulations. The data used is primary data obtained from giving questionnaires to UNP Mathematics student respondents, and factor analysis is used to analyze the data. According to the study's findings, the factors formed were as follows: factor 1 was wearing a national standard helmet, having a driver's license, having a vehicle registration, the vehicle meeting technical requirements based on the law, the driver meeting the requirements based on regulations, and factor 2 was obeying signal lights, obeying traffic signs, and understanding traffic rules.

Keywords: Factor Analysis, Non-compliance, Traffic Regulations.

1 Introduction

Data from the Central Statistics Agency (BPS) in Padang City can be seen in Table 1, which shows the number of vehicles from 2019-2021. In 2019, the number of motorcycles was 283.098 units. In 2020, the number of motorcycles will be 242.238 units. In 2021, the number of motorcycles will be 346.432 units. It can be concluded from the data obtained that those motorbikes in the city of Padang experience fluctuations.

Table 1. Number of Vehicles in Padang City

Transportation type	Number of vehicles		
	2019	2020	2021
Sedan	7.554	6.833	10.311
Jeep	7.795	7.370	9.154
Minibus/ST Wagon	81.287	75.316	86.809
Microbus	675	588	694
Buses	0	0	0
Pick Up	12.987	11.667	15.084
Light Trucks	7.257	6.597	958
Trucks	5.849	5.231	6.970
Two Wheel Motorcycle	283.098	242.238	346.432
Tricycle Motorcycle	475	364	1.087
Amount	407.141	356.359	477.499

* Source: BPS City of Padang

Data obtained from the Padang Police from 2019-2022 shows in Table 2 that the number of motorcycle traffic violations from 2020 to 2021 has decreased due to the COVID-19 pandemic. In 2022, the number of traffic violations on motorbikes was relatively high, with a total of 67.966 units due to the restart of routine activities that year while following health precautions to stop the spread of COVID-19.

Table 2. Padang Police Traffic Vehicle Violation Numbers

No	Period	Number of Vehicles Involved in Violations							
		Motorcycl	Passenger car	Minibus	Sedan	Jeep	Pick Up	Trucks	Bus Car
1	2019	22.845	461	5.449	6	5	102	189	1
2	2020	15.303	483	1.385	307	254	313	503	8
3	2021	10.635	293	1.890	93	21	254	214	17
4	2022	19.183	1.066	2.808	235	33	506	320	33
Amount		67.966	2.303	11.532	641	313	1.175	1.226	59

* Source: BPS City of Padang

Data obtained from the Padang Police from 2019-2022, which can be seen in Table 3, shows that the number of professional traffic violations in the city of Padang is relatively high, which occurred among college students with a total of 34.355. College students can represent a group of people. The high level of college students who use motorized vehicles unconsciously must understand compliance with traffic rules.

Table 3. Types of Traffic Violation Professions in the City of Padang

No	Period	Offender Profession							
		TNI/ POLRI	PNS	Employees / Private	Drivers	College Students	Students	Traders	Others
1	2019	0	1.011	15.519	1.291	7.700	3.537	0	0
2	2020	1	35	6.959	144	3.408	1.425	8	6.576
3	2021	17	20	5.543	25	5.546	444	5	1.817
4	2022	40	21	5.918	28	17.701	393	0	83
Amount		58	1.087	33.939	1.488	34.355	5.799	13	8.473

* Source: BPS City of Padang

The data obtained from the Padang Police from 2019-2022 can be seen that the data on vehicles involved in traffic accidents in the city of Padang has fluctuated. The vehicles involved in accidents can be seen in Table 4 that motorcycle vehicles are involved in accidents quite high compared to other vehicles such as passenger cars, goods cars and bus cars. So that we can obtain the percentage increase or decrease in traffic accidents from 2019-2022. In 2019, it was seen that the percentage of motorbikes involved in accidents was 26,06%. In 2020, it can be seen that the percentage of motorbikes involved in accidents was 19,60%. In 2021 it can be seen that the percentage of motorbike vehicles involved in accidents is 22,70% and in 2022 it can be seen that the percentage of motorbike vehicles involved in accidents is 31,62% which can be concluded that motorbike vehicles involved in traffic accidents in 2022 are quite high compared to the previous year.

Table 4. Vehicles Involved in Traffic Accidents

No	Period	Number of Vehicles Involved in Accidents			
		Motorcycles	Passenger Cars	Freight Cars	Bus Cars
1	2019	915	163	80	9
2	2020	688	107	60	4
3	2021	797	129	95	3
4	2022	1.110	173	88	1
Amount		3.510	572	323	17

* Source: BPS City of Padang

From the data presented, it is obtained that non-compliance with traffic regulations occurs relatively highly among students, so from this, research will be carried out on the analysis model and the factors that influence non-compliance with these traffic regulations. One method of dependency analysis used to explain the relationship between many variables about the relationship between these variables and many factors is factor analysis. By condensing variables into a small number of variables, known as factors that still contain the original variables, factor analysis can also condense or summarize data from many variables. Factor analysis can be used to find factors (dimensions or components) that can represent the original variable [1]. The existence of multicollinearity is a fundamental principle of factor analysis. Multicollinearity is the correlation between variables [2]. Correlation can be described with a matrix [3]. Based on the description above, research was conducted to analyze the factors that influence non-compliance with traffic regulations for motorbike users. These factors can be determined using factor analysis methods.

2 Theoretical Basic

This research begins with a theory so that it can be said to be applied research. Applied research is collecting data and then applying the data to theory [4]. The data used in this study is primary data. Primary data is collected from the first source, such as interviews with individuals or groups or survey responses [5]. UNP mathematics students who were survey respondents provided research data. Only 387 UNP Mathematics Study Program Students enrolled in tertiary institutions during the 2018–2021 academic year were included in the study population. Purposive sampling is approaching non-probability sampling used in this research. The Slovin formula [6] is used to calculate the sample size for this study, namely:

$$n = \frac{N}{1 + (N \times e^2)} \tag{1}$$

where:

n = Total of sample

N= Total of population

e = Error (10% = 0,1)

$n = \frac{N}{1+(N\times e^2)} = \frac{387}{1+(387 \times (0,1)^2)} = 79,46611 \approx 79$

By using the number of samples calculated by the Slovin formula, it is known that 79 UNP Mathematics students as a sample own motorbikes. This research variable will explore the nature of the values of individuals, objects, or activities, which undergo many changes, to develop conclusions [7].

The variables of this study include:
x_1 = National Standard Helmet
x_2 = Use of Signal Lights
x_3 = Have a STNK
x_4 = Have a SIM
x_5 = Obeying Traffic Signs
x_6 = Vehicle Meets Technical Requirements Under Law
x_7 = Driver Meets Requirements According to Regulations
x_8 = Understand About Traffic Rules

Before analyzing the data, the processing steps are as follows:
1. Collect respondents' answers through the Google Forms online questionnaire.
2. Check the data to give a score on the answer choices.
3. Calculate the mean of each variable.
   Transform the data into the standard "Z score" [8] using the formula:

$$Z_{jk} = \frac{\left(x_{jk} - \underline{x}_k\right)}{s_k} \tag{2}$$

   This transformation is carried out because the number of statement items per variable is not the same, and the units of measurement for variables are different.
4. Then analyzed using factor analysis, can be seen in the following stages:
   a. Form a data matrix as follows:

$$X_{n\times p} = \left[x_{11}\ x_{12}\ \dots\ x_{1p}\ x_{21}\ x_{22}\ \dots\ x_{2p}\ \vdots \vdots \vdots \vdots\ x_{n1}\ x_{n2}\ \dots\ x_{np}\ \right]$$

where:

$$j = 1, 2, \dots, n$$

$$k = 1, 2, \dots, p$$

b. Determine the covariance matrix from the data matrix that has been transformed into standard form [9] as follows:

$$S_{ii} = \frac{1}{n-1}\sum_{j=1}^{n}\left(x_{ji} - \underline{x}_i\right)^2, i = 1, 2, \dots, p \quad (3)$$

$$S_{ij} = \frac{1}{n-1}\sum_{k=1}^{n}(x_{ki} - \underline{x}_i)(x_{jk} - \underline{x}_k) \quad (4)$$

where:

$i = 1, 2, \dots, p$ $\quad k = 1, 2, \dots, p$

x_{ki} = the i-th observation value and the k-th variable

x_{jk}= the j-th observation value and the k-th variable

$\underline{x}_{i,k}$ = the average value of the i or k variables

The covariance matrix is denoted by the S matrix as follows:

S = $[s_{11}\ s_{12}\ \dots\ s_{1p}\ s_{21}\ s_{22}\ \dots\ s_{1p}\ \vdots\ \vdots\ \ddots\ \vdots\ s_{p1}\ s_{p1}\ \dots\ s_{pp}\ ]$

c. Form a correlation matrix. Investigation of the relationship between variables is called correlation in statistics [10] as follows :

$$r_{ik} = \frac{s_{ik}}{\sqrt{s_{ii}}\sqrt{s_{kk}}} \quad (5)$$

where :

r_{ik} = correlation of the i-th variable sample with the k-th variable

s_{ik} = covariance of the i-th variable sample with the k-th variable

s_{ii} = the variance of the i variable with the i variable

s_{kk} = variance of the k-th variable with the k-th variable

The correlation matrix with the R matrix is predicted as follows, if the observations are sample data:

$$R = \left[\frac{s_{11}}{\sqrt{s_{11}}\sqrt{s_{11}}}\ \frac{s_{12}}{\sqrt{s_{11}}\sqrt{s_{22}}}\ \dots\ \frac{s_{1P}}{\sqrt{s_{11}}\sqrt{s_{PP}}}\ \frac{s_{21}}{\sqrt{s_{22}}\sqrt{s_{11}}}\ \frac{s_{22}}{\sqrt{s_{22}}\sqrt{s_{22}}}\ \dots\ \frac{s_{1P}}{\sqrt{s_{11}}\sqrt{s_{PP}}}\ \vdots\ \vdots\ \cdots\ \vdots\ \frac{s_{P1}}{\sqrt{s_{PP}}\sqrt{s_{11}}}\ \frac{s_{P2}}{\sqrt{s_{PP}}\sqrt{s_{22}}}\ \dots\ \frac{s_{PP}}{\sqrt{s_{PP}}\sqrt{s_{PP}}}\right] = [r_{11}\ r_{12}\ \dots\ r_{1p}\ r_{21}\ r_{22}\ \dots\ r_{2p}\ \vdots\ \vdots\ \vdots\ \vdots\ r_{p1}\ r_{p2}\ \dots\ r_{pp}\ ]$$

d. Perform test determinations using the Barlett test, KMO test, and MSA test as follows:
Correlation, which states that highly correlated variables are factors, is a core principle of factor analysis. Although one-factor variable has a weak correlation with other factor variables. The statistical tests that can be used to see the accuracy of using factor analysis [3] are:

1) *Bartlett Test*
This test looks at the correlation of variables with other factors. This is called an identity matrix of 1 when the variables used in the factor analysis are not correlated or when the correlations between the variables are not statistically significant, implying that the correlation between the variables is 0. Factor analysis cannot be performed using this form of matrix. In testing the hypothesis formed, namely:

H_0 : the correlation matrix is an identity matrix.

H_1 : the correlation matrix is not an identity.

The test is carried out using Chi-Square statistics [11], as can be seen below:

$$\chi^2 = -\left[(N-1) - \frac{2p+5}{6}\right] ln\ ln\ |R| \quad (6)$$

where:

N = Total of observations

|R| = Determinants of the correlation matrix

P = Total of variable

After calculating the statistics *Chi Square* if $\chi^2{}_{hitung} > \chi^2{}_{\alpha,p(p-1)/2}$ then decline H_0 so that it can be concluded that the correlation matrix is not an identity matrix, in other words, a correlation between variables is found or rejected H_0 if P_{value} (signifikansi) < 0.05.

2) *Kaiser Meyer Olkin Test (KMO)*

The KMO test indicates whether data can be analyzed using factor analysis or not. KMO test statistics [11] are as follows:

$$KMO = \frac{\sum_{I=1}^{P}\sum_{J\neq I}^{P} r^2{}_{ij}}{\sum_{I=1}^{P}\sum_{J\neq I}^{P} r^2{}_{ij} + \sum_{I=1}^{P}\sum_{J\neq I}^{P} a^2{}_{ij}} \quad (7)$$

for $a^2{}_{ij} = \frac{r_{ij}}{\sqrt{1-r^2{}_{ij}}}$

where:

i = 1, 2, . . . , p

j = 1, 2, 3, . . . , p

r_{ij}= simple correlation coefficient of variables i and j

a_{ij}= partial correlation coefficient of variables i and j

If KMO > 0.05 then decline H_0 so it can be concluded that the data can be analyzed using factor analysis.

3) *Measure of Sampling Adequacy* Test (MSA)

A statistical test called the MSA test can be used to evaluate how well another variable predicts the variable with simple errors. The MSA test statistics [11] are

$$MSA = \frac{\sum_{I=1}^{P}\sum_{J\neq I}^{P} r^2{}_{ij}}{\sum_{I=1}^{P}\sum_{J\neq I}^{P} a^2{}_{ij}} \quad (8)$$

where:

i = 1, 2, . . . , p

j = 1, 2, 3, . . . , p

r_{ij}= simple correlation coefficient of variables i and j

a_{ij}= partial correlation coefficient of variables i and j

The MSA value ranges from 0 to 1 with criteria [12]:

MSA = 1 ; variables can be predicted accurately or correctly.

MSA > 0.5 ; predictions and analysis of variables can still be continued.

MSA < 0.5 ; variable cannot be continued or excluded from other variables.

e. Use principal component analysis to extract the components and large one eigenvalue to get the number of factors. The original variables can be combined linearly and given weights to form the main components [13].

$$Ax = \lambda x \quad (9)$$

f. Estimate the factors by first determining their weight. Factor weight is a metric that describes how each factor represents a particular variable [14].

From the covariance matrix, eigenvalue pairs are obtained $(\lambda_{j,} e_i)$ with $\lambda_1 \geq \lambda_2 \geq \ldots \geq \lambda_p \geq 0$ so:

$$\sum = \lambda_1 e_1 e^t{}_1 + \lambda_2 e_2 e^t{}_2 + \ldots + \lambda_p e_p e^t{}_p$$

$$= \left[\sqrt{\lambda_1} e_1 \ \sqrt{\lambda_2} e_2 \ \ldots \ \sqrt{\lambda_p} e_p\right] \left[\sqrt{\lambda_1} e^t{}_1 \ \sqrt{\lambda_2} e^t{}_2 \ \vdots \ \sqrt{\lambda_p} e^t{}_p\right]$$

The factoring matrix above can also be written as follows:

$$\sum = LL^t$$

As previously stated, the covariance matrix S correlation matrix is replaced with R. If specific factors are included in the factor analysis, then the estimation of the weights of these unique factors becomes:

$R = LL^t + \psi$

$$= \left[\sqrt{\lambda_1} e_1 \ \sqrt{\lambda_2} e_2 \ \ldots \ \sqrt{\lambda_p} e_p\right] \left[\sqrt{\lambda_1} e^t{}_1 \ \sqrt{\lambda_2} e^t{}_2 \ \vdots \ \sqrt{\lambda_p} e^t{}_p\right] + \left[\psi_1 \ 0 \ \ldots \ 0 \ 0 \ \psi_2 \ \ldots \ 0 \ \vdots \ \vdots \ \ddots \ \vdots \ 0 \ 0 \ \ldots \ \psi_p\right]$$

Matrix of estimation of factor weights $\{L_{ij}\}$ [8] as follows:

$$L_{ij} = \left[\sqrt{\lambda_1} e_1 \ \sqrt{\lambda_2} e_2 \ \ldots \ \sqrt{\lambda_p} e_p\right] \tag{10}$$

The specific variance estimator is obtained from the main diagonal of the matrix $R - LL^t$, so that:

$$\psi = \left[\psi_1 \ 0 \ \ldots \ 0 \ 0 \ \psi_2 \ \ldots \ 0 \ \vdots \ \vdots \ \ddots \ \vdots \ 0 \ 0 \ \ldots \ \psi_4\right]$$

where:

$\psi = r_{ij} - \sum_{j=1}^{m} a_{ij}$

for $i = 1, 2, \ldots, p$

g. Rotate using the varimax method on factor weights using the formula:

$$\sum_{j=1}^{n} \left[\frac{1}{p} \sum_{j=1}^{n} \left(\frac{c_{ij}}{h_i}\right)^2 - \left(\frac{1}{p} \sum_{j=1}^{n} c_{ij}\right)^2\right] \tag{11}$$

h. Establish a factor analysis model [15] as follows:

$$\begin{aligned} X_1 &= c_{11}F_1 + c_{12}F_2 + \ldots c_{1m}F_m + \varepsilon_1 \\ X_2 &= c_{11}F_1 + c_{12}F_2 + \ldots c_{1m}F_m + \varepsilon_2 \\ &\vdots \\ X_p &= c_{p1}F_1 + c_{p2}F_2 + \ldots c_{pm}F_m + \varepsilon_1 \end{aligned} \tag{12}$$

where:

X_i = random variable i (i = 1, 2, . . . , p)

c_{ij} = the weight of the i-th response to the j-th joint factor of matrix C (loading factor for f_j to x_i) with i = 1, 2,..., p ; j = 1, 2, 3,…, p

F_j = joint factor j (j = 1, 2, 3, . . . ,m)

ε_i = error or specific factor of the i-th variable (i = 1, 2,..., p)

The general model of the factor analysis matrix is stated as follows:

$$X_{(p\times1)} = C_{(p\times m)} F_{(m\times1)} + \varepsilon_{(p\times1)}$$

where:

$X = [X_1\ X_2\ \vdots\ X_p\ ]$, $C = [C_{11}\ C_{12}\ \dots\ C_{1m}\ C_{21}\ C_{22}\ \dots\ C_{2m}\ \vdots\ \vdots\ \ddots\ \vdots\ C_{p1}\ C_{p2}\ \dots\ C_{pm}\ ]$, $F = [F_1\ F_2\ \vdots\ F_m\ ]$, $\varepsilon = [\varepsilon_1\ \varepsilon_2\ \vdots\ \varepsilon_p\ ]$

The factor weight matrix or C matrix is used in factor analysis.

i. Look for the diversity of variables. Each element is explained to show the factors that influence these factors as follows:

$$F_j = \frac{{c_{ij}}^2}{\sum_{i=1}^{p} \quad c_{ij}} \times 100\% \tag{13}$$

j. Determine the influential variables for each factor to see which variables vary the most for that factor.

Upon completion, data analysis calculations use the help of SPSS (Statistical Package for Social Science) software21.

3 Method

Based on the results of distributing the questionnaire to 79 UNP mathematics students, namely 42 students from the class of 2018, 15 students from the class of 2019, 12 students from the class of 2020, and 10 students from the class of 2021. The questionnaire contained 37 statements to identify the factors that influence non-compliance with traffic regulations.

3.1 Data Analysis

The information collected comes from distributing questionnaires, so an initial data tabulation can be compiled. Data standardization was carried out because there are units and differences in the number of statement items for each variable in this research questionnaire. Furthermore, the data is used to be processed using factor analysis. Form a data matrix, covariance matrix, and correlation matrix. A correlation matrix is created to determine whether there is a correlation between two variables. Pairs of variables can be called correlated if the level of significance $>\ \alpha$ as big 0.05.

First, a feasibility or accuracy test is carried out to determine whether the factor analysis criteria can be used. The research fulfills the assumptions using the Barlett test, so the Barlett value is approximated by Chi-Square of 188.203; Df = 28, then the conclusion obtained is that the variable has a correlation relationship. The KMO value is 0.807, which means it is more significant than 0.05, so reject H_0. So, it can be concluded that the data can be analyzed using factor analysis by looking at the anti-image matrices with the help of SPSS 21 software, which can be seen especially in the numbers marked "a" from Table 5. It is known that all variables in the MSA value of this study are known to be more than 0.05, meaning all variables can be predicted and further analyzed.

Table 5. Results MSA Value

No.	Indicator	Measure of Sampling Adequacy
1.	X_1	0.880^a
2.	X_2	0.795^a
3.	X_3	0.785^a
4.	X_4	0.741^a
5.	X_5	0.776^a
6.	X_6	0.826^a
7.	X_7	0.887^a
8.	X_8	0.832^a

Determine the number of factors using the principal component analysis method using SPSS 21 software. As can be seen in Table 6, two factors that have eigenvalues > 1 of 3.560 and 1.152 respectively will result in forming two factors. The next step is to estimate factors by selecting factor weights using SPSS 21 software.

Table 6. Eigenvalues and the percentage of factor variance

Variable	Eigenvalues	Diversity %	Cumulative
X_1	3.560	44.501	44.501
X_2	1.152	14.403	58.904
X_3	0.819	10.240	69.144
X_4	0.660	8.253	77.389
X_5	0.601	7.514	84.911
X_6	0.495	6.188	91.099
X_7	0.431	5.390	96.489
X_8	0.281	3.511	100.000

Table 7. Factor Weight Value

Variable	Factor 1	Factor 2
X_1	0.638	-0.292
X_2	0.545	0.530
X_3	0.717	-0.381
X_4	0.716	-0.439
X_5	0.670	0.512
X_6	0.795	0.028
X_7	0.533	-0.235
X_8	0.682	0.361

The results of the estimation of factor weights can be seen in Table 7, which shows that there are several variables whose distances between factors 1 and 2 are not much different. This indicates that the correlation between the two factors is relatively high. Table 7 shows that variables 3 and 4 have a relatively high correlation with factor 1, while factor 2 has a low correlation. So, it is necessary to rotate the value of the factor weight. The rotation used in this research is varimax rotation. It will be easier to interpret the factors created with the help of the varimax rotation. Then rotate the factor weights using varimax using SPSS 21 software.

Table 8. Result of Factor Weight Rotation

Variable	Factor 1	Factor 2
X_1	0.677	0.185
X_2	0.078	0.756
X_3	0.794	0.168
X_4	0.831	0.122
X_5	0.185	0.822
X_6	0.592	0.531
X_7	0.560	0.161
X_8	0.291	0.714

Based on Table 8, it can be seen that the results of the estimation of factor weights after rotation can be observed, and there is a strong relationship between each variable and each component. For variable 1 with F_1 of 0,677 and F_2 of 0,185. Likewise, with variables two to eight, factor weighting is not affected by positive and negative signs in the weighted factor coefficients, which only determines the direction of the correlation. Then, the final model of the rotated factor weight values is formed in Table 8.

$$X_1 = 0{,}677F_1 + 0{,}185F_2 + \varepsilon_1$$

$$X_2 = 0{,}078F_1 + 0{,}756F_2 + \varepsilon_2$$

$$X_3 = 0{,}794F_1 + 0{,}168F_2 + \varepsilon_3$$

$$X_4 = 0{,}831F_1 + 0{,}122F_2 + \varepsilon_4$$

$$X_5 = 0{,}185F_1 + 0{,}822F_2 + \varepsilon_5$$

$$X_6 = 0{,}592F_1 + 0{,}531F_2 + \varepsilon_6$$

$$X_7 = 0{,}560F_1 + 0{,}161F_2 + \varepsilon_7$$

$$X_8 = 0{,}291F_1 + 0{,}714F_2 + \varepsilon_8$$

In the following, the large diversity of variables can be explained by factors using factor values, which can be seen in Table 9.

Table 9. Great Diversity of Variables

Variable	Factor 1	Factor 2
X_1	11,340%	0,100%
X_2	0,150%	16,520%
X_3	15,720%	0,825%
X_4	17,230%	0,430%
X_5	0,850%	19,530%
X_6	8,740%	8,150%
X_7	7,820%	0,750%
X_8	2,110%	14,740%

Based on Table 9, the large diversity of variables is obtained from the factor weight values to determine the amount of variance that meets the needs seen from the factor weight values that are larger than 0.05. So that the level of non-compliance with traffic regulations variable X_1 is explained by F_1 of 11,340% and $F_2$of 0,100%, variable X_2 is explained by F_1 of 0,150% and F_2 of 16,520%. The same applies to other variables that the eight variables can explain.

3.2 Discussion

Eight variables in the analysis of this study's data affect non-compliance with traffic regulations for motorcycle users of UNP Mathematics students. However, after analyzing the data, there are still correlated variables, which means that some of the initial variables in this study have correlations. A multivariate analysis, namely factor analysis, was applied to obtain independent factors. Each factor is adjusted for maximum variance and used to explain one or more factors. The value of the most incredible diversity is explained, which shows the extent to which the two factors influence each other. Factor 1 affects non-compliance with UNP student motorcycle traffic regulations on national standard helmets (X_1), has a driver's license (X_3), has a STNK (X_4), the vehicle meets technical requirements under the law (X_6), the driver meets the requirements according to regulations (X_7). This means the five variables have a strong correlation, which can be grouped into one factor. Factor 2 is obeying signal lights (X_2), obeying traffic signs (X_5), understanding traffic rules (X_8). Based on this diversity, eight variables that affect non-compliance with traffic rules for motorbike users at UNP Mathematics students are explained by factors 1 and 2.

4 Conclusion

Based on the conclusions that can be drawn from the results of data analysis:

1) The final model of the factors that influence non-compliance with traffic regulations for motorcycle users of UNP Mathematics students is as follows:

$$X_1 = 0{,}677F_1 + 0{,}185F_2 + \varepsilon_1$$

$$X_2 = 0{,}078F_1 + 0{,}756F_2 + \varepsilon_2$$

$$X_3 = 0{,}794F_1 + 0{,}168F_2 + \varepsilon_3$$

$$X_4 = 0{,}831F_1 + 0{,}122F_2 + \varepsilon_4$$
$$X_5 = 0{,}185F_1 + 0{,}822F_2 + \varepsilon_5$$
$$X_6 = 0{,}592F_1 + 0{,}531F_2 + \varepsilon_6$$
$$X_7 = 0{,}560F_1 + 0{,}161F_2 + \varepsilon_7$$
$$X_8 = 0{,}291F_1 + 0{,}714F_2 + \varepsilon_8$$

2) Factors formed that influence non-compliance with traffic regulations for motorbike users of UNP Mathematics students, namely factor 1 are national standard helmets (X_1), have a driver's license (X_3), have a vehicle registration (X_4), the vehicle meets technical requirements based on law (X_6) , the driver meets the requirements according to the regulations (X_7) and factor 2 is obeying the signal lights (X_2), obeying traffic signs (X_5), understanding traffic rules (X_8).

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