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THE EFFECT OF DRIVER AGE AND EDUCATION LEVEL ON THE LEVEL OF DRIVING SAFETY ON ONLINE MOTORCYCLE TAXI DRIVERS

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ABSTRACT

The rapid growth of app-based transportation services has positioned online motorcycle taxis as a primary mode of urban transportation in Indonesia. However, the increasing intensity of motorcycle use has also heightened the risk of traffic accidents, making riding safety a critical issue. This study aims to examine the effect of drivers' age and education level on riding safety among online motorcycle taxi drivers. This research employed a quantitative approach using a descriptive associative method. Data were collected through questionnaires distributed to 100 active online motorcycle taxi drivers operating in the DKI Jakarta area using purposive sampling. The data were analyzed using multiple linear regression, supported by validity and reliability tests, classical assumption tests, t-tests, F-tests, and the coefficient of determination. The results indicate that drivers' age has a significant effect on riding safety. In addition, education level also significantly influences riding safety. Simultaneously, age and education level have a significant effect on riding safety among online motorcycle taxi drivers. The findings of this study are expected to provide useful insights for online transportation service providers in developing more effective safety training programs and to serve as a reference for future research related to traffic safety.

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INTRODUCTION

The development of digital technology has brought major changes to the transportation system in Indonesia, especially with the presence of online transportation services such as online motorcycle taxis. This mode of transportation is the main choice of the community because of the ease of access, time efficiency, and comfort offered. However, behind these benefits, there is a serious problem in the form of an increasing number of traffic accidents, especially those involving two-wheeled vehicles as the main means of online transportation. Data from the Indonesian National Police in 2024 shows that around 73% of traffic accidents in Indonesia involve two-wheeled vehicles, with human error as the dominant cause. These mistakes include negligence, low safety awareness, and the physical and mental condition of the driver. Some studies have shown that age factors and education level play a role in shaping driving behavior, where young-age riders tend to be more aggressive, while low education levels are often associated with a suboptimal understanding of safety.

High work pressure is also a special characteristic of online motorcycle taxi drivers, especially in urban areas. The demands of short-term order completion, competition between drivers, and congested traffic conditions increase the risk of accidents. Data from the Indonesian Online Drivers Association (ADOI) in 2023 shows an increase in the incidence of minor to moderate accidents among drivers aged 20–30 years and with lower secondary education, which indicates the influence of demographic factors on driving safety. Driving safety for online motorcycle taxi drivers is a crucial issue because it has an impact not only on drivers, but also on passengers and other road users. Although online transportation companies have provided basic safety training, the Jasa Raharja 2024 report notes that traffic violations and fatigue due to excessive working hours are still the main causes of accidents. This shows the need for a more specific safety approach based on the characteristics of the driver.

Various previous studies have confirmed the relationship between demographic factors and driving behavior. Silalahi et al. (2024) found that age affects the level of traffic compliance, while Izmi and Rusmiati (2022) showed a positive correlation between education level and driving awareness. However, Andre et al. (2024) emphasized that workload has a more dominant influence than demographic factors. The difference in findings shows that there is still a research gap related to the simultaneous influence of age and education level on the driving safety of online motorcycle taxi drivers, so this study is relevant and important to be conducted.

LITERATURE REVIEW

Driver Age

Age is a demographic factor that affects driving behavior and safety, because it is related to physical condition, psychological maturity, and driving experience. Younger drivers generally have good reflexes and stamina, but tend to be more risk-averse and less compliant with traffic rules, while more mature drivers show

better prudence and self-control even though physical abilities may decline. Setiawan et al. (2021) stated that age is significantly related to traffic compliance, where the younger age group is more likely to commit violations. In the context of online motorcycle taxi drivers, age differences affect responses to work pressure, traffic conditions, and decision-making that have a direct impact on the level of driving safety.

Education Level

The level of education reflects an individual's ability to understand the rules, assess risks, and apply disciplined behavior in driving. Drivers with higher levels of education tend to have better safety awareness, a deeper understanding of traffic regulations, and critical thinking skills in making decisions on the road. Izmi and Rusmiati (2022) found that education was positively related to the level of traffic awareness and compliance. In the context of online transportation, the level of education also plays a role in shaping the professional attitude of drivers, including compliance with standard operating procedures and the use of safety attributes, thereby contributing to improving driving safety.

Driving Safety

Driving safety is a condition where the driver is able to control the vehicle safely, comply with traffic regulations, and minimize the risk of accidents, as mandated in Law Number 22 of 2009 concerning Road Traffic and Transportation. Driving safety is influenced by various factors, such as individual characteristics (age and education), physical and mental condition, compliance with rules, traffic environment, and the work pressure of the online transportation application system. Online motorcycle taxi drivers who have a high safety awareness tend to exhibit safer driving behavior.

RESEARCH METHODS

This study uses a quantitative approach with an associative descriptive method, which aims to analyze the influence of age and education level on the level of driving safety in online motorcycle taxi drivers. The quantitative approach was chosen because it is able to objectively test the relationship between variables through statistical analysis (Sugiyono, 2020). The associative design was used to determine the close relationship between independent variables, namely age (X_1) and education level (X_2), and the dependent variable driving safety (Y), as also applied to driving safety research by Setiawan et al. (2021) and Izmi and Rusmiati (2022).

The population in this study is all active online motorcycle taxi drivers operating in urban areas, especially Jakarta, who are registered on digital transportation platforms such as Gojek, Grab, and Maxim. The sampling technique uses purposive sampling, with the criteria of an active driver of at least 6 months, having participated in safety socialization, and being willing to fill out a

questionnaire. The number of samples was determined using the slovin formula with an error rate of 5%, and if the population is not known for sure, a minimum of 100 respondents will be used, according to the recommendations of regression-based quantitative research (Sugiyono, 2020). Data collection was carried out through a Likert scale closed questionnaire (1–5) as primary data, which was disseminated directly and online to respondents. In addition, secondary data is obtained through literature studies from scientific journals and supporting documents relevant to the research topic. The research instrument was tested first through a validity test using Pearson Product Moment correlation and a reliability test using Cronbach's Alpha, with a α ≥ value criterion of 0.70, as applied in previous driving behavior studies (Andre et al., 2024).

The data analysis technique in this study uses the help of SPSS software. The analysis carried out included descriptive analysis to describe the characteristics of respondents and research variables, as well as classical assumption tests that included normality, multicollinearity, and heteroscedasticity tests to ensure the feasibility of regression models. Furthermore, hypothesis testing was carried out using multiple linear regression analysis, with a t-test to test the partial influence of each independent variable on the dependent variable, an F test to test the simultaneous influence, and a determination coefficient (R^2) to determine the contribution of age variables and education level to driving safety

RESULTS AND DISCUSSION

Classic Assumption Test

The classical assumption test is used to determine whether there is normality or not *Residual*, multicollinearity, autocorrelation, and heteroscedastic in regression models.

Normality Test

Table 1. Normality Test Results

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		100
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	2.16318414
Most Extreme Differences	Absolute	.087
	Positive	.075
	Negative	-.087
Test Statistic		.087
Asymp. Sig. (2-tailed)[c]		.062
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		
d. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 2000000.		

Source : Results *Output SPSS 26,* Processed Researcher (2026)

Test results *One-Sample Kolmogorov-Smirnov* obtained the result of the significance value (*Asymp. Sign. 2-tailed*) by 0.062. Since the significance value is

greater than 0.05 (0.062 > 0.05), it can be concluded that the data has been distributed normally.

Multicollinearity Test

The multicollinearity test aims to test whether the regression model finds a correlation between independent variables (Ghozali, 2021).

Table 2. Multicollinearity Test Results

Coefficient								
Models		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIVID
1	(Constant)	2.544	3.031		.839	.403		
	TOTAL. X1	.161	.066	.162	2.458	.016	.807	1.239
	TOTAL. X2	.779	.070	.729	11.092	.000	.807	1.239
a. Dependent Variable: TOTAL. Y								

Source : Processed Researcher (2026)

Based on table 2. The results of the multicollinearity test showed that the tolerance values for the variables Work Motivation (X1) and Work Discipline (X2) were 0.993 > 0.10. Meanwhile, the VIF (Variance Inflation Factor) value for the variables Work Motivation (X1) and Work Discipline (X2) was 1.007 < 10. These results indicate that there are no symptoms of multicollinearity in this regression model.

Heteroscedasticity Test

The Heteroscedasticity Test using the *Glycecedasticity Test* has the provision that if the correlation coefficient of all variables to the residual > 0.05, then the regression model does not occur heteroscedasticity. The following are the results of the heteroscedasticity test:

Table 3. Heteroscedasticity Test Results

Coefficient						
Models		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.056	2.003		1.526	.130
	Driver's Age	-.065	.043	-.168	-1.504	.136
	Education Level	.028	.046	.067	.604	.547
a. Dependent Variable: ABS_RES						

Source : Processed Researcher (2026)

Based on table 3. to strengthen the visual findings, the Glejser test was carried out as a statistical approach to check the inconsistency of the residual variant in each observation. The goal is to ensure that there is no violation of the classical assumption of heteroscedasticity. The assessment criterion is a model free of heteroscedasticity if the significance probability value (Sig.) > 0.05. In contrast, the model shows heteroscedasticity if the Sig. value < 0.05. This value can be seen in the Sig. column in *the output coefficients.*

Multiple Linear Regression Coefficient Test

Table 4. Multiple Linear Regression Coefficient Test Results

Coefficient						
Models		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.544	.333		7.630	.000
	Driver's Age	.161	.007	.198	22.348	.000
	Education Level	.779	.008	.894	100.838	.000
a. Dependent Variable: Y						

Source : Processed Researcher (2026)

Based on the summary of findings in the table presented, it is possible to identify the magnitude of fixed parameters and the influence value of each predictor so that it is possible to formulate plural linear relationships according to the model framework:

$$Y=a+b1X1+b2X2+e$$
$$Y=2.544+0.161X1+0.779X2+e$$

Based on these equations, it can be interpresented as follows:

1. The value of constant (a) is 2,544 which has a positive value. This means that if there are no variables of Driver Age (X1) and Education Level (X2), then the Driving Safety Level (Y) of employees will remain at 2,544 units.
2. The regression coefficient of the variable Driver Age (X1) is 0.161 which has a positive value. This means that if the *Driver* Age variable (X1) increases by 1 unit, then the Driving Safety Level (Y) is predicted to increase by 0.161 units, assuming the Education Level (X2) variable remains the same.
3. The regression coefficient of the variable Education Level (X2) is 0.779 which has a positive value. This means that if the variable Education Level (X2) increases by 1 unit, then the Driving Safety Level (Y) is predicted to increase by 0.779 units, assuming the variable Driver Age (X1) remains.

Hypothesis Testing
T test

Table 5. Test Results t

Coefficient						
Models		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.544	.333		7.630	.000
	Driver's Age	.161	.007	.198	22.348	.000
	Education Level	.779	.008	.894	100.838	.000
a. Dependent Variable: Y						

Source : Processed Researcher (2026)

Age variables *Driver* (X1) it can be known that the calculation of the ttable > (22,348 > 1,660) The resulting probability level is well below the specified limit, so that the analytical decision can be confirmed by the age variable *Driver* (X1) has a positive and partially significant effect on the level of driving safety (Y) in *Driver* Motorcycle Taxi *online* until H1 is accepted*.* The variable of education level (X2) can be found that the calculation of the ttable > (100,838 > 1,660) Based on the results of the probability evaluation that exceeds the reference limit, it can be stated that the educational background factor contributes individually to the direction of the directional relationship of the level of driving safety (Y) in the *Driver* Motorcycle Taxi *online* until H2 is accepted.

Test F

Table 6. F Test Results

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	905.703	2	452.851	94.821	.000[b]
	Residual	463.257	97	4.776		
	Total	1368.960	99			
a. Dependent Variable: Tingkat Keselamatan						
b. Predictors: (Constant), Tingkat Pendidikan, usia driver						

Source : Processed Researcher (2026)

Based on the summary of the evaluation of the joint test, a comparative value of F was obtained which was the basis for the interpretation, the result was 3.090, so it can be concluded that the Fcal > Ftable (94.821 > 3.090) The comparison of test numbers shows that the probability of 0.000 is below the threshold of 0.05, so that the third hypothesis is declared feasible. The findings indicate that the driver's age factor (X1) along with educational background (X2) have a simultaneous impact on the analyzed phenomenon. the level of driving safety on *Driver* Motorcycle Taxi *online.*

Determination Test

Table 7. Driver Age Determination Test Results (X1)

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.482[a]	.232	.225	3.275
a. Predictors: (Constant), usia driver				

Source : Processed Researcher (2026)

Based on the summary of the determination measurement model, a magnitude of R^2 of 0.232 was obtained. This figure suggests that the driver's age factor alone contributes to explaining 23.2 percent of the dynamics of the bound construct change, while the other 76.8% is influenced by variables derived from external elements that are not covered in the analysis design. The corrected R^2 size of 0.225 illustrates that after adjusting for the number of predictors and observation units, the age capacity *Driver* In explaining the dependent variables, they remain relatively stable. Thus, age *Driver* The explanation of the model is adequate in explaining the diversity of bound constructs, although there are still stronger external influences beyond the scope of the study.

Table 8. Results of the Education Level Determination Test (X2)

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.800[a]	.641	.637	2.241
a. Predictors: (Constant), Tingkat Pendidikan				

Source : Processed Researcher (2026)

Based on the results of the determination coefficient test in Table *Model Summary* it can be seen that the value of R Square (R^2) is 0.641. This shows that the level of education was partially able to explain 64.1% of the variation in the dependent variable, while the remaining 35.9% was influenced by other variables outside the research model. The Adjusted R Square value of 0.637 indicates that after adjustments, the ability of the education level to explain dependent variables remains high and stable. Thus, the level of education has a strong contribution in explaining the variation of dependent variables compared to other variables outside the research model.

Table 9. Simultaneous Determination Test Results

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.813[a]	.662	.655	2.185
a. Predictors: (Constant), Tingkat Pendidikan, usia driver				

Source : Processed Researcher (2026)

A review of the summary of the determinative model shows that the magnitude of R^2 reaches 0.662. This achievement indicates that the age of *Driver* and education levels were simultaneously able to explain 66.2% of the variation in changes in most of the bound construct diversity could be explained, while about 33.8% of the remaining were due to other factors outside the framework of the analysis. A corrected R^2 size of 0.655 indicates that after the correction of the number of predictors and observation units, the capacity of the framework in explaining the dependent variables remains strong and stable. Thus, the combination of ages *Driver* and the level of explanatory education is relatively strong in explaining the diversity of affected constructs.

CONCLUSION

This study concludes that age and level of education have a significant influence on the level of driving safety of online motorcycle taxi drivers in the DKI Jakarta area. The more mature the driver's age, the better the driving safety behavior shown, which is reflected in emotional stability, driving experience, and caution in dealing with traffic. In addition, a higher level of education helps to increase understanding of traffic rules, awareness of accident risks, and compliance in the use of personal protective equipment. Simultaneously, age and education make complementary contributions in shaping driving safety behavior, so that safety is not determined by a single factor, but the result of the interaction of various demographic characteristics.

Based on these conclusions, it is recommended that online motorcycle taxi companies organize structured and continuous driving safety training by taking into account the difference in age and level of driver education. Drivers are expected to improve compliance with traffic regulations, use safety equipment, and maintain physical and mental condition while working. The government needs to strengthen inclusive supervision and traffic safety education programs for the online transportation sector, as well as formulate adaptive policies. Meanwhile, further research is suggested to add other variables such as working hours, fatigue, workload, vehicle condition, and application system pressure, as well as use a more diverse methodological approach to deepen understanding related to the safety of online motorcycle taxi drivers.

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