JOURNAL LA MULTIAPP

VOL. 07, ISSUE 05 (1215-1227), 2026
DOI: 10.37899/journallamultiapp.v7i5.6011

The Effect of Mental Workload and Mental Effort on the Performance of Online Motorcycle Taxi Drivers

Muhammad Marsanda Zarkasih[1], Renny Rochani[1]

[1]*Industrial Engineering Study Program, Faculty of Engineering, Universitas Sebelas Maret, Indonesia*

**Corresponding Author: Muhammad Marsanda Zarkasih*
Email: marsandazarkasih@student.uns.ac.id, rennyrochani@staff.uns.ac.id

Article Info

Article history:
Received 22 September 2026
Received in revised form 22 October 2026
Accepted 20 November 2026

Keywords:
Driver Performance
Mental Effort
Mental Workload
Online Motorcycle Drivers

Abstract

Online motorcycle drivers are exposed to various cognitive demands, including processing order information, determining routes, maintaining attention, and making decisions while driving. These conditions may affect driver performance through the Mental Workload and Mental Effort experienced during work. This study aims to analyze the effects of Mental Workload and Mental Effort on the performance of online motorcycle drivers in Jebres District, Surakarta, both partially and simultaneously. This study employed a quantitative explanatory approach using a survey method. Data were collected through questionnaires from 91 online motorcycle drivers selected using purposive sampling and analyzed using multiple linear regression. The results showed that Mental Workload had a positive and significant effect on driver performance, while Mental Effort had a negative and significant effect. Simultaneously, Mental Workload and Mental Effort significantly affected driver performance. The two variables explained 58.5% of the variation in driver performance, while the remaining variation was explained by other factors outside the research model.

Introduction

The development of application-based transportation has created a new work pattern for online motorcycle taxi drivers (Pasya et al., 2025; Thamrin, 2025; Noorikhsan et al., 2024). The driver's job is not only in the form of driving activities and delivering passengers or completing orders, but also operating applications, understanding order information, determining routes, interacting with customers, and adjusting traffic conditions (Chen, 2025; Glöss et al., 2016). These various activities can occur at close times so that the driver's work has a dynamic character. This condition makes drivers face various job demands, such as job demand, congestion, work duration, rest time, and additional burdens (Jaydarifard et al., 2024). Therefore, the job of an online motorcycle taxi driver not only requires physical ability, but also involves cognitive demands during work (Ramadanil et al., 2024; Putra & Anggara, 2026; Kusmasari et al., 2024).

One of the demands that arise in the work of an online motorcycle taxi driver is the mental workload, which is the demands related to the process of processing information, maintaining attention, making decisions, and responding to work. In online motorcycle taxi drivers, these burdens can arise when receiving order information, understanding pick-up locations and destinations, determining routes, observing traffic, and communicating with customers. When several activities are carried out simultaneously, drivers need to maintain concentration and allocate mental resources during work. Previous research has also shown a relationship

ISSN: 2716-3865 (Print), 2721-1290 (Online)
Copyright © 2026, Journal La Multiapp, Under the license CC BY-SA 4.0

between mental workload and job performance. (Jalali et al., 2023) It found that the mental profile of workload is related to job performance in workers, with work fatigue playing a role in the relationship.

Mental Effort is also a relevant aspect in the work of an Online Motorcycle Taxi driver. Mental effort describes an individual's mental effort in completing a task (Grund et al., 2024; Wolpe et al., 2024). Mental workload and mental effort are relevant aspects to understand the demands and mental efforts of drivers in carrying out their work. The performance of online motorcycle taxi drivers is also one of the important aspects because it is related to the driver's ability to carry out work and provide services to customers. Previous research, (Chadijah et al., 2021) examining the industrial relationship between Online Motorcycle Taxi drivers and PT Gojek Indonesia Surakarta Branch with Jebres as one of the research locations. The study shows that Jebres has potential in the education, tourism, and industrial sectors that support community mobility and Gojek activities.

Mental demands and efforts are important to pay attention to, because they can be related to the performance of online motorcycle taxi drivers (Wulani et al., 2022; Hutabarat et al., 20026; Dharmanto et al., 2026; Triharto, 2026). Performance can be seen from the ability to complete work, achieve work targets, meet order completion time, use time effectively, and carry out work independently (Rambulangi et al., 2024). Previous research in Surakarta has also examined drivers' performance with various factors, such as commitment, work stress, motivation, and work safety (Sari et al., 2023). The number of online transportation in 2024 in Surakarta City will reach 3,072 units, consisting of Grab, Gojek, and Maxim. One of the areas in Surakarta City, Jebres District, was chosen as the research location because it has educational, trade, industrial, and community mobility activities that support online motorcycle taxi driver activities (Herawatie et al., 2024; Pranawukir et al., 2026; Alkausar et al., 2026).

Research on online motorcycle taxi drivers in Surakarta has been conducted previously with various focuses, such as industrial relations, job characteristics, commitment, work stress, motivation, work safety, flexibility, compensation, and punishment. However, research that specifically places mental workload and mental effort simultaneously as factors related to the performance of online motorcycle taxi drivers is still limited. Research (Pourteimour et al., 2021) found a weak positive relationship between mental workload and job performance, whereas (Alaydi & Ng, 2024) Finding the negative impact of mental workload on job performance. (Pütz et al., 2025) showed a relationship between mental effort and task performance, but the study was carried out using experimental tasks. The difference in results and characteristics of the objects showed that there was a research space to test the mental workload and mental effort on the performance of online motorcycle taxi drivers in real and dynamic working conditions.

Based on this description, there is a need to examine the relationship between mental demands, mental effort, and performance in online motorcycle taxi drivers. This study was conducted on online motorcycle taxi drivers operating in Jebres District, Surakarta City. The study aims to examine the influence of mental workload and mental effort on driver performance, both partially and simultaneously. The results of the study are expected to provide an empirical picture of the relationship between mental demands and effort and performance and expand the study of psychological factors in online transportation work. The results of this study can also be used as a consideration in understanding the working conditions of drivers and factors that need to be considered so that performance can still be maintained in the implementation of online transportation work

ISSN: 2716-3865 (Print), 2721-1290 (Online)
Copyright © 2026, Journal La Multiapp, Under the license CC BY-SA 4.0

Methods

Methods

This study employed a quantitative explanatory approach using a survey method to examine the effects of Mental Workload (X1) and Mental Effort (X2) on the Performance of Online Motorcycle Taxi Drivers (Y), both partially and simultaneously. The study was conducted in Jebres District, Surakarta City, from May to August 2026, with data collection carried out between June 15 and July 23, 2026. The quantitative approach was applied because the research variables were measured using numerical data and analyzed statistically. Multiple linear regression analysis was employed to examine the direction and statistical significance of the relationships between the independent variables and driver performance.

The study population consisted of active two-wheeled online motorcycle taxi drivers operating through Gojek, Grab, and Maxim who received or completed orders in Jebres District, Surakarta City. The exact population size was unknown because comprehensive official data covering drivers from the three platforms were unavailable. Therefore, a non-probability sampling method with purposive sampling was employed. Respondents were selected based on several criteria: being active online motorcycle taxi drivers, using the Gojek, Grab, or Maxim platform, operating two-wheeled vehicles, having received or completed orders in Jebres District, and being able to understand the research questionnaire. The minimum sample size was determined using an a priori power analysis with G*Power version 3.1.9.7. The analysis was conducted using two predictor variables, an effect size of 0.15, a significance level of 0.05, and statistical power of 0.80, resulting in a minimum requirement of 68 respondents. A total of 91 respondents were included in the final analysis, exceeding the minimum sample requirement.

Primary data were collected through a structured self-report questionnaire distributed online using Google Forms. The questionnaire consisted of respondent characteristics and items measuring Mental Workload, Mental Effort, and Driver Performance. Mental Workload (X1) was operationalized as the perceived mental demands experienced by drivers when processing order information, maintaining attention, making decisions, determining routes, and adapting to traffic and working conditions. Mental Effort (X2) referred to the perceived cognitive effort required to maintain concentration, process information, make decisions, and respond to various situations while completing orders. Driver Performance (Y) was measured through five dimensions: work quality, work quantity, punctuality, effectiveness, and independence. The measurement instruments employed a five-point Likert scale for applicable questionnaire items, while Mental Effort was measured using the scoring range established for its instrument. The resulting variable scores were used for descriptive statistical analysis and multiple linear regression.

Before conducting the main analysis, instrument quality was evaluated through validity and reliability tests. Item validity was examined using Pearson Product Moment correlation by comparing the calculated correlation coefficient (r-count) with the critical correlation value (r-table). An item was considered valid when its calculated correlation coefficient exceeded the specified critical value. Instrument reliability was assessed using Cronbach's Alpha, with a coefficient greater than 0.70 indicating acceptable internal consistency. These tests were conducted to evaluate the suitability and consistency of the questionnaire items used to measure the research variables.

The collected data were analyzed using descriptive statistics to summarize the characteristics and distribution of each research variable. Descriptive analysis included the number of respondents, minimum and maximum scores, mean values, and standard deviations. Before performing multiple linear regression, classical assumption tests were conducted, consisting of normality, multicollinearity, and heteroscedasticity tests. The normality of regression

ISSN: 2716-3865 (Print), 2721-1290 (Online)
Copyright © 2026, Journal La Multiapp, Under the license CC BY-SA 4.0

residuals was evaluated using the One-Sample Kolmogorov–Smirnov test, with a significance value greater than 0.05 indicating that the normality assumption was not rejected. Multicollinearity was assessed using Tolerance and Variance Inflation Factor (VIF), with Tolerance values greater than 0.10 and VIF values below 10 indicating the absence of serious multicollinearity. Heteroscedasticity was assessed using a significance-based test, with significance values greater than 0.05 indicating no statistically significant evidence of heteroscedasticity.

Multiple linear regression analysis was performed to determine the relationship between Mental Workload, Mental Effort, and Driver Performance. The regression model was formulated as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

where Y represents Online Motorcycle Taxi Driver Performance, X_1 represents Mental Workload, X_2 represents Mental Effort, β_0 represents the regression constant, β_1 and β_2 represent the unstandardized regression coefficients, and ε represents the error term. Partial t-tests were conducted to examine the statistical significance of each independent variable in relation to driver performance, while the simultaneous F-test was used to evaluate the overall significance of the regression model. The coefficient of determination (R^2) was used to determine the proportion of variation in driver performance explained by Mental Workload and Mental Effort, while adjusted R^2 was considered to account for the number of predictors in the model. All hypothesis tests were evaluated using a significance level of 0.05.

Results and Discussion

This chapter explains the results of the research obtained. The results and discussions must be written clearly and concisely and it is recommended not to duplicate existing articles. The author should also write the novelty and contribution of his research in this chapter.

Respondent Characteristics

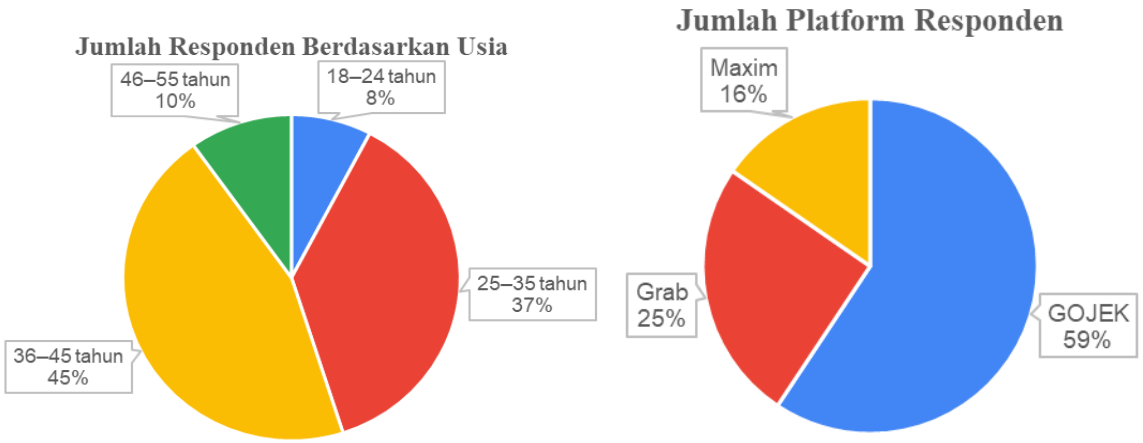


Figure 1. Characteristics of respondents by platform and age

Based on the platform used, the majority of respondents are Gojek drivers. Respondents are Gojek drivers by 59%, Grab by 25%, and Maxim by 16%. The majority of respondents are in the age group of 36-45 years, which is 45%. Respondents are dominated by drivers who have experience working online motorcycle taxis for 5-6 years. And the study respondents are dominated by drivers who work 5-6 days per week. Based on these characteristics, the study respondents are generally dominated by drivers who are quite experienced and have a relatively high work intensity.

ISSN: 2716-3865 (Print), 2721-1290 (Online)
Copyright © 2026, Journal La Multiapp, Under the license CC BY-SA 4.0

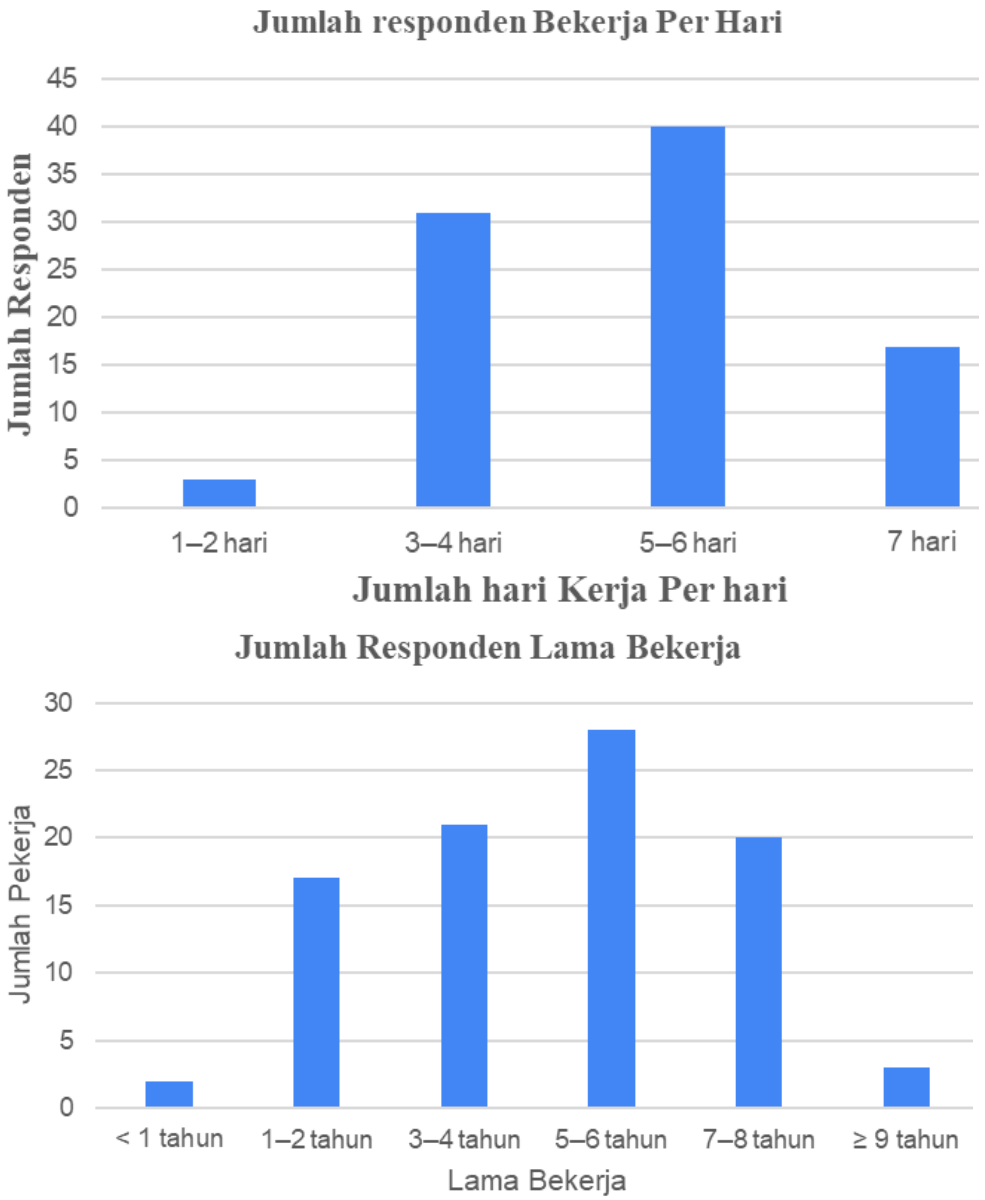


Figure 2. Distribution of Respondents by Length of Work and Working Days

Instrument Quality Test

The instrument quality test is carried out to ensure that the instrument used is able to measure the research variables accurately and consistently. The instrument quality test is carried out by validity test and reliability test. The validity test is used to ensure that each question attribute is able to measure the construct being studied. Based on the results of the validity test of the Online Motorcycle Taxi Driver Performance variable (Y), all attributes have a calculation value in the range of 0.407–0.728 which is greater than the table of 0.361. This shows that all 17 attributes of the Online Motorcycle Taxi Driver Performance variable are declared valid and can be used for data collection and analysis.

The reliability test was carried out to determine the level of consistency of the research instrument in measuring the variables being studied. The reliability test was carried out using Cronbach's Alpha value, with the instrument declared reliable if the Cronbach's Alpha value > 0.70. Based on the results of the reliability test, all variables had a Cronbach's Alpha value of > 0.70, namely *Mental workload* of 0.806, *Mental effort* of 0.863, and Performance of Online Motorcycle Taxi Driver of 0.877. It can be concluded that all research instruments are declared reliable and feasible for further analysis.

ISSN: 2716-3865 (Print), 2721-1290 (Online)
Copyright © 2026, Journal La Multiapp, Under the license CC BY-SA 4.0

Description of Research Variables

Table 1. Results of Description of Research Variables

Variabel	N	Minimum	Maximum	Red
***Mental workload* (X1)**	**91**	**30**	**74**	**60,27**
Mental effort (X2)	91	5	25	19,26
Driver Performance (Y)	91	34	77	67,43

Descriptive analysis was carried out to provide an overview of the data characteristics of each research variable. Based on Table 1., all research variables had 91 respondent data. *Mental workload* (X1) had an average of 60.27 with a score range of 30 to 74 and a standard deviation of 7.388. *Mental effort* (X2) had an average of 19.26, with a minimum score of 5 and a maximum of 25 and a standard deviation of 4.602. Driver performance (Y) had an average of 67.43, with a minimum score of 34 and a maximum of 77 and a standard deviation of 6.728. The standard deviation value of each variable showed a variation in scores between respondents.

Classic Assumption Test

The classical assumption test was carried out with the normality test, the multicollinearity test, and the heteroscedasticity test. The normality test was performed to determine whether the residual value in the multi-linear regression model was normally distributed. Based on the results of the normality test using *the Kolmogorov-Smirnov One-Sample*, the Asymp. Sig. (2-tailed) value of 0.058 > α 0.05 was obtained, so that H_0 was accepted and can be concluded to be residual in the normal distributed multiple linear regression model and the normality assumption has been met.

The multicollinearity test was carried out to determine whether or not there is a high correlation between independent variables in the multiple linear regression model. Based on the results of the multicollinearity test, the variables *of mental workload* and *mental effort both had a* Tolerance *value* of 0.774 and VIF of 1.292. Based on these results, *the Tolerance value* > 0.10, and the VIF value <10, so that the variables of *mental workload* and *mental effort* are suitable to be used together in the multiple linear regression model.

The heteroscedasticity test was carried out to find out whether there was an imbalance of residual variance in the regression model. Based on the results of the heteroscedasticity test, the significance value of *mental workload* was 0.083 and *the mental effort* value was 0.836. The two significance values were greater than α 0.05, so it can be concluded that the regression model did not experience symptoms of heteroscedasticity. Based on the overall classical assumption test, it can be concluded that the regression model used has met the classical assumptions, so that multiple linear regression analysis can be continued.

Multiple Linear Regression Analysis

Multiple linear regression analysis was carried out to determine the direction and magnitude of the influence *of mental workload* and *mental effort* on the Performance of Online Motorcycle Taxi Drivers. The following is a table of the results of the multiple linear regression test.

Table 2. Multiple Linear Regression Test Results

Model	***Unstandardized Coefficients***		Say.
	b	Std. Error	Beta
(Constant)	43,016	3,799	–

ISSN: 2716-3865 (Print), 2721-1290 (Online)
Copyright © 2026, Journal La Multiapp, Under the license CC BY-SA 4.0

Mental workload	0,63	0,067	0,692
Mental effort	-0,705	0,079	-0,651

Based on the results of multiple linear regression analysis, a constant value of 43.016 was obtained. This shows that if the value of *mental workload* and *mental effort* is considered equal to zero, then the value of Driver Performance is estimated at 43.016. The *variable Mental workload* has a regression coefficient of 0.630 with a Standardized Beta value of 0.692. A positive value coefficient shows that an increase in *mental workload* tends to be followed by an increase in Driver Performance value. Assuming the *variable Mental effort* is fixed, each increase of one unit *of mental workload* is estimated to increase Driver Performance by 0.630 units.

Hypothesis Test and Coefficient of Determination

Based on the results of the tests that have been carried out, test results on the three research hypotheses are obtained. A summary of the hypothesis test results regarding the effect of *mental workload* and *mental effort* on the performance of online motorcycle taxi drivers is presented in the following table.

Table 3.Hypothesis Test Results

Hipotesis	Variable Relationships	t/F calculation	Sig.	Direction of Influence	Verdict
H1	*Mental* → Performance workload	9,434	0,000	Positive	Accepted
H2	*Mental effort* → Kinerja	-8,871	0,000	Negatives	Accepted
H3	*Mental workload* + *Mental effort* → Performance	62,065	0,000	Signifikan	Accepted

A partial t-test was carried out to determine the influence of each independent variable individually on the dependent variable. Based on the results of the partial t-test, *the mental workload* (X1) had a *calculated t-value* of 9.434 and Sig. 0.000 < 0.05, so that it had a significant effect with a positive direction on the Performance of Online Motorcycle Taxi Drivers (Y). *Mental effort* (X2) has a t-value of -8.871 and Sig. 0.000 < 0.05, so it has a significant negative effect on the Performance of Online Motorcycle Taxi Drivers (Y).

Simultaneous F test was carried out to find out whether *Mental Workload* (X1) and *Mental Effort* (X2) together affect the Performance of Online Motorcycle Taxi Drivers (Y). Based on the results of the F test, an F value of 62.065 was obtained with a Sig. value of 0.000 < 0.05. It can be concluded that *mental workload* (X1) and *mental effort* (X2) simultaneously have a significant effect on the Performance of Online Motorcycle Taxi Drivers (Y). This means that the two independent variables are jointly able to explain the variation in driver performance in the research model. Thus, all research hypotheses are declared accepted.

The determination coefficient was used to determine the ability of the variables *of Mental Workload* (X1) and *Mental effort* (X2) in explaining the variation in Online Motorcycle Taxi Driver Performance (Y). Based on the test results, an R Square value of 0.585 was obtained. This means that 58.5% of the variation in Online Motorcycle Taxi Driver Performance can be explained by *mental workload* and *mental effort*, while the remaining 41.5% is explained by other factors outside the research model. The Adjusted R Square value of 0.576 indicates that after adjusting for the number of variables in the model, the model's ability to explain the variation in performance is 57.6%.

The novelty of this study lies in examining Mental Workload and Mental Effort simultaneously as predictors of online motorcycle driver performance in a real and dynamic

ISSN: 2716-3865 (Print), 2721-1290 (Online)
Copyright © 2026, Journal La Multiapp, Under the license CC BY-SA 4.0

work setting. Previous studies identified relationships between Mental Workload and job performance or between Mental Effort and task performance in different occupational and experimental contexts. This study extends those findings by integrating both constructs in the same regression model and applying them to online motorcycle drivers operating in Jebres District, Surakarta. The results therefore provide empirical evidence on the distinct directions of the relationships between Mental Workload, Mental Effort, and driver performance in an actual ride-hailing work context.

The Effect of Mental Workload on Performance

Based on the results of the partial t-test, *the mental workload* has a calculated t-value of 9.434 with a significance value of 0.000 < 0.05, so that *the mental workload* has a significant effect on the performance of online motorcycle taxi drivers. The regression coefficient of 0.630 shows that the influence has a positive direction. This means that the increase *in mental workload* in this study is followed by an increase in the performance of online motorcycle taxi drivers.

The results of this study are in line with the research (Pourteimour et al., 2021), which found a positive relationship between *mental workload* and *job performance*, although the relationships obtained are relatively weak. The findings suggest that an increase in mental demands is not always followed by a decrease in performance. Under certain conditions, higher job demands can encourage individuals to increase attention, concentration, and effort in completing tasks. This is relevant to motorcycle taxi drivers' jobs *online* which demands information processing, decision-making, and response to changes in conditions during order execution. Thus, *Mental workload* What the driver feels in this study can be a demand that encourages the driver to maintain the implementation of his work.

However, the results of this study are not in line with the research (Alaydi & Ng, 2024; Saavedra et al., 2026; Shahu et al., 2026) who found that *mental workload* negatively impact on *job performance* on air traffic controllers. The study explains that the increase in *mental workload* can lower attention, judgment, and decision-making ability. The study also explicitly shows that the *mental workload* and *job performance* still produce different findings between work contexts. The difference in results can be caused by differences in the characteristics of the work and working conditions of each respondent. On the job of a motorcycle taxi driver *online*, mental demands such as paying attention to order information, arranging trips, and responding to traffic conditions can encourage drivers to concentrate more on getting their work done. Therefore, the results of this study show that *Mental workload* has a positive and significant effect on the Performance of Motorcycle Taxi Drivers *Online* in Jebres District, Surakarta City.

The Effect *of Mental Effort* on Performance

Based on the results of the partial test, *mental effort* (X2) proven to have a negative and significant effect on the performance of motorcycle taxi drivers *online*. These results are shown through the value of t_{hitung}, by -8.871 with a significance value of 0.000, which is smaller than 0.05. That is, the higher the *mental effort* felt by the driver, the resulting performance tends to decrease.

Mental effort describes the cognitive capacity that an individual uses in completing a job. When the demands of the task are getting higher, the individual can give additional mental effort to maintain his performance (Bukowski et al., 2026; However, cognitive ability has limitations so that greater mental effort is not always followed by better performance (Chen, 2025). On motorcycle taxi drivers *online*, this can be seen from the need to keep an eye on traffic conditions, determine routes, monitor applications, communicate with customers, and

ISSN: 2716-3865 (Print), 2721-1290 (Online)
Copyright © 2026, Journal La Multiapp, Under the license CC BY-SA 4.0

make decisions during the trip. These various demands make drivers need to use concentration and cognitive resources continuously.

The findings are in line with (Wagner & Eastwood, 2025) which indicates that the increase in *mental effort* does not always result in better performance. Their research found that *volitionally exerted mental effort* This is related to increased errors in completing tasks. This suggests that high mental effort can reflect difficulty in maintaining attention when performing a task. (Chen, 2025) also found that the increase in *perceived mental effort* does not automatically result in performance improvements.

The results of this study show that the higher the *mental effort* the driver feels, the lower the performance tendency. The higher the *mental effort* can show that the driver must exert greater cognitive resources to deal with the demands of his job. Under certain conditions, this situation can actually make it more difficult for the driver to maintain optimal performance. This is in accordance with (Wagner & Eastwood, 2025) which explains that the relationship between *mental effort* and performance can be influenced by the demands of tasks as well as individual characteristics.

The Effect of *Mental Workload* and *Mental Effort* on Performance

Based on the results of multiple linear regression, the equation Y = 43.016 + 0.630X1 – 0.705X2 was obtained. The results of the F test showed a value of F = 62.065 with a significance of 0.000 < 0.05 so that *Mental workload* and *mental effort* simultaneously have a significant effect on the performance of motorcycle taxi drivers *online*. Value R^2 0.585 indicates that the two variables are able to explain 58.5% of the variation in work, while the other 41.5% are influenced by factors outside the model.

Partially, *mental workload* has a positive and significant effect on performance with a coefficient of 0.630 and *a Standardized Beta* of 0.692. These results show that an increase *in mental workload* in the study is actually followed by an increase in performance. This condition can occur because drivers respond to job demands by increasing attention and concentration so that work can still be completed properly. Thus, *mental workload* at a certain level can encourage drivers to exert their cognitive abilities in dealing with job demands (Straub, 2026; Li et al., 2026; Wang et al., 2026; Costantini et al., 2026).

Mental effort negative and significant effect on performance, with a coefficient of -0.705 and *Standardized Beta* -0,651. This means that the greater the mental effort required by the driver, the performance tends to decrease. This result is in line with (Wagner & Eastwood, 2025) who found that *mental effort* higher ones do not necessarily result in better performance. High mental effort may be related to increased errors when individuals must maintain attention in completing tasks. The study also shows that the relationship between *mental effort* with performance influenced by the demands of the task and individual characteristics (Rubio-Morales et al., 2026; Liu et al., 2026; Gone et al., 2026).

Overall, the results of the study show that *Mental workload* and *Mental effort* have a different influence on the driver's performance. *Mental workload* has a positive direction, while *Mental effort* has a negative direction. This difference shows that the mental demands felt by drivers do not necessarily have the same impact as the amount of mental effort that must be expended to complete the work. (Wagner & Eastwood, 2025) also affirms that the experience *mental effort* are complex and can affect performance differently depending on the conditions of the task.

Conclusion

The job as an online motorcycle taxi driver requires drivers to face various activities that involve cognitive abilities while carrying out their work. Drivers are not only required to drive

ISSN: 2716-3865 (Print), 2721-1290 (Online)
Copyright © 2026, Journal La Multiapp, Under the license CC BY-SA 4.0

vehicles, but also need to pay attention to traffic conditions, understand information from applications, determine travel routes, communicate with customers, and make decisions in dealing with various conditions on the road. These various demands can affect the driver's mental state and ultimately relate to the driver's ability to maintain their performance. In dynamic work conditions, mental demands and efforts expended to complete work are important aspects to pay attention to. Therefore, the discussion of this study is focused on the influence of mental workload and mental effort on the performance of online motorcycle taxi drivers, both partially and simultaneously.

Based on the results of the study on the effect of Mental Workload and Mental Effort on the performance of Online Motorcycle Taxi drivers in Jebres District, Surakarta City, it can be concluded that Mental Workload has a positive and significant effect on the performance of Online Motorcycle Taxi drivers, with a t-value of 9.434 and a significance of 0.000 < 0.05. This shows that the Mental Workload faced by drivers is related to performance improvement in the context of this study. Furthermore, Mental effort has a negative and significant effect on the performance of online motorcycle taxi drivers, with a t-value of −8.871 and a significance of 0.000 < 0.05, which shows that the greater the mental effort expended by drivers in carrying out their work, the performance tends to decrease. Simultaneously, mental workload and mental effort had a significant effect on the performance of online motorcycle taxi drivers, with an F value of 62.065 and a significance of 0.000 < 0.05. These two variables were able to explain 58.5% of the variation in driver performance, while the other 41.5% was explained by other factors outside the research model.

Based on the results of the research, for online motorcycle taxi drivers, it is recommended to manage work time and rest in a balanced manner and manage work demands so that the mental effort expended is not excessive. For online motorcycle taxi service providers, the results of this study can be considered in designing application systems, information presentation, navigation, and work targets by paying attention to the driver's mental condition. The next study is suggested to add other variables that have the potential to affect performance, such as work fatigue, work duration, driving experience, work stress, and work environment conditions, so that factors that affect driver performance can be studied more broadly.

References

Alaydi, B., & Ng, S. I. (2024). Mitigating the negative effect of air traffic controller mental workload on job performance: The role of mindfulness and social work support. *Safety*, *10*(1).

Alkausar, D., Afroh, N. I. U., Wibowo, D. A., & Razak, A. A. (2026). Analysis of Conflict Between Traditional Motorcycle Taxis and Online Motorcycle Taxis in the Purwokerto Station Transit Area. *Civic Engagement and Social Education Journal*, 1-10.

Bukowski, M., Majchrowicz, B., Michalik, J., Soral, W., Campbell, A., & Inzlicht, M. (2026). Does uncontrollability reduce willingness to invest mental effort?. *Collabra: Psychology*, *12*(1), 161214. https://doi.org/10.1525/collabra.161214

Castro Silva, J., Peixoto, F., Galhoz, A., & Gaitas, S. (2026). Job demands and resources as predictors of well-being in Portuguese teachers. *European Journal of Teacher Education*, *49*(1), 84-107.

Chadijah, D. I., Wijaya, M., & Soemanto, R. B. (2021). Industrial relations between ojek online drivers with PT Gojek Indonesia branch of Surakarta. *Journal of Islamic World and Politics*, *3*(2).

ISSN: 2716-3865 (Print), 2721-1290 (Online)
Copyright © 2026, Journal La Multiapp, Under the license CC BY-SA 4.0

Chen, C.-Y. (2025). The influence of learner modality preferences on perceived mental effort and performance in self-paced instructional videos. *International Journal of Educational Technology and Learning*, *19*(1), 64–71.

Costantini, S., Zanco, C., Mastropietro, A., Arlati, S., Andreoni, G., Rizzo, G., ... & Mondellini, M. (2026). Assessing the Impact of an Assistive Driving Device on Mental Workload and Stress During Simulated Driving: A Multivariate Approach. *Applied Sciences*, *16*(10), 4974. https://doi.org/10.3390/app16104974

Dharmanto, A., Widyastuti, T., Sawitri, N. N., & Thamrin, D. (2026). The Influence of Emotional Intelligence and Work-Life Balance on Service Performance Mediated by Employee Commitment to Online Motorcycle Taxi Drivers or Partners in Jabodetabek. *Greenation International Journal of Economics and Accounting*, *4*(4), 1158-1172. https://doi.org/10.38035/gijea.v4i4.1188

Glöss, M., McGregor, M., & Brown, B. (2016). *Designing for labour BT - Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. 1632–1643.

Gone, Y. S. P., Naim, M. F., & Peethambaran, M. (2026). Sounding the silence: examining the antecedents and outcomes of quiet quitting. *International Journal of Organizational Analysis*, *34*(1), 165-184. https://doi.org/10.1108/IJOA-09-2024-4794

Grund, A., Fries, S., Nückles, M., Renkl, A., & Roelle, J. (2024). When is learning "effortful"? Scrutinizing the concept of mental effort in cognitively oriented research from a motivational perspective. *Educational Psychology Review*, *36*(1), 11.

Herawatie, D., Siswanto, N., & Widodo, E. (2024). Motorcycle taxi in shared mobility and informal transportation: A bibliometric analysis. *Journal of Information Systems Engineering and Business Intelligence*, *10*(2), 250-269. https://doi.org/10.20473/jisebi.10.2.250-269

Hutabarat, J., Pradana, J. A., Sulistyadi, K., Sari, S. A., & Ardianto, R. (2026). Integrated posture and mental workload assessment model for musculoskeletal risk mitigation in motorcycle ride-hailing operators. *International Journal of Transport Development and Integration*, *10*(1), 180.

Jalali, M., Esmaeili, R., Habibi, E., Alizadeh, M., & Karimi, A. (2023). Mental workload profile and its relationship with presenteeism, absenteeism and job performance among surgeons: The mediating role of occupational fatigue. *Heliyon*, *9*(9).

Jaydarifard, S., Behara, K., Baker, D., & Paz, A. (2024). Driver fatigue in taxi, ride-hailing, and ridesharing services: A systematic review. *Transport Reviews*, *44*(3), 572–590.

Kusmasari, W., Mahirah, A., & Nalhadi, A. (2024). Measurement of Physical and Mental Workload in Onlline Ojek Drivers: A Case Study in Serang City. *International Journal of Disabilities Sports and Health Sciences*, *7*(3), 655-662.

Li, J., Lin, M., Feng, X., Zhang, H., Wang, C., & Ma, Y. (2026). Effects of Driving Task Demands and Information Load on AR-HUD Cognitive Efficiency: The Moderating Role of Working Memory Capacity in a VR-Based Simulated Driving Environment. *Journal of Eye Movement Research*, *19*(3), 48. https://doi.org/10.3390/jemr19030048

Liu, H., Chen, X., & Chen, B. (2026). Demystifying the mediation of boredom between students' English learning resilience and academic achievement. *Research Papers in Education*, 1-26. https://doi.org/10.1080/02671522.2026.2731331

ISSN: 2716-3865 (Print), 2721-1290 (Online)
Copyright © 2026, Journal La Multiapp, Under the license CC BY-SA 4.0

Noorikhsan, F. F., Khoerunisa, N., Nurohman, T., Muchariman, R., & Hamzah, R. A. (2024). Vulnerabilities in digital platform-based work in the field of online transportation. *Jurnal Inovasi Ilmu Sosial dan Politik (JISoP)*, *6*(2), 137-148. https://doi.org/10.33474/jisop.v6i2.22591

Pasya, M. A., Mujib, A., Wijaya, B. A., & Asy-Syahid, S. (2025). Between informality and digital platforms: The position and legal protection of online motorcycle taxi drivers in Indonesia's urban economy. *Istinbath: Jurnal Hukum*, *22*(2), 628-649. https://doi.org/10.32332/istinbath.v22i02.art09

Pourteimour, S., Yaghmaei, S., & Babamohamadi, H. (2021). The relationship between mental workload and job performance among Iranian nurses providing care to COVID-19 patients: A cross-sectional study. *Journal of Nursing Management*, *29*(6), 1723–1732.

Pranawukir, I., Bariski, R. N., & Sukma, M. (2026). Developing the Personal Branding of Sympathetic Public Service Providers: A Community Outreach Program for Conventional Motorcycle Taxi Drivers. *ABDI KAMI: Jurnal Pengabdian Kepada Masyarakat*, *9*(2), 400-418. https://doi.org/10.69552/hv8xmv43

Putra, Y. M., & Anggara, O. F. (2026). Work–study conflict and academic burnout among gig-economy students: Evidence from online motorcycle taxi drivers. *Journal of Educational Management Research*, *5*(2), 1206-1219. https://doi.org/10.61987/jemr.v5i2.1844

Pütz, S., Mertens, A., Chuang, L. L., & Nitsch, V. (2025). Physiological predictors of operator performance: The role of mental effort and its link to task performance. *Human Factors*, *67*(6), 595–615.

Ramadanil, R., Susilawati, S., & Hasibuan, R. (2024). The Relationship Between Working Time and Fatigue of Online Motorcycle Taxi Drivers in Medan. *Journal La Medihealtico*, *5*(4), 792-798. https://doi.org/10.37899/journallamedihealtico.v5i4.1496

Rambulangi, V., Tampi, J. R. E., & Tulusan, F. M. G. (2024). Analysis of employee performance at the Bahu Subdistrict Office: Study on aspects of quality, quantity, timeliness, effectiveness and work independence. *Journal La Bisecoman*, *5*(1), 32–41.

Rubio-Morales, A., Díaz-García, J., Russell, S., López-Gajardo, M. Á., Ponce-Bordón, J. C., & García-Calvo, T. (2026). Does latest match outcome influence subsequent mental training demands and mental fatigue? A longitudinal study in youth-elite soccer. *International Journal of Sport and Exercise Psychology*, *24*(4), 640-653. https://doi.org/10.1080/1612197X.2025.2468678

Saavedra, L. M., Blakey, S. M., Lopez-Castro, T., Grau, P. P., Back, S. E., Killeen, T. K., ... & Morgan-López, A. A. (2026). Depression burden and differential treatment effects in PTSD and substance use disorder comorbidity: findings from Project Harmony. *European Journal of Psychotraumatology*, *17*(1), 2747573. https://doi.org/10.1080/20008066.2026.2747573

Sari, I. P., Suyatno, A., & Alia Akhmad, K. (2023). Effect of work environment and work motivation on the performance of Gojek drivers in the city of Surakarta. *International Journal of Asian Business and Management*, *2*(4), 469–484.

Shahu, A., Greinecker, N., & Wintersberger, P. (2026, April). Faster but Not Smarter? Temporal Constraints and User Compliance with AI Explanations. In *Proceedings*

ISSN: 2716-3865 (Print), 2721-1290 (Online)
Copyright © 2026, Journal La Multiapp, Under the license CC BY-SA 4.0

of the Extended Abstracts of the 2026 CHI Conference on Human Factors in Computing Systems (pp. 1-7). https://doi.org/10.1145/3772363.3798697

Straub, S. M. (2026). Humans at the center!? Analyzing digital workplace characteristics and their impact on truck drivers' perceived workload. *The International Journal of Logistics Management*, *37*(7), 58-89.

Thamrin, D. (2025). Resilience of Online Motorcycle Taxi Drivers in Bekasi City: Workload, Compensation, and Adaptation Strategies during the COVID-19 Pandemic. JIMU (JURNAL ILMIAH MANAJEMEN UBHARA), 7(2), 58-68. https://doi.org/10.31599/ewbean85

Triharto, K. (2026). Psychological Empowerment in Strengthening Women's Human Resources in the Gig Economy Sector: A Critical Study of Female Online Motorcycle Taxi Drivers in Indonesia. *Wawasan: Jurnal Ilmu Manajemen, Ekonomi dan Kewirausahaan*, *4*(1), 330-356. https://doi.org/10.58192/wawasan.v4i1.4292

Wagner, D., & Eastwood, J. D. (2025). The experience of mental effort during a continuous performance task: Exploring the influence of task- and person-based factors. *PLOS ONE*, *20*(9), e0332505.

Wang, Z., Zheng, J., Li, Y., Ma, L., & Zhang, W. (2026). Aging and occupational reinforcement: Are older high-speed train drivers still capable of driving?. *International Journal of Industrial Ergonomics*, *114*, 103960. https://doi.org/10.1016/j.ergon.2026.103960

Wolpe, N., Holton, R., & Fletcher, P. C. (2024). What is mental effort: A clinical perspective. *Biological Psychiatry*, *95*(11), 1030–1037.

Wulani, F., Lindawati, T., & Iswanto, Y. B. (2022). Work stress of online motorcycle taxi drivers: The role of coworker support, autonomy and affective occupational commitment. *Jurnal Organisasi dan Manajemen*, *18*(2), 26-42.

ISSN: 2716-3865 (Print), 2721-1290 (Online)
Copyright © 2026, Journal La Multiapp, Under the license CC BY-SA 4.0