

## ABSTRAK

### JOHAN RIVALDO PANAHTAN, ANALISIS PENGARUH JARAK TEMPUH DAN VOLUME BENSIN TERHADAP EMISI CO<sub>2</sub> PADA AKTIVITAS TRANSPORTASI DI PT Mutuagung Lestari Tbk. (MUTU)

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Penelitian ini menganalisis pengaruh jarak tempuh dan volume bensin terhadap emisi CO<sub>2</sub> dari kegiatan transportasi di PT Mutuagung Lestari Tbk. (MUTU), sebuah perusahaan jasa lingkungan di Indonesia. Di era sekarang, isu perubahan iklim semakin menjadi perhatian, terutama karena sektor transportasi jadi penyumbang besar gas rumah kaca seperti CO<sub>2</sub>. PT Mutuagung Lestari Tbk.(MUTU), yang memiliki bisnis yang bergerak di bidang jasa seperti pengujian, sertifikasi, dan verifikasi emisi, punya tantangan untuk mengurangi dampak lingkungannya sendiri dari kendaraan operasional yang memakai bensin. Masalah utamanya adalah bagaimana hubungan antara jarak yang ditempuh dan bensin yang digunakan memengaruhi emisi, faktor apa yang membuat pemakaian bensin kurang efisien, dan strategi apa yang bisa diterapkan untuk mengurangi emisi itu. Tujuannya untuk memahami hubungan itu melalui analisis, identifikasi faktor seperti kondisi kendaraan atau rute perjalanan, dan mengusulkan strategi seperti optimalisasi rute atau teknologi hijau. Penelitian menggunakan pendekatan kuantitatif deskriptif-eksplanatori, dengan data primer dari kuesioner ke karyawan dan driver (pakai skala Likert), plus data sekunder dari laporan perusahaan tahun 2021-2023. Populasi sekitar 150-200 orang dan kendaraan, sampel diambil menggunakan rumus Slovin menjadi 100 responden melalui *purposive* dan *stratified random sampling*. Analisisnya memakai regresi linier berganda, uji asumsi klasik, dan uji hipotesis t dan F. Penelitian ini diharapkan dapat menjadi dasar kebijakan bagi PT Mutuagung Lestari Tbk. (MUTU) untuk transportasi lebih ramah lingkungan, meningkatkan efisiensi, dan patuh regulasi pemerintah perihal emisi. Ini juga bisa menjadi referensi buat industri lain dan akademisi yang mengulik isu energi berkelanjutan. Penelitian ini dilakukan Oktober 2025 – Januari 2026 di Depok.

**Kata Kunci:** emisi CO<sub>2</sub>, jarak tempuh, volume bensin, transportasi operasional.

## **ABSTRACT**

**JOHAN RIVALDO PANAHATAN, ANALYSIS OF THE INFLUENCE  
OF DISTANCE TRAVELED AND GASOLINE VOLUME ON CO<sub>2</sub>  
EMISSIONS IN TRANSPORTATION ACTIVITIES AT PT Mutuagung  
Lestari Tbk. (MUTU)**

*Guided by Sulastri, S.E., M.M.*

*This study analyzes the effect of travel distance and gasoline consumption on CO<sub>2</sub> emissions from transportation activities at PT Mutuagung Lestari Tbk. (MUTU), an environmental services company in Indonesia. In today's era, climate change issues are receiving growing attention, particularly because the transportation sector is one of the largest contributors to greenhouse gases such as CO<sub>2</sub>. PT Mutuagung Lestari Tbk. (MUTU), whose core business involves testing, certification, and emission verification services, faces the challenge of minimizing its own environmental impact from operational vehicles that use gasoline. The main issues examined include how travel distance and fuel consumption affect emissions, what factors contribute to inefficient fuel use, and what strategies can be implemented to reduce emissions. The study aims to understand these relationships through analysis, identify influencing factors such as vehicle condition and travel routes, and propose strategies such as route optimization and green technology adoption. A quantitative descriptive–explanatory approach is employed, using primary data collected from questionnaires distributed to employees and drivers (utilizing a Likert scale), as well as secondary data from the company's reports from 2021–2023. The population consists of approximately 150–200 individuals and vehicles, with a sample size of 100 respondents determined using the Slovin formula and selected through purposive and stratified random sampling. Data analysis includes multiple linear regression, classical assumption testing, and t- and F-tests for hypothesis testing. The findings of this research are expected to serve as a policy foundation for PT Mutuagung Lestari Tbk. (MUTU) in developing more environmentally friendly transportation practices, improving operational efficiency, and ensuring compliance with government emission regulations. Moreover, this study can serve as a reference for other industries and academics exploring sustainable energy and emission reduction issues. The research was conducted from October 2025 to January 2026 in Depok, Indonesia.*

**Keywords:** *CO<sub>2</sub> emissions, travel distance, gasoline volume, operational transportation.*