



The Influence of Operational Performance on Employee Work Performance in Coal Transportation via River Transportation in South Sumatra Province

Surnata¹, Tulus Irpan Harsono Sitorus², Bambang Setiawan³, Paulina M. Latuheru⁴, Febriansyah⁵, Raden Muhamad Firzatullah⁶, Santoso⁷

^{1,3,4,5,6,7}Politeknik Transpostasi Sungai, Danau dan Penyyeberangan, Indonesia

²Transportation Policy Agency, Ministry of Transportation, Indonesia

Email: Surnatasur66@gmail.com

This study aims to analyze the influence of operational performance on employee performance in coal transportation activities via river transportation in South Sumatra Province. The background of this study is based on the important role of operational performance in supporting the effectiveness and efficiency of the coal distribution process, a major commodity in the region. The research method used was quantitative with a descriptive and verification approach. Data were obtained through questionnaires distributed to employees directly involved in coal transportation operations, then analyzed using simple linear regression techniques. The results showed that operational performance, including aspects of productivity, punctuality, facility maintenance, and efficient use of resources, had a positive and significant influence on employee performance. This means that the better the company's operational performance, the higher the employee performance. Therefore, improving operational quality, work discipline, and supervision of the coal distribution process are important factors in improving employee performance and overall company success.

Keyword: *Operational Performance, Work Performance, Coal Transportation, River Transportation, South Sumatra.*

1. INTRODUCTION

South Sumatra Province is one of the largest coal-producing regions in Indonesia. Most of the coal mined in this region is distributed to various regions and for export via river transportation, particularly the Musi River and its tributaries. Coal transportation via river transportation plays a crucial role in maintaining the smooth operation of the national energy supply chain and is a major pillar of regional economic activity. In this coal transportation process, operational performance is a crucial factor in determining a company's success in achieving efficiency, productivity, and service quality targets. Good operational performance is reflected in timely deliveries, fleet reliability,

occupational safety, and employee ability to perform tasks according to established operational standards.

However, in practice, various operational obstacles are still frequently encountered, such as late deliveries, fleet damage, and poor coordination between work units. These issues can directly impact employee performance, including target achievement, discipline, and work motivation. Therefore, research is needed to determine the extent to which operational performance affects employee performance in coal transportation activities via river transportation in South Sumatra Province.

Through this research, it is hoped that a clearer picture can be obtained regarding the relationship between operational performance and employee work performance, so that it can become a basis for management in increasing work effectiveness and supporting the achievement of overall company goals.

2. METHODOLOGY

This study employed a quantitative research method with an associative approach to analyze the influence of operational performance on employee performance in coal transportation activities using inland river transportation in South Sumatra Province, Indonesia. The quantitative approach was selected because it enables the measurement and statistical analysis of the relationship between the independent variable, namely operational performance (X), and the dependent variable, employee performance (Y). The associative approach was applied to identify and explain the extent to which operational performance contributes to employee performance within the operational activities of river-based coal transportation.

The population of this study consisted of all employees and operational personnel involved in coal transportation activities through river transportation systems. The research sample was determined using a purposive sampling technique, where respondents were selected based on specific criteria, particularly employees who were directly engaged in operational coal transportation activities. This sampling method was considered appropriate because it ensured that the respondents possessed relevant knowledge and experience related to the operational processes being studied.

Data collection was conducted using closed-ended questionnaires and documentation techniques. The questionnaire was designed using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) to measure respondents' perceptions regarding indicators of operational performance and employee performance. In addition, documentation techniques were utilized to obtain supporting data related to operational activities, company records, and employee performance reports relevant to the research objectives.

The collected data were analyzed quantitatively using several statistical procedures. First, validity and reliability tests were carried out to ensure that the research instrument was valid and reliable for measuring the research variables. Subsequently, simple linear regression analysis was applied to determine the effect of operational performance on employee performance. Furthermore, a t-test was conducted to examine the significance of the influence of the independent variable on the dependent variable. All statistical analyses were performed systematically to obtain accurate and reliable research findings.

3. DISCUSSION

The proposed Battery Management System (BMS)-based charging system is designed to utilize energy generated from a solar photovoltaic (PV) source for efficient and controlled battery charging. The overall system consists of a PV module, a DC–DC converter (charger controller), a lithium-ion battery pack, and a BMS unit.

Research data was collected from 40 respondents, consisting of employees and operational personnel working in coal transportation via river transportation in South Sumatra Province. Each variable was measured using five items on a Likert scale of 1–5.

Table 1. Results of the Validity Test of the Operational Performance Variable (X)

No	Indicator	r_ count	Sig.	Information
1	Working time efficiency	0,624	0,000	Valid
2	Delivery accuracy	0,651	0,000	Valid
3	Fleet maintenance	0,705	0,000	Valid
4	Inter-unit coordination	0,689	0,000	Valid
5	Operational productivity	0,734	0,000	Valid

Table 2. Results of the Validity Test of the Employee Work Performance Variable

No	Indikator	r_ hitung	Sig.	Keterangan
1	Kualitas hasil kerja	0,710	0,000	Valid
2	Tanggung jawab	0,676	0,000	Valid
3	Disiplin kerja	0,742	0,000	Valid
4	Kerja sama	0,723	0,000	Valid
5	Inisiatif dan motivasi	0,757	0,000	Valid

Table 3. Reliability Test Results

Variables	Cronbach's Alpha	Information
Operational Performance (X)	0,87	Reliabel
Employee Work Performance (Y)	0,90	Reliabel

Cronbach's Alpha value > 0.70 indicates that all statement items are consistent and reliable.

b. Simple Linear Regression Analysis

The results of the regression analysis show the equation:

$$Y = 12.45 + 0.68X$$

Table 4. Results of the Simple Linear Regression Analysis

Variables	Coefficient (B)	t_count	Sig.	Information
Konstanta	12,45	—	—	—
Operational Performance (X)	0,68	8,25	0,000	Significant

A regression coefficient of 0.68 indicates that every one-unit increase in operational performance will increase employee work performance by 0.68 units. The relationship between the two is positive and significant. General Description of Research Data. From the questionnaire results, the average score for the operational performance variable (X) was 4.12, which is considered good, and the average score for the work performance variable (Y) was 4.20, which is also considered good. This indicates that employees have demonstrated effective operational performance and have positively impacted their work performance in coal transportation activities via river transportation.

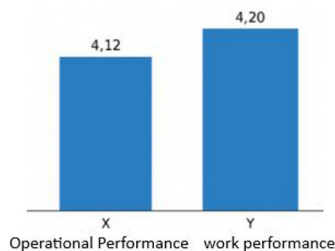


Figure 1. Operational Performance and work performance diagram

The diagram shows a comparison between the average scores of the operational performance (X) and employee performance (Y) variables. The average score for operational performance was 4.12, while employee performance was 4.20.

These results indicate that both variables are in the good category, with employee performance slightly higher than operational performance. This indicates that coal transportation activities via river transportation in South Sumatra Province have been effective, and improvements in operational performance have contributed positively to improved employee performance.

The validity test results showed that all statement items in the operational performance (X) and employee work performance (Y) variables had r -calculation values greater than 0.30 with a significance value <0.05 . This indicates that all questions used in the questionnaire were valid and capable of measuring the intended variables. Meanwhile, the reliability test results showed a Cronbach's Alpha value of 0.87 for variable X and 0.90 for variable Y, indicating that all statement items were consistent and reliable, exceeding the minimum threshold of 0.70. Thus, this research instrument was suitable for use in data collection.

Furthermore, the results of a simple linear regression analysis produced the equation $Y = 12.45 + 0.68X$. The positive regression coefficient (0.68) indicates that higher operational performance leads to higher employee work performance. The t-test results showed a calculated t -calculation value of 8.25, which is greater than the t -table value of 1.99, with a significance value of 0.000 <0.05 , thus accepting the research hypothesis. This means that there is a positive and significant influence between operational performance and employee work performance in coal transportation activities via river transportation in South Sumatra Province. The average questionnaire score supports this result. The average operational performance score (4.12) and work performance (4.20) are included in the good category, which indicates that operational activities have been running effectively, including time efficiency, delivery accuracy, and coordination between work units. This has an impact on increasing employee discipline, responsibility, and the quality of work results. Thus, the results of this study are in line with performance management theory which states that operational effectiveness has a direct contribution to increasing productivity and individual work performance. Employees who work within a good operational system—especially in terms of planning, fleet maintenance, and work time control—tend to show more optimal work results.

4. CONCLUSION

Based on the results of the validity and reliability tests, all statement items in the operational performance and employee work performance variables were declared valid and reliable, thus the research instrument was suitable for use. The results of the regression analysis showed an equation of $Y = 12.45 + 0.68X$ with a calculated t-value of $8.25 > t\text{-table} = 1.99$ and a $\text{sig.} = 0.000 < 0.05$, indicating a positive and significant influence between operational performance and employee work performance. The average score for the operational performance variable (4.12) and work performance (4.20) indicates a good category. Therefore, it can be concluded that coal transportation activities via river transportation in South Sumatra Province have been running

effectively, and improved operational performance has a direct impact on employee work performance.

Operational efficiency improvements need to be continuously pursued, particularly in terms of work time management, delivery accuracy, and fleet maintenance to optimize productivity.

Coordination between work units must be improved through a more integrated internal communication system to accelerate decision-making in the field. Developing employee competencies through routine training and periodic performance evaluations is crucial for maintaining and improving work performance. For further research, it is recommended to add other variables such as work motivation, work environment, or leadership to provide a more comprehensive picture of the factors influencing employee performance.

The results of this study provide important implications for management and agencies involved in coal transportation via river transportation in South Sumatra Province. The finding that operational performance has a positive and significant impact on employee performance indicates that improving operational effectiveness can directly drive improvements in employee productivity and work quality. Practically, managing agencies need to emphasize optimizing operational work systems, such as scheduling, fleet maintenance, and improving inter-unit coordination, as these have been shown to improve employee morale and performance in the field.

From a theoretical perspective, the results of this study reinforce human resource management theory, which states that operational performance is a key determinant of employee performance, particularly in the transportation and logistics sector. Therefore, this study can serve as a reference for future research examining the relationship between operational performance and other aspects such as job satisfaction, motivation, and organizational effectiveness.

References

- [1] Alfosius Israel Here, Maria Agustina Kleden, Astri Atti, (2025) Analysis of Service Satisfaction Using the Servqual and Importance Performance Analysis (IPA) Methods at a Regional General Hospital. *ESTIMASI: Journal of Statistics and Its Application*. 2025;6(1):2721-370. doi:10.20956/ejsa.v6i1.27989
- [2] Book: Sukwika T., (2023) Determining Population and Sampling. <https://www.researchgate.net/publication/373137498>
- [3] Jihan Raihan Zein, William Ramdhan, Sahren, (2024) Application of the Servqual Method to Improve the Quality of Public Service Performance at the Religious Affairs Office, Rawang Panca Arga District. *JIPI (Scientific Journal of Informatics Research and Learning)*. 2024;9(4):2459-2472. doi:10.29100/jipi.v9i4.6254
- [4] Johanes WZ., Alfosius K. HereJ (2025). Analysis of Cleaning Service Satisfaction Using Service Quality and Importance Performance Analysis (IPA) Methods at the Regional General Hospital (RSUD). *ESTIMASI: Journal of Statistics and Its Application*. 2025;6(1):2721-379. doi:10.20956/ejsa.v6i1.27989
- [5] Fauzan A. Sangadji, Juliet G. Metekohy & Fahira W. Sangadji, (2025) Analysis

- of Service Quality at the Waai Ferry Port in Central Maluku Using the Importance Performance Analysis (IPA) Method. *ITP Civil Engineering Journal*. 2025;12(1). doi:10.21063/JTS.2025.V1201.070-079
- [6] Ir. Sugihardjo, M.Si et al., (2019) Research B, Development D. Ministry of Transportation Research Journal. <http://ojs.balitbanghub.dephub.go.id/index.php/warlit>
- [7] Magvira Ardhia Pratiwi, (2022) THE DIFFERENCES BETWEEN THEORETICAL FRAMEWORK AND CONCEPTUAL FRAMEWORK IN SCIENTIFIC RESEARCH. *Idealog: Ideas and Dialogue of Indonesian Design*. 2022;7(2):199-210. doi:10.25124/idealog.v7i2.5014
- [8] Mochamad Yogie Pranata, Puspita Wulansari, (2023) The Influence of Compensation and Motivation on the Performance of Customer Service Employees at a Telco Company in Indonesia. *International Journal of Science, Technology & Management* ISSN: 2722-401 DOI: <https://doi.org/10.46729/ijstm.v6i4.1250>
- [9] Obi Mardalena1, Ria Andryani, (2021) Analysis of Website Service Quality at Palembang Open University Using the Webqual 4.0 Method and Importance Performance Analysis (IPA). *Journal of Information Systems and Informatics*. 2021;3(4). <http://journal-isi.org/index.php/isi>
- [10] Shanti Mayangsari A, Eko Pujianto W. et al., (2025) Middle manager impacts: Situational leadership on service quality performance. *Journal of Management and Services Marketing*. 2025;18(1):15-34. doi:10.25105/jmpj.v18i1.19989
- [11] Syafri, Ahmad Firman, Badaruddin, (2023) Port Facilities, Services, and Service Performance on Service User Satisfaction at PT PELINDO TERMINAL PETIKEMAS BITUNG. Volume 2, Number 2, April 2023, pp. 168-182. E-ISSN: <https://E-Jurnal.Nobel.Ac.Id/Index.Php/Ej> 168. <https://e-jurnal.nobel.ac.id/index.php/ej>
- [12] Subhaktiyasa PG., (2024) Determining Population and Sample: Quantitative and Qualitative Research Methodology Approaches. *Scientific Journal of Educational Professions*. 2024;9(4):2721-2731. doi:10.29303/jipp.v9i4.2657
- [13] Waruwu M, Pu`at SN, Utami PR, Yanti E, Rusydiana M., (2025) Quantitative Research Methods: Concepts, Types, Stages, and Advantages. *Scientific Journal of Educational Professions*. 2025;10(1):917-932. doi:10.29303/jipp.v10i1.3057
- [14] Yuhuan Luo, Min Yu, Zhang Liyixia, Jingjing Chen, (2024) Effect of different pretreatment methods on the stability of pumpkin seed milk and potential mechanisms Volume 452, 15 September 2024, 139582 <https://doi.org/10.1016/j.foodchem.2024.139582>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

