

**PRESCRIPTIVE MAINTENANCE OF KOMATSU DUMP TRUCK HD785-7
BASED ON MACHINE FAILURE DATABASE USING NAÏVE BAYES
CLASSIFIER IN FULL MAINTENANCE CONTRACT
PT ABC SITE SANGKULIRANG**

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.



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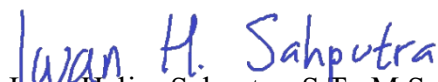


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ABSTRACT

PRESCRIPTIVE MAINTENANCE OF KOMATSU DUMP TRUCK HD785-7 BASED ON MACHINE FAILURE DATABASE USING NAÏVE BAYES CLASSIFIER IN FULL MAINTENANCE CONTRACT PT ABC SITE SANGKULIRANG

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This research develops a Prescriptive Maintenance (RxM) model to improve the Physical Availability (PA) of Komatsu Dump Truck HD785-7 under a Full Maintenance Contract (FMC) at PT ABC Site Sangkulirang, addressing the issue of low PA that affects operational efficiency and mining productivity. By applying the Naïve Bayes Classifier and the DMAIC (Define, Measure, Analyze, Improve, Control) framework, historical maintenance data from the Daily Activity Report (DAR) in Lakoni systems were transformed into predictive insights to guide maintenance prioritization. A total of 924 data records were processed, with 682 used for training and 242 for testing the classification model. The model achieved 97.93% accuracy, 100% precision, and 94.12% recall, demonstrating its effectiveness in identifying units requiring preventive maintenance. Integrating the RxM model into maintenance operations reduced unplanned breakdowns, optimized technician allocation, and improved scheduling decisions, with supporting tools like dashboards and updated Standard Operating Procedures (SOPs) ensuring long-term sustainability. This study highlights the potential of machine learning in enhancing asset management within the mining industry.

Keywords: Prescriptive Maintenance (RxM), RapidMiner, Naïve Bayes Classifier, Data Mining, Physical Availability (PA), Full Maintenance Contract (FMC)



DEDICATION

I dedicate this work to my parents, my wife, and my children.

Also, to management PT United Tractors Tbk



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