

IMPLEMENT MARKOV CHAIN ANALYSIS AND CONFUSION MATRIX
FOR ASSESSING KEY PERFORMANCE INDICATORS IN HEAVY
EQUIPMENT MAINTENANCE

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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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ABSTRACT

IMPLEMENT MARKOV CHAIN ANALYSIS AND CONFUSION MATRIX FOR ASSESSING KEY PERFORMANCE INDICATORS IN HEAVY EQUIPMENT MAINTENANCE

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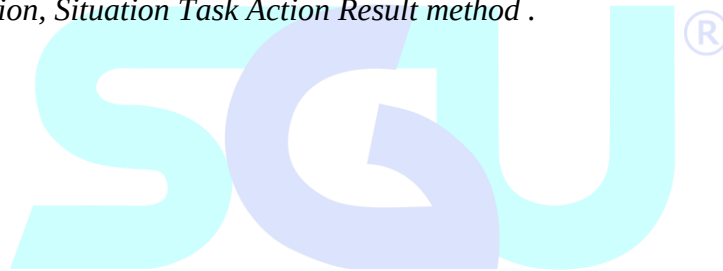
Currently, the coal business is still vibrant, making the role of heavy equipment in coal mining operations crucial. Effective maintenance of heavy equipment is essential to maintain its performance. Equipment breakdowns and component failures can lead to significant losses and impact mining operations. To address this issue, this study focused on implement markov chain analysis and confusion matrix for assesing key performance indication in heavy eaiupment maintenance

Every year target of production of coal increase . This increasing production will challange for performance of Plant's KPI to support this conditions . Plant using Balance Scorecard to manage all KPI Plant under one sheet monthly report performance . This Balance Scorecard compare monthly KPI performance to yearly target performance . This calculation method make two state condition . An achieve target of Plant KPI and An unachieve target of Plant KPI .Using Markov chain can be modeling history of KPI performance visualy probability of change between any state of conditions . This model can be develop four state condition to increase sensitivity of change of state . The four state conditions of markov chain can make plant more spesific and more accurate to take action base on this state condition. To measure effektiveness of action on every state condition in this thesis use confution matrix . This confution matrix also can measured capability of history KPI to get the target . This confusion matrix can revisi yearly KPI target for drive any improvement in KPI performance .

if the KPI target not challenge plant will not aware to improve more effective and more efficient than before . This confusion matrix can help Plant Div to measure accuracy and precision of planning phase in the future .

Base on Markov chain situation model . Plant can make Task recommendation and Action recommendation of in four state of condition . This Task and Action can be measured They's effectiveness with confution matrix result .This new process of problem solving method are Situation Task Action Result (STAR) . STAR method was not develop to change current Problem Identification Correction Action (PICA) Method . STAR will substate the PICA to more completed and spesific . Because STAR method can integrated to current Balance Scorecard of KPI .

Keywords: Coal Mining, Heavy Equipment, Key Performance Indicator ,Balance Scorecard , Markov chain , Confusion matrix Four state condition of Markov , Setting New Target of KPI, Condition Monitoring of KPI , , TASK recommendation . ACTION Recommendation, Situation Task Action Result method .



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DEDICATION

I dedicate this work to the future of the country I love: Indonesia.

To my beloved family, Tuti Krisna and Gabriel for their unwavering support, endless love, and boundless patience throughout this process of study .

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