

CHAPTER 5 - CONCLUSIONS AND RECCOMENDATIONS

5.1 Conclusions

This study has confirmed the hypothesis that MMP can improve PS lead time accuracy. MMP simplifies PS scheduling and task delivery to mechanics so as to minimize time delays and PS job accuracy. In particular, PS lead time accuracy increased from 71.9% to 96,2% after MMP implementation and has exceeded the specified target.

Some of the factors contributing to MMP's positive impact on lead time accuracy include:

- Improved data integrity: MMP ensures data accuracy through digital record-keeping and standardized processes, eliminating errors and inconsistencies in manual entry.
- Real-time communication: MMP facilitates efficient communication between maintenance personnel, enabling timely response and problem resolution, thus preventing delays.
- Improve Planning and scheduling accuracy: MMP enables advanced planning and resource allocation, optimizes maintenance schedules, and prevents scheduling conflicts.
- Automated task management: MMP automates task assignment and tracking, ensuring efficient workflows and minimizing human error.

Beyond lead time accuracy improvements, MMP implementation delivered broader benefits for FMC Business:

- a. OEE improved from the pre-implementation average of 59,9% to 89,2%, exceeding the target, indicating an increase in equipment utilization and productivity.
- b. Improved planning and execution results in decreased PS rework, thus saving time and resources.

- c. MMP's data-driven insights empower informed decision-making on maintenance strategies and resource allocation.

Overall, the study shows that implementing MMP effectively addresses the problems of traditional maintenance approaches, resulting in improvements in PS lead time accuracy, OEE and overall business performance.

5.2 Recommendations

This research is the beginning of research related to the effectiveness of the use of MMP in supporting the maintenance process at UT FMC Tanjung Enim for the Komatsu HD 785-7 unit, then to improve unit performance and the effectiveness of MMP utilization, further research is needed for development in the form of:

- a. Improved data reliability in MMP. Accurate and reliable data is important to support the right decision making in maintenance. Therefore, efforts need to be made to improve data reliability in MMP by conducting regular data validation.
- b. Increase the effectiveness of maintenance planning and implementation. Effective maintenance planning and execution can help prevent unexpected downtime. Therefore, efforts need to be made to improve the effectiveness of maintenance planning and implementation, namely by developing standardization of maintenance processes and procedures.
- c. Increase the efficiency of resource use. Efficient use of resources can help reduce maintenance costs. Therefore, efforts need to be made to improve the efficiency of resource use, for example by conducting periodic resource needs analysis.

Then, to support the achievement of these targets, it is necessary to utilize more up-to-date IT technology. This can be done by developing MMP into a more comprehensive CMMS platform.

The development of MMP into a more comprehensive CMMS platform can be done by adding the following features:

- a. More flexible and adaptive planning and scheduling features: This feature can help users to plan and schedule maintenance more accurately and efficiently, taking into account various factors, such as equipment condition, spare parts availability, and human resources.
- b. More advanced data monitoring and analysis features: This feature can help users monitor equipment performance in real-time and perform data analysis to identify potential problems.
- c. More integrated collaboration and communication features: This feature can help users to collaborate and communicate more effectively, thus improving work efficiency and effectiveness.

With the development of MMP into a more comprehensive CMMS platform, maintenance performance can be improved more significantly, thus supporting increased equipment uptime and OEE.

GLOSSARY

CBM	Condition-Based Monitoring
CMMS	Computerized Maintenance Management System
FGD	Focus Group Discussion
FMC	Full Maintenance Contract
HD785-7	One type of Komatsu dump truck with a payload capacity of 90 tons
MPP	Maintenance Management Portal
MSR	Maintenance strategy reference
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
OEE	Overall Equipment Effectiveness
PA	Physical Availability
	Preventive and Corrective Action Request, Maintenance sheet containing
PCAR	improvement recommendations from engineers
PEOU	Perceived Ease of Use
PEU	Perceived Usefulness
P-M Analysis	Phenomenon-mechanism Analysis
PS	Periodical Service, a planned maintenance activity
TAM	Technology acceptance model

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Problem Solving and Decision Making	2020
English Literacy	2021
Creative Thinking	2021
Basic Financial Management	2021
Strategic Management for Professional	2021
Developing and Handling Talent in a Digital World	2022
Create Business Sense	2022
Technical Solution Management	2023
Personal Branding	2023