

IMPROVING LEADTIME QUALITY ISSUE SOLUTION PERFORMANCE USING DEFINE,
MEASURE, ANALYSE, IMPROVE, CONTROL (DMAIC) METHODOLOGY AND
CUSTOMER FEEDBACK ANALYSIS: A CASE STUDY IN HEAVY EQUIPMENT
MANUFACTURE

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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.



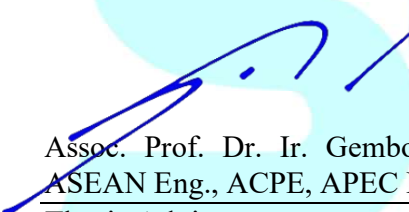
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ABSTRACT

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The study examines the improvement of quality issue solution lead time in a heavy equipment manufacturing environment operating in Indonesia. Timely resolution of quality issues is critical to minimizing customer downtime and sustaining after-sales service performance. However, historical data from 2022–2024 show that the average quality issue resolution lead time exceeded the agreed target of 270 days, reaching 296 days on average

To address this performance gap, the study applies the Define–Measure–Analyze–Improve–Control (DMAIC) methodology supported by Key Performance Indicator (KPI) monitoring. A case study approach was used, analyzing historical quality issue data involving distributors, principals, and factories. Total lead time was decomposed into Lead Time A (escalation), Lead Time B (factory analysis), and Lead Time C (countermeasure validation and Product Service News issuance) to identify dominant delay contributors. Root causes were investigated using Fishbone and Why–Why analyses, followed by implementation of targeted improvement actions.

The results indicate that Lead Time C was the dominant contributor, accounting for more than 50% of total lead time, mainly due to prolonged validation cycles, sequential approvals, and lack of early countermeasure communication. Prior to improvement, only 55% of open issues were escalated early as ETSI, compared with 88% among closed issues. Improvement initiatives included mandatory early escalation, introduction of temporary countermeasures (Quality News), optimization of parts readiness logistics, and adoption of risk-based validation.

Keywords: Reduce Leadtime Solution, minimize machine downtime, Define–Measure–Analyze–Improve–Control (DMAIC) methodology



DEDICATION

This thesis is dedicated to my beloved family: Intan, Alinka, Maudy and Verrel for the constant encouragement, understanding, and support during the completion of this study.

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Finally, this work is dedicated to myself, for perseverance, resilience, and commitment in completing this thesis as a fulfillment of the academic requirements of Swiss German University.

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