

**Developing DMAIC Maintenance to Increase Machine Performance in PT. XYZ
and Gaining Business Sustainability in PT. United Tractors**

By

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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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PT. XYZ is an Indonesian coal hauling contractor works with Scania double trailer R580 and R620. Physical availability decline from R580 to 75% and R620 to 81% in the first semester of 2022 hindered PT. XYZ to gain revenue. The main concern was to achieve physical availability target of 83% (R580) and 85% (R620). By doing intense FGD, UT conceived customer voice (VOC) and gathered all correlated parameters to focus on utmost priority parameters using Kano Model – QFD approach. Six Sigma DMAIC methodology identified defects and executed RPN based improvement. Using process capability analysis, R580 physical availability increased to 86% (July 2023), with the increment of Cpk from 0.61 to 1.22, Cp from 0.62 to 1.33, Ppk from 0.64 to 0.94, and Pp from 0.63 to 0.86. While R620 physical availability increased to 88% (July 2023), with the decrement of Cpk from 0.61 to 0.14, Cp from 0.62 to 0.67, Ppk from 0.55 to 0.10, Pp from 0.56 to 0.52. Physical availability significantly correlated with selected parameters: MTTR, PI achievement, backlog execution rate, component and system mandatory, OTIF mechanic and VHS availability. The stability of the process was maintained using control charts to warn special causes that disturbed the system.

Keywords: Physical Availability, Six-Sigma DMAIC, FMEA, Process Capability Analysis, Control Chart.

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DEDICATION

I humbly dedicate this piece of work to my loving parents, Mr. Adrian Wijaya and Mrs. Sri Agung, for their endless guidance and support. To my mates Ms. Donna Shandra for continuous support and understanding when undertaking my research and writing my project. This thesis is also dedicated to all the people who supported me throughout my education. Thanks for making me see this adventure through to the end. Finally, I dedicate this research paper to the Almighty God who gives me strength, wisdom, guidance, power of thinking, security, competence, and for giving me good health while doing this. All of these, I offer to you.

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