

WARRANTY COST REDUCTION TO IMPROVE SALES PROFIT
IN THE OVERHAUL DEPARTMENT AT PT. UNITED TRACTORS

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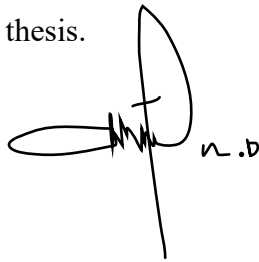


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STATEMENT BY THE AUTHOR

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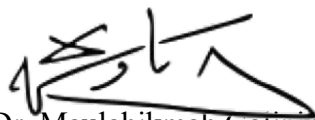
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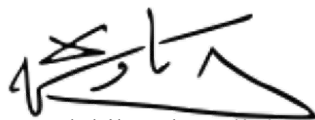
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ABSTRACT

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The remanufacturing components business is one of the five pillars of the Service Division within the Overhaul Department, which applies the principles of the circular economy by restoring components to “Ready for Use” condition and providing a *warranty*. High component failure rates during the *warranty* period have the potential to increase *warranty* costs, reduce the company’s profitability, and affect customer perception and trust in the quality of remanufacturing products. This study aims to identify the factors causing component failure, determine the priority of failure risks, and formulate effective improvement strategies to reduce *warranty* costs and enhance component reliability. The DMAIC (Define, Measure, Analyze, Improve, Control) method was used as a structured approach to process quality improvement to define the problem, measure actual performance, analyze causes, implement corrective actions, and control the sustainability of the improvement results. The analysis phase is supported by FMEA (Failure Mode and Effects Analysis) to evaluate potential failure modes based on severity, frequency of occurrence, and detectability, thereby establishing risk priorities that require attention. Subsequently, the 5 Whys method is applied to identify the root causes of the problem in depth. The analysis results were incorporated into the PICA (Preventive, Identification, Corrective, Action) program as the basis for developing preventive and corrective actions. The implementation of these improvements showed that *warranty* costs for remanufacturing components could be reduced to 0.28% of revenue in 2026 (YTD), outperforming the company’s target of a maximum of 1% of revenue. The findings of this study indicate that the integration of the DMAIC, FMEA, 5 Whys, and PICA methods is effective in supporting risk-based decision-making to improve product reliability, cost efficiency, and customer satisfaction.

Keywords: Remanufacturing, Circular Economy, Reliability, Warranty, Quality Control, Maintenance, Improvement.

ABSTRACT

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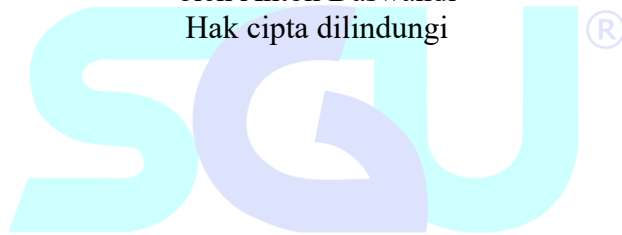
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Bisnis component *remanufacturing* merupakan salah satu dari lima pilar bisnis Service Divisi dari Overhaul Department yang menerapkan prinsip *circular economy* melalui proses pengembalian fungsi component hingga mencapai kondisi *Ready for Use* dan disertai jaminan *warranty*. Tingginya tingkat kegagalan component selama masa *warranty* berpotensi meningkatkan *cost warranty*, menurunkan keuntungan penjualan perusahaan, serta mempengaruhi persepsi dan kepercayaan pelanggan terhadap kualitas produk *remanufacturing*. Penelitian ini bertujuan untuk mengidentifikasi faktor penyebab kegagalan component, menentukan prioritas resiko kegagalan, serta merumuskan *strategi* perbaikan yang efektif untuk menekan *cost warranty* dan meningkatkan *reliability* component. Metode DMAIC (*Define, Measure, Analyze, Improve, Control*) digunakan sebagai pendekatan terstruktur dalam peningkatan kualitas proses untuk mendefinisikan permasalahan, mengukur kinerja aktual, menganalisis penyebab, mengimplementasikan tindakan perbaikan, dan mengendalikan keberlanjutan hasil perbaikan. Tahap analisis didukung oleh FMEA (*Failure Mode and Effects Analysis*) untuk mengevaluasi potensi mode kegagalan berdasarkan tingkat keparahan, frekuensi kejadian, dan kemampuan deteksi sehingga diperoleh prioritas resiko yang memerlukan penanganan. Selanjutnya, metode 5 *Whys* diterapkan untuk mengidentifikasi akar penyebab permasalahan secara mendalam. Hasil analisis diterjemahkan kedalam *program PICA* (*Preventive, Identification, Corrective, Action*) sebagai dasar penyusunan tindakan perbaikan yang bersifat *preventive* dan *corrective*. Implementasi perbaikan menunjukkan bahwa *cost warranty* component *remanufacturing* dapat ditekan hingga 0,28% dari *revenue* tahun 2026 (YTD), lebih baik dibandingkan target perusahaan sebesar maksimal 1% dari *revenue*. Temuan penelitian ini menunjukkan bahwa integrasi metode DMAIC, FMEA, 5 *Whys*, dan PICA efektif dalam mendukung pengambilan keputusan berbasis resiko guna meningkatkan *reliability* produk, efisiensi *cost*, dan kepuasan pelanggan

Keywords: Remanufacturing, Circular Economy, Reliability, Warranty Cost Reduction, Maintenance.

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LEMBAR PERSEMBAHAN

Thesis ini saya persembahkan kepada kedua orang tua, istri, anak, mertua, adik, ipar, teman-teman, dosen, dan perusahaan tercinta PT. United Tractors Tbk. yang telah mendukung studi saya sampai saat ini.



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