

# Penerapan Lean Warehousing untuk Meningkatkan Kinerja Cold Storage Perikanan dengan Metode Value Stream Mapping dan Failure Mode and Effects Analysis = Implementation of Lean Warehousing to Improve a Seafood Cold Storage Performance Using Value Stream Mapping and Failure Mode and Effects Analysis Methods

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## Abstrak

Value stream mapping merupakan metode terstruktur dalam mengimplementasikan lean yang bertujuan menggambarkan proses secara menyeluruh, yaitu aliran informasi, material, dan waktu, untuk mengidentifikasi waste dan mengeliminasinya dalam continuous improvement guna meningkatkan kinerja proses dan value bagi pelanggan melalui peningkatan efisiensi dan produktivitas. Industri perikanan merupakan sektor penting bagi Indonesia dengan potensi ekonomi yang besar. Industri perikanan mengalami pertumbuhan signifikan beberapa tahun terakhir yang diproyeksikan akan terus meningkat. Oleh sebab itu, fasilitas cold storage yang vital dalam cold chain industri perikanan dituntut untuk meningkatkan kinerja untuk menambah nilai bagi pelanggan dan meningkatkan daya saing rantai pasok. Dalam kondisi pertumbuhan industri perikanan, cold storage perikanan PT X belum beroperasi dengan efisien yang ditunjukkan oleh proses pergudangan yang lama, kesalahan proses pergudangan, serta keberadaan waste. Dengan demikian, penelitian ini menerapkan lean warehousing dengan metode value stream mapping yang bertujuan untuk meminimalkan waste dan meningkatkan efisiensi proses pergudangan inbound dan outbound melalui strategi pencapaian lean warehousing. Metode value stream mapping menunjukkan waste, dilanjutkan dengan pemeringkatan waste kritis dan analisis akar permasalahannya dengan diagram Ishikawa. Failure mode and effects analysis dilakukan untuk menunjukkan prioritas perancangan strategi untuk setiap failure mode dalam waste kritis menurut signifikansi yang ditunjukkan oleh nilai RPN. Hasil penelitian menunjukkan bahwa rancangan future state value stream map meningkatkan kinerja proses pergudangan cold storage perikanan PT X dengan pengurangan total lead time sebesar 76,11% (5,87 jam), pengurangan total process time sebesar 31,85% (3,14 jam), pengurangan total waktu non-value added sebesar 66,57% (8,73 jam), dan peningkatan value added ratio sebesar 23%. Rancangan perbaikan untuk mengeliminasi waste dalam penelitian ini adalah pembentukan standard operating procedure (SOP) dan sistem penjadwalan, digitalisasi proses pergudangan, perancangan sistem pelabelan dengan manajemen visual, penerapan sistem FIFO dan pengaturan tata letak, serta penerapan sistem 5S.

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Value stream mapping is a structured method in implementing lean that gives a comprehensive visualization of a process, including information flow, material flow, and time ladder, in order to identify wastes and eliminate them in continuous improvement to achieve process performance improvement and increase value for customers through increased efficiency and productivity. The fishing industry is an important sector for

Indonesia with a large economic potential. In the last few years, the fishing industry has grown significantly and is projected to keep growing. Thus, cold storage facilities, as a vital part of the fishing industry's cold chain, is required to increase their performance to add value for the customers and increase the competitiveness of their supply chain. In the middle of the fishing industry's growth, the seafood cold storage of PT X is not operating efficiently which is shown by long warehousing processes time, mistakes in warehousing processes, and wastes in the process. Therefore, this research implements lean warehousing using value stream mapping method to minimize waste and increase efficiency of inbound and outbound warehousing processes through strategies to achieve lean warehousing. Value stream mapping method shows wastes, continued with ranking of critical wastes and its root cause analysis using Ishikawa diagram. Failure mode and effects analysis is done to prioritize strategy design for every failure mode of critical wastes by significance shown from its RPN value. Research results show that future state value stream map design has increased the performance of warehousing process in the seafood cold storage of PT X which is indicated by reduction of total lead time by 76.11% (5.87 hours), reduction of total process time by 31.85% (3.14 hours), reduction of total non-value added time by 66.57% (8.73 hours), and increased value added ratio by 23%. Improvements plan designed to eliminate waste in this research is done by creating standard operating procedure (SOP) and scheduling system, digitalization of warehousing processes, designing a labelling system with visual management, implementation of FIFO system and facilities layout design, along with implementation of 5S system.