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Failure Mode and Effect Analysis (FMEA) for Evaluating the Causes of Delays in BIK's Dry Bulk Cargo Operation

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Abstract

Bulk products are shipped all around the world, in vast tonnages, containing different cargoes. Such a vast movement of bulk cargoes can impose its own problems for marine bulk terminals dealing with the cargo work operation.

This research utilizes a novel model, based on the Failure Mode and Effect Analysis (FMEA) in conjunction with the Cause and Effect Diagram and Pareto Analysis, aiming to assist marine bulk terminal operators in reducing the delays in cargo handling operations, and smoothing their loading/unloading activities.

The main objective of this paper is to find the main factors causing delays in BIK's cargo handling operation by focusing on quantification of risk assessment by determining the Risk Priority Numbers (RPN) per identified processing of cargo handling operation. The obtained results show that unreadiness of cargo owners, quarantine and port formalities, financial problems, and truck shortage are the main causes of delay in dry bulk cargo operation in BIK.

Keywords*: Loading/Discharging operation, Port, Failure Mode and Effect Analysis (FMEA), Pareto analysis*