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## SUMMARY

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Perishable cargo handling demand for commodities tuna at Cargo Terminal of Soekarno Hatta International Airport JAS especially from 2010 to 2014 are likely to experience an increasing trend. Among 118 International Airports that exist around the world, 8 airports do not have special facilities for handling perishable cargo, one of which is the Soekarno Hatta International Airport. The increasing demand for perishable cargo shipments at Soekarno Hatta International Airport which is not supported by perishable cargo particular warehouse facilities, resulting in changes of cargo handling performance at Jasa Angkasa Semesta (JAS) as the provider of warehousing services. Another problem is compounded by the operational activities of the temporal variation in workload due to the shipper arrival and departure of aircraft that have a narrow time vulnerable. One of the ways to improve the performance of the JAS is to do the planning, control, and process improvement of handling perishable cargo, especially tuna. The policy of perishable cargo handling performance improvements especially tuna fish commodities is needed to minimize the risk. Risks that arise in the process of cargo handling tuna at Soekarno Hatta International Airport, among others, physical risk, information risk, financial risk, and the risk of the organization.

JAS priority in determining performance parameters is done by distributing questionnaires to experts and literature studies. Based on the results of the questionnaire and literature study, tuna cargo handling performance is influenced by the speed of tuna cargo handling in the export warehouse of JAS, changes in the quality of tuna during the handling process, and changes in operating costs. In this research, the performance measurement of tuna cargo handling will be measured using a discrete simulation models and Analytical Network Process: Benefit, Opportunity, Cost, and Risk (ANP BOCR) for decision-making models.

The preparation of discrete simulation model is done using ARENA application program. Models is prepared using the principle of flow / process oriented, where the assessment carried out on each work station involved in tuna cargo handling system. Input data for simulation models includes the number of tuna shipper, the number of cargo carried by each shipper, the arrival time of each shipper, cargo handling processes, resources involved, processing time, and waiting time. Before the simulation model was applied, first testing has been done to examine the model's ability to solve problems through the verification and validation. The model is verified by checking the data input to the model, run the model and check if an error occurs. Validation is done using the test methods Welch Confidence Interval test methods between cargoes which are delivered on time with its historical data. Based on simulation results, there is no significant difference between the existing conditions with the simulation results.

The discrete model simulations result of the existing cargo handling tuna for gives the punctuality of time delivery which is indicated by 88% on-time delivery, with an average level quality of 83.605 %, 18 % of cargo is not delivered on time,



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with an average level quality of 22.934 %. The existence of the delay level by 18% is caused by a queue of cargo at every working station and the arrival time between the cargoes. The queues caused by the mixed up of the perishable and general cargo handling in one door. The high degree of delay in cargo delivery tuna increase the risk of physical damage, financial risk, and the worst is the risk of losing the customer's trust.

The ANP BOCR result indicates that the simulation of discrete systems model for performance improvement of cargo handling tuna at Soekarno Hatta International Airport will reach the optimum point when JAS decides to open a special line of perishable cargo handling as the main policies (ranked 1 total value 0.2433); The second policy is the application of technology TVs, ETVs, and RFID (ranked 2nd in total value 0.2072); The third policy is to increase the number of X-ray machines and forklifts (ranked 3rd in total value 0.2023); The fourth policy is setting the arrival schedule of the cargo (ranked 4th in total value 0.2001); The fifth policy is using of the wide body aircraft type (ranked 5th in total value 0.0778); and the final ranking is to build a special warehouse for perishable cargo (ranked 6th in total value 0.0692). This result is rational considering the advantage factors level (benefit and opportunity) is given by opening a special line of perishable cargo handling higher than its disadvantage level (cost and risk).

Discrete model simulation results on the performance improvement scenario of tuna cargo handling by opening a special track for perishable cargo handling provides a punctuality which is indicated by the 100 % on time delivery, with an average level of 86.013 % quality. By speeding up the processing time (an average of 81.519 minutes), will reduce the delay of cargo delivery up to 100%, so the quality of the tuna is still in good condition with high levels of histamine 6.7 ppm. In addition, opening a special line of perishable cargo handling can reduce operational costs because of on time cargo deliveries and there is no cargo will experience a repeated demolition. The managerial implications that can be done by JAS to improve tuna cargo handling performance is to open a special line of perishable cargo handling commodities, especially tuna.

Keywords : ANP BOCR, Arena, cargo terminal of Soekarno Hatta International Airport, discrete simulation, tuna fish cargo.

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