INTISARI

Peningkatan produktivitas merupakan keinginan setiap industri manufaktur, termasuk industri mebel di Indonesia. Terjadinya penurunan produktivitas industri mebel Indonesia di tahun 2012 dibanding 2002 dari negara kompetitor, yaitu Vietnam, hingga 148% (*Centre for European Policy Studies*, 2014). Hal tersebut mendorong CV Mulya Abadi untuk meningkatkan produktivitas. CV Mulya Abadi merupakan perusahaan manufaktur furnitur berbahan dasar kayu yang berlokasi di Kab. Sukoharjo.

Penelitian ini diawali dengan *initial assessment* secara *random sampling* di setiap *workstation* proses produksi. Hasil pengamaatan menunjukkan terdapat *workstation* dengan *non-added value time* (*waste*) hingga 90%, sehingga pendekatan yang tepat dalam upaya peningkatan produktivitas adalah pendekatan *lean manufacturing*. Model simulasi: *discrete event simulation* (DES) dibangun untuk menguji dampak setiap skenario solusi perbaikan sebelum diimplementasikan di sistem riil. Model DES dipilih dikarenakan sistem riil bersifat diskrit dan tidak dibutuhkan pemodelan tiap entitas secara individual/ khusus. Model simulasi yang dibentuk kemudian diverifikasi dan divalidasi. Pendekatan *lean manufacturing* digunakan untuk merumuskan skenario solusi yang mampu meminimalisasi *waste* (*waiting*, *transporting,* dan *inventory*) berdasarkan *general report* hasil *running* model simulasi. Setiap skenario solusi yang dirumuskan diuji kelayakan ekonomi untuk dipilih skenario solusi yang optimal.

Hasil yang didapatkan dari penelitian adalah dipilihnya skenario solusi kombinasi antara solusi bersifat prosedur berupa pengubahan serta penambahan aktivitas kerja pekerja dan solusi bersifat investasi berupa penggunaan alat *material handling* untuk transfer material antar *workstation*. Pelaksanaan skenario solusi tersebut mampu menurunkan *waste*: *transporting* hingga 44%, *waste*: *waiting* hingga 52%, dan *waste*: *inventory* hingga 62%. Pelaksanaan skenario solusi tersebut mampu meningkatkan produktivitas sistem hingga 27%. Untuk mengimbangi peningkatan produktivitas tersebut diperlukan penambahan *demand* yang bisa dilaksanakan dengan mengajukan penawaran penambahan kuantitas pesanan dan penawaran produksi produk jenis baru ke *client*.

Kata Kunci: *lean manufacturing*, industri mebel, *discrete event simulation*, skenario solusi, produktivitas

ABSTRACT

The Improvement in productivity is a dream for every manufacturing industry, including furniture industry. The decreasing of productivity in Indonesia's furniture manufacturing industry in 2012 from 2002 compared to competitor country, Vietnam, upto 148% (Centre for European Policy Studies, 2014). It stimulates CV Mulya Abadi to increase its productivity. CV Mulya Abadi is a wood-based furniture manufacturer located in Kab. Sukoharjo.

The research is begun with initial assessment by random sampling in every workstation of production system. The results show if there were some workstation with non-added value (waste) upto 90%, thus the appropriate approach used to increase the productivity is using lean manufacturing. Simulation model: discrete event simulation (DES) is built in order to assesst the impact of every scenario of improvement solutions before it's implemented in the real system. DES model is choosed because the real system is a discrete system and there was no need to model every entity individually/ specifically. The built simulation model is verified and validated. The lean manufacturing approach is used to build the solution scenario which can minimize the waste (waiting, transporting, and inventory) based on general report resulted from running the model. Economic feasibility analysis is conducted for every solution scenarios to be built, so the optimal solution scenario is obtained.

The optimal solution scenario obtained is a scenario which combines the procedural solution, changing and increasing the working activity for the worker, and investment solution, using material handling tools to transport between workstation. The results obtained from running the improvement model are, the decreasing of transporting waste upto 44%, the decreasing of waiting waste upto 52%, and the decreasing of inventory waste upto 62%. The implementation of the solution can increase the productivity upto 27%. The demand addition is suggested in order to balance the improving productivity. The demand addition can be conducted by offering improvement in product quantity ordered and offering new product to be produced to the client.

Keywords: lean manufacturing, furniture industry, discrete event simulation, solution scenarios, productivity