

ABSTRACT

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Program Study : *Master of Civil Engineering*
Title : *"Analysis of the Implementation of the Green Building Concept in the Main Building of the Flour Mill Plant Based on Value Engineering and Life Cycle Cost Analysis to Improve Cost Performance"*
Councillor : Dr. Ir. Albert Eddy Husin, M.T. a

The Main Building of the Flour Mill Plant is the main part of the wheat flourmill consisting of Wheat Bins, Process Area, Finish Bins, Laboratory and Buck Loading Area. In Indonesia, there is only one Flour Mill Plant that applies the Green concept. So that the construction of factory buildings that apply the Green concept is urgently needed, this is in accordance with the mission of the Sustainable Development Goals 2030, that by 2030 the new development will have a concept of 100% and an existing building of 60%. To reduce the environmental burden on an industry, it is necessary to build and develop a factory building with a green concept. Based on research, the lowest green building will experience cost increases ranging from 4.5 %to 7% of conventional designs. The result of this study is that there are "10 factors that affect the cost performance of the Green Building Flour Mill Plant project", namely Project Manager Performance, Energy Efficiency, Technical Specifications, Provision of Parking Lots, Management Commitment, Water Sources, Analysis Functions, Waste Handling Systems, Selection of Alternative Materials and Energy Costs. The VE method results in cost savings of 13.30% of Green costs, LCCA shows a Payback Period with time = 3.11 Years \approx 3 Years 11 Months for the application of the Green concept to the Main Flour Mill Plant building.

Keywords: *Green Building, Main Building Flour Mill Plant, SEM-PLS, Value Engineering, Lifecycle Cost Analysis.*

ABSTRAK

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Program Studi : Magister Teknik Sipil
Judul : “Analisis Implementasi Konsep *Green Building* pada Bangunan Utama *Flour Mill Plant* Berbasis *Value Engineering* dan *Life Cycle Cost Analysis* Untuk Meningkatkan Kinerja Biaya “.
Dosen Pembimbing : Dr. Ir. Albert Eddy Husin, M.T.

Bangunan Utama *Flour Mill Plant* merupakan bagian utama dari pabrik tepung terigu yang terdiri dari *Wheat Bins, Process Area, Finish Bins, Laboratory dan Buck Loading Area*. Pembangunan bangunan pabrik yang menerapkan konsep *Green* sangat dibutuhkan, hal ini sesuai misi dari *Sustainable Development Goals 2030*, bahwa pada tahun 2030 bangunan baru berkonsep sebesar 100% dan bangunan ekisting sebesar 60%. Untuk mengurangi beban lingkungan pada suatu industri maka perlu dibangun dan dikembangkan bangunan pabrik yang berkonsep *Green*. Dengan metode *Value Engineering* dan *Life Cycle Cost Analysis*, penerapan konsep *Green* pada Bangunan Utama *Flour Mill Plant* digunakan analisis dengan menggunakan *Structural Equation Modelling – Part Least Square (SEM-PLS)*. Berdasarkan penelitian paling rendah bangunan *green* akan mengalami penambahan biaya berkisar 4,5 % sd 7% dari dari *design* konvensional. Hasil dari penelitian ini didapatkan 10 faktor-faktor yang berpengaruh kepada kinerja biaya pada proyek *Green Building Flour Mill Plant*” yaitu *Project Manager Performance, Efisiensi Energi, Spesifikasi Teknis, Penyediaan Lahan Parkir, Komitmen Manajemen, Sumber Air, Fungsi Analisis, Sistem Penanganan Sampah, Pemilihan Material Alternatif dan Biaya Energi*. Metode VE menghasilkan penghematan biaya sebesar 13,30% dari biaya *Green*, LCCA menunjukkan pembayaran kembali (*Payback Period*) dengan waktu = 3,11 Tahun \approx 3 Tahun 11 Bulan untuk penerapan konsep *Green* pada bangunan *Utama Flour Mill Plant*.

Kata Kunci: *Green Building, Bangunan Utama Flour Mill Plant, SEM-PLS, Value Engineering, Lifecycle Cost Analysis.*