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Factors for implementing green supply chain management in the construction industry

Wibowo, Mochamad Agung[a] ; Handayani, Naniek Utami[b] ; Mustikasari, Anita[b]

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Abstract

Purpose: The objectives of this study are to elaborate on the concepts, dimensions and elements of green supply chain management (GSCM) and develop a framework of GSCM implementation for the construction industry Design/methodology/approach: This paper presents the findings from a study where experts were asked to contribute their opinions related to GSCM in the construction industry. To develop the model, the Delphi method was used. The objective of this method is to achieve the most reliable consensus in a group of experts Findings: The research result is a developed framework for GSCM in the construction industry comprising five concepts, 22 dimensions, and 82 elements. Research limitations/implications: The limitation of this research is that its output was the discovered elements, but it did not cover the implementation of this model in construction projects, so some elements may be missing. Practical implications: The output of the research could give new perspective to manage the construction project based on Green Supply Chain Method. Social implications: The stakeholder of the construction project has to learn with this concept (Green Supply Chain) in order to improve construction's project performance. Originality/value: The originality of this

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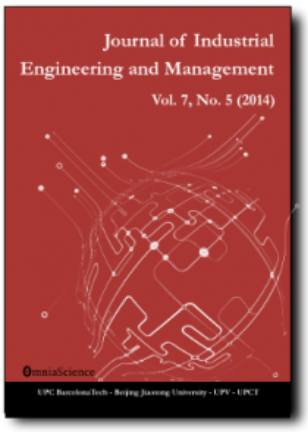

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Journal of Industrial Engineering and Management

Factors for implementing green supply chain management in the construction industry

Mochamad Agung Wibowo, Naniek Utami Handayani, Anita Mustikasari

Abstract

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Findings: The research result is a developed framework for GSCM in the construction industry comprising five concepts, 22 dimensions, and 82 elements.

Research limitations/implications: The limitation of this research is that its output was the discovered elements, but it did not cover the implementation of this model in construction projects, so some elements may be missing.

Practical implications: The output of the research could give new perspective to manage the construction project based on Green Supply Chain Method.

Social implications: The stakeholder of the construction project has to learn with this concept (Green Supply Chain) in order to improve construction's project performance.

Originality/value: The originality of this research is that it is a new theme in the area of the construction supply chain. Previous research merely considered the concept of GSCM in construction. Therefore, this research develops an assessment model for performance indicators of GSCM implementation in construction projects.

Keywords

green supply chain management, construction industry, construction waste, project life cycle

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Tools to Measure the Technological Capabilities of the Aerospace Industry

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Abstract:

Purpose: The following article describes steps along with a mathematical model to determine the technological capability of the aerospace industry of Mexicali in the area of design (ICTD) and manufacturing (ICTM)

Design/methodology/approach: This model was performed by weighted variables using factor analysis to identify technological capacities of Small and medium-sized enterprises (SMEs) and compare them with those that must be accomplish to become suppliers for transnational industry (TNCs).

Findings: The results suggest that SMEs must realize a comparative table QFD of their current capabilities and the requirements established by transnational corporations, to create a strategic plan that includes; certifications (AS 9000, NAP CAP, Belts, ISO, Six Sigma), software acquisition and updated equipment necessary for reducing the technological gap. Additionally, it is recommended the integration of clusters of enterprises SMEs for the strengthening of technological capacities.

Originality/value: Up to we know, there is not similar model for measuring technological capabilities of aerospace industry.

Keywords: SMEs, technological capabilities index, technology transfer, diagnostics, supplier development

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1. Introduction

Latin America based its industrialization mainly in the acquisition of productive capacity by negotiating technology with foreign companies, (Unasur, 2014). There is evidence that some companies experienced technological learning processes with which they acquire technological capabilities (Dagnino, 2012; Hansen & Ockwell, 2014; Khayyat & Lee, 2015). However, this was not enough for technological independence since opening up to globalized world had a significant decrease in the growth of manufacturing activities and consequently resulted in a marked decrease in creation of national manufacturing companies in various sectors.

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Material Management without Forecasting: From MRP to Demand Driven MRP

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Received: May 2018
Accepted: July 2018

Abstract:

Purpose: Efficient Operations and Supply Chain Management is key to building sustainable competitive edge for companies. However, the achievement of this goal is becoming challenging in the present dynamic production environment, as traditional Manufacturing Planning and Control systems were not developed to work in this context. The Demand-Driven Material Requirement Planning (DDMRP) methodology was developed with the aim of addressing this need and deal efficiently with material management. The present work therefore, analyzes the implemented changes and the subsequent qualitative and quantitative results of a company after converting from MRP to DDMRP.

Design/methodology/approach: To achieve an in depth understanding of the case study a qualitative approach was taken. Data was collected from semi-structured interviews, documents and archival records enabling triangulation. The results from before and after the implementation of DDMRP were compared, and the evolution of the performance of the company was evaluated.

Findings: The results clearly show that using DDMRP the company increased visibility in the supply chain. In addition, the inventory level was reduced by 52.53% while material consumption was increased by 8.7%. These results were achieved while maintaining the high service level.

Originality/value: DDMRP is a relatively new methodology and for this reason there is little published data in this field. In addition the few studies found in the literature analyze the performance of DDMRP in simulated environments. The present work aims to go one step further and analyzes the implementation of DDMRP in a real company.

Keywords: DDMRP, inventory level, visibility, MRP, forecast, uncertainty

To cite this article:

Kortabarria, A., Apaolaza, U., Lizarralde, A., & Amorrortu, I. (2018). Material management without forecasting: From MRP to demand driven MRP. *Journal of Industrial Engineering and Management*, 11(4), 632-650. https://doi.org/10.3926/jiem.2654

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A Condition-Based Opportunistic Maintenance Policy Integrated with Energy Efficiency for Two-Component Parallel Systems

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Received: May 2018
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Abstract:

Purpose: This paper deals with the problem of traditional maintenance model ignoring energy consumption in two-component parallel systems. Thus, the aim of the article is to propose a new maintenance model with ecological consciousness for two-component parallel systems, which can improve the energy utilization and achieve sustainable development. The objective is to obtain the optimal maintenance policy by minimizing total cost.

Design/methodology/approach: This paper integrates energy efficiency into condition-based maintenance (CBM) decision-making for two-component parallel systems. Based on energy efficiency, the paper considers the economic dependence between the two components to take opportunistic maintenance. Specifically, the objective function consists of traditional maintenance cost and energy cost incurred by energy consumption of components. In order to assess the performance of the proposed new maintenance policy, the paper uses Monte-Carlo method to evaluate the total cost and find the optimal maintenance policy.

Findings: Simulation results indicate that the new maintenance policy is superior to the classical condition-based opportunistic maintenance policy in terms of total costs.

Originality/value: For two-component parallel systems, previous researches usually simply establish a condition-based opportunistic maintenance model based on real deterioration data, but ignore energy consumption, energy efficiency (EE) and their contributions of sustainable development. This paper creatively takes energy efficiency into condition-based maintenance (CBM) decision-making process, and proposes a new condition-based opportunistic maintenance policy by using energy efficiency indicator (EEI).

Keywords: energy efficiency, condition-based opportunistic maintenance, two-component parallel systems

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