



7th International Conference on Engineering, Project, and Production Management

Examination of Factors Influencing the Successful Implementation of Reverse Logistics in the Construction Industry: Pilot Study

Thanwadee Chinda*

*School of Management Technology, Sirindhorn International Institute of Technology, Thammasat University,
Bangkadi, Muang, Pathumthani, 12000 Thailand*

Abstract

Most of construction and demolition (C&D) waste, such as concrete, metal, plastic, and paper, can be reused, remanufactured, and recycled. This paper aims at examining key factors influencing the successful implementation of reverse logistics in the construction industry. A total of 17 associated factors are listed from construction-related literature. A pilot study was conducted with six construction companies located in Germany and Thailand. The results reveal three key factors, including the “compliance to law and regulation”, the “open-minded to the use of recycled materials”, and the “management experience in reverse logistics implementation”, with the highest scores of 4.8 out of five. The “infrastructure to support the reverse logistics implementation” and the “inclusion of reverse logistics in design stage” are, however, found to have the least influence in reverse logistics implementation. Further study will be conducted with the exploratory factor analysis to group the 17 factors into key factors affecting successful reverse logistics implementation.

© 2016 Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the organizing committee of EPPM2016

Keywords: construction and demolition waste; construction industry; reverse logistics

1. Introduction

Construction and demolition (C&D) waste is waste resulting from the construction and demolition of buildings and infrastructure. With a rapid growth of large and mid-sized cities and the lack of proper waste management, the amount of C&D waste, and its illegal disposal increase [1]. Most of C&D materials are found highly recyclable, such as metal,

* Corresponding author.

E-mail address: thanwadee@siit.tu.ac.th

plastic, and glass; they are, however, dumped into landfills, causing a number of environmental problems [2]. Embracing reverse logistics implementation would help reduce these environmental effects [3].

According to Chinda et al. [4], there are four major types of reverse logistics methods, including direct reuse, remanufacturing, recycle, and 4) landfill. Direct reuse is defined as products or components that are traded as they are (without being modified), and can be used a second or multiple times. Reprocessing the component or material in order to produce the same component or material in the same quality the input product had when it was first used is called recycle. Remanufacturing is, on the other hand, an industrial process, in which worn-out products are restored to like-new condition through a series of industrial processes [5]. Remanufacturing is, however, not much implemented in the construction industry.

Different drivers motivate companies to implement reverse logistics into their operational business. According to Chileshe et al. [2], these drivers are divided into three main categories, including 1) legislative driver, 2) profit-oriented driver, and 3) corporate citizenship driver. In case of the legislative driver, there are a number of regulations relating to C&D waste management, for example, the European Council Directive 91/156/EEC and the Council Directive 91/689 EEC regulations implemented in Europe countries, and the Kreislaufwirtschafts-und Abfallgesetz (KrW-/AbfG) regulation that focus on the handling of C&D wastes in Germany. Furthermore, the members of the European Parliament have voted in favor of a new directive, obligating each member country to make sure that 70% of the C&D waste arising will be re-used or recycled by 2020 [6]. The profit-oriented driver can be separated into direct and indirect profit-oriented drivers. Direct driver concerns if returned products are suitable as a substitute for other input materials, which in turn might reduce costs. Indirect driver, on the other hand, focuses on possible benefits for the public perception (or the green image) of the enterprise, and possible improvements in supplier- and customer-relations [3]. In terms of corporate citizenship driver, it remains quite abstract. The construction companies, just like companies in other industries, aim to retain their “license to operate”, which is issued by the people/institutions in its direct environment. This “license to operate”, in other word, forces the company to act sustainably [3].

Other researches, however, define different key drivers in reverse logistic implementation in the construction industry. Brauchle et al. [5], for example, defined four key factors, namely 1) constraints, 2) investment, 3) costs, and 4) management factors that affect reverse logistics decision in the German construction industry. Hosseini et al. [7] concluded three advantages and two barriers of reverse logistics implementation. Three advantages include economic, social, and environmental advantages, while two barriers are industry-specific and organizational barriers. Sobotka and Czaja [8] mentioned that economic, environment, social, and site condition stimulate the implementation of reverse logistics in the construction industry.

In Thailand, the topic of reverse logistics has been of interest over the past few years. Most of them, however, focus on the implementation of reverse logistics in the manufacturing companies. Banomyong et al. [9], for example, applied the leagile concept in the reverse logistics process of an electronic appliance manufacturer. They found that the lead-time for product repairs and return, as well as costs involved with reverse logistics have been drastically reduced, while customer satisfaction increased significantly. Tepprasit and Yuvanont [10] examine the direct and indirect effects of logistics management on the effectiveness of reverse logistics in Thailand’s electronics industry based on five key aspects: 1) product design and choice of materials, 2) transportation and movement, 3) manufacturing, 4) packaging, and 5) communication. Pumpinyo and Nitivattananon [11] investigated the current practices in the reverse logistics system at the separation centers. They defined three aspects of reverse logistics practice in waste management, including environmental, economic, and social aspects, and also five barriers affecting sustainable performance, namely finance, market competition, management/technology, labor and regulation/government policy.

Very few researches have been conducted in the area of reverse logistics implementation in the construction industry. Moreover, proper waste management, through the use of different reverse logistics methods, is needed to enhance the green image and save costs of the construction industry. This papers, therefore, aims at examining key factors influencing successful reverse logistics implementation in the construction industry. Pilot study has been conducted with five construction companies. It is expected that the results bring a better understanding of key factors necessary for a successful reverse logistic implementation.

Download English Version:

<https://daneshyari.com/en/article/5027587>

Download Persian Version:

<https://daneshyari.com/article/5027587>

[Daneshyari.com](https://daneshyari.com)