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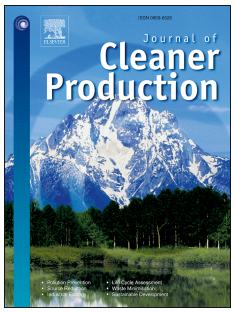

A green model for the catering industry under demand uncertainty

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PII: S0959-6526(17)31817-6

DOI: 10.1016/j.jclepro.2017.08.100

Reference: JCLP 10358

To appear in: *Journal of Cleaner Production*

Received Date: 7 June 2016

Revised Date: 17 May 2017

Accepted Date: 13 August 2017

Please cite this article as: Sel Çğı, Soysal M, Çimen M, A green model for the catering industry under demand uncertainty, *Journal of Cleaner Production* (2017), doi: 10.1016/j.jclepro.2017.08.100.

A green model for the catering industry under demand uncertainty

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Abstract

In this study, we design a catering supply chain involving production and service management. The production management involves food production lot-sizing and delivery scheduling decisions, while the service management is associated with balancing the food service lines. If production is in excess of demand, the food waste occurs along the catering chain. If the quantity produced is less than demand, this leads to a shortage. To address this problem, we develop a stochastic programming model accounting for the key performance indicators of total waste, total shortage and total cost of production and distribution. The selected indicators enable to assess the sustainability performance of the catering supply chain. The numerical study reflects real settings from catering operations of a university cafeteria in Turkey. For a sustainable development of catering supply chains, the analyses reveal the potential benefits of outsourcing (e.g., decreasing total costs by 36% and waste costs by 23%), employing qualified staff and increasing capacity through process improvement.

Keywords: Supply chain management, Assembly-serve systems, Catering food production, Perishability, Food waste, Stochastic programming model

1. Introduction

Supply chain is "*the network of organizations that are involved in the different processes and activities that produce value in the form of* ***products*** *and* ***services*** *in the hands of the ultimate consumer*"(Christopher, 2005).

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