Supply chain dynamic configuration as a result of new product development

Mahdi Jafarian, Mahdi Bashiri
Department of Industrial Engineering, Shahed University, Tehran, Iran

Abstract

This study considers supply chain network configuration in an innovative environment. New product development (NPD) will affect the supply chain configuration (SCC). The time of new product introduction has a significant effect on the market performance while it has an indirect effect on the supply chain configuration. Supplier integration into the new product introduction is the key concept. New product introduction, which may contribute to supply chain reconfiguration, considering the new product development concept, we may face with dynamic during a planning horizon. In this study, a new model is presented to show the applicability of the proposed model. The results show that the new model considers production, sales, and transportation planning for order to achieve an integrative and efficient supply system. Then in some cases to show the applicability of the proposed model. The results show that the configuration of supply chain has a significant effect on the configuration of supply chain.

Keywords

New product development; Dynamic supply chain configuration; Production planning; Supplier integration; New product launch time
Figures and tables from this article:

Fig. 1. Old product hypothetical BOM.

Fig. 2. New product hypothetical BOM.

Fig. 3. Integration time of supply chain elements in current product for the simulated example.
Fig. 4. Integration time of supply chain elements in the new product for the simulated example.

Table 1. Summary of hypothetical electronic device supply chain parameters for considered example.

Table 2. Reconfiguration for the proposed example.

Table 3. Analysis of reconfiguration on the total supply chain cost in the electronic device supply chain.

Table 4. Reconfiguration impact on objective function.

Table 5. Sensitivity analysis of reconfiguration cost in the electronic device supply chain example.
Table 6. Products life cycle overlap sensitivity analysis for the electronic device supply chain example

Table 7. Sensitivity analysis of new product life cycle shape for the electronic device supply chain example

Corresponding author. Tel.: +98 9123150355.

Copyright © 2013 Elsevier Inc. All rights reserved.

Note to users: Corrected proofs are Articles in Press that contain the authors’ corrections. Final citation details, e.g., volume/issue number, publication year and page numbers, still need to be added and the text might change before the final article is assigned to an issue of the journal, the Article in Press version will be replaced in the associated published issue of the journal. The date the article was first made available.