

EWGT2013 – 16th Meeting of the EURO Working Group on Transportation

The flexibility and specialization of resources - competitive strategies of materials decoupling points of a network supply chain of metallurgic products

Marzena Kramarz^a, Włodzimierz Kramarz^{b,*}

^a *The Silesian University of Technology,
The Faculty of Organization and Management,
41-800 Zabrze, ul. Roosevelta 26-28,*

^b *The Silesian University of Technology,
The Faculty of Organization and Management,
41-800 Zabrze, ul. Roosevelta 26-28*

Abstract

The configuration of the supply chain which realizes the postponed production strategy, requires consideration of the issue of formation of network relations in order to increase the supply potential. The increase in the number of network relations shaped by materials decoupling point of the supply chain can be a consequence of an endeavour to reduce the logistic costs, improvement in the level of the customer service or an increase in innovativeness. In the model presented in the article the authors considered the issue of reducing logistic costs with the established high level of the customer service, taking into account the problem of the flexibility of resources.

© 2013 The Authors. Published by Elsevier Ltd.
Selection and/or peer-review under responsibility of Scientific Committee

Keywords: materials decoupling points; network supply chain; flexibility resources; differentiation strategy.

1. Introduction

The cooperation of enterprises in network supply chains is an opportunity for creating innovative products and services. The structures of network supply chains tend to be various (Saniuk et al 2013). The factors which have the most essential influence on the configuration of the network supply chain is the degree of product

* Corresponding author. Tel.: +0-000-000-0000 ; fax: +0-000-000-0000 .
E-mail address: makram5@wp.pl, wkramarz@op.pl.

differentiation, the product logistic features and market conditions, including demand fluctuations. These factors decide, among other things, about the location of the material decoupling point which is responsible for providing the continuity of flows in supply chains through proper inventory control and more generally material flows control. Organizations fulfilling the assumptions of material decoupling points, combining the supply aspect of the chain with the demand aspect, realizes different competitive strategies. One of the strategy which is strongly forced by the recipients' market and consequently affects the flows organization in the entire chain, is the product differentiation strategy to the recipient's needs. The organization which is the material decoupling point in this type of supply chains frequently takes over additional tasks connected with postponed production. For the realization of the adopted strategic objectives it uses its own resources or resources gained from its partners in the network. In the paper resources were characterized according to the attributes of flexibility and dedicatedness (specialization). As noticed by Zhang Q. et al. (2002), Baker P. (2006), the attribute of flexibility of resources becomes critical for guaranteeing the realization of the recipients' variable needs. Depending on the type of the supply chain and the type of the product, production capacities connected with flexible responsiveness to changes in demand can be located on the level of logistic centers, industrial companies or in other nodes of the supply chain.

The research presented in the paper refers to models proposed by van Mieghem J.A. and Rudi N. (2002) Jordan W.C., Graves S.C. (1995) and Graves S.C., Tomlin B. (2003) Goyal M., Netessine S. (2004). Being aware of the complexity of the issue of investment into flexible or dedicated resources one consciously limited the problem to logistic costs connected with realization of an order and with cooperation, taking into account in the model: costs of flexible and dedicated resources, transport costs connected with cooperation and product delivery, lost sale costs, costs of unused production capacities, costs of storing semi-finished goods and final goods. One strived for cost minimization with the level of logistic and customer services which was admissible and accepted by customers. The complexity and the punctuality of order realization one indicated as crucial elements of logistic and customer service in the investigated supply chain. At the same time, the authors took into account limitations connected with the production abilities of flexible and dedicated resources.

The article has the following structure. The second chapter introduces the basis of the research problem referring to the literature discussions regarding the structure of the supply chain resulting from different approaches to the realization of the postponed production strategy. In the further part, the literature research focuses on the problem of the flexibility of resources. Chapter 3 involves empirical research carried out based on the supply chain of the motor industry. In this chapter the authors shows the assumptions, introduce the research methodology and inference based on the carried out simulation experiments. Referring to the literature research concerning the postponed production strategy, the flexibility of resources and the configuration of the supply chain, the research was carried out in two stages: developing an analytical model for identification of the relationship between the variables describing nodes in the supply chain: including the degree of the flexibility of resources, the subcontracting of tasks of the postponed production, production capacities, logistic costs as well as the independent variable: demand fluctuations. The second stage was to develop a simulation model and carry out experiments. Simulation experiments were carried out in the technique of the management systems dynamics in the Vensim tool.

2. Literature review

2.1. The structure of the supply chain - the model of late differentiation of the product

The product differentiation in the supply chain, as a competitive strategy distinguishing an enterprise by the skill of adapting itself to customers' preference in respect of the selected features of the product (customizing) is one of the premises of changes in the structure of the supply chain. The product differentiation requires formation

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات