The production planning process for a network of firms in the textile-apparel industry

Alberto De Toni\textsuperscript{a,}\textsuperscript{*}, Antonella Meneghetti\textsuperscript{b}

\textsuperscript{a}DIEGM - Dipartimento di Ingegneria Elettrica, Gestionale e Meccanica, University of Udine, Via delle Scienze, 208, Udine, Italy
\textsuperscript{b}DiEM - Dipartimento di Energetica e Macchine, University of Udine, Via delle Scienze, 208, Udine, Italy

Abstract

The paper investigates how the decision variables of the production planning process for a network of firms in the textile-apparel industry, i.e. planning period length, material availability, the link between production orders and customer orders as regards colour mix, can affect the system’s time performance, whose measurement has involved the creation of two new indicators. To adhere to reality, we studied and collected actual data from one of the most important Italian companies, the Benetton Group SpA and using these observations as a basis, a simulation model was built. Only the production planning period compression has been recognised as yielding a significant improvement in the external time performance. A relation between the external time performance and the internal time performance of the network is recognised. The cash flows associated with different lengths of the production planning period are analysed. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Production planning; Network of firms; Time-based competition; Textile-apparel industry

1. Introduction

There is ample literature regarding investigations on time-based competition issues involving single enterprises. Based on the distinction between the external and the internal configuration of a firm, two types of time performances have been identified: the external, visible to clients, and the internal, measurable by the company but not manifest to customers [1]. The former can be related to the frequency at which new products are introduced into the market, thus measuring the innovativeness of supply, and to delivery time, which describes the ability to quickly satisfy clients’ needs. As they can positively modify the customers’ perception [2,3], they have to be regarded as the source of competitive advantages in a time-based philosophy.

The paths which can be followed by an enterprise to improve its external time performances have been reduced to two alternatives [4]: a traditional approach, based on applying over-resources (personnel, inventory, etc.) and increasing costs, and an innovative one, based on sped-up processes leading to a structurally faster company without additional costs. The latter approach deals with internal time performances as the means by which the external ones are improved; shorter time-to-market and lead times in the productive-logistics phases, in fact,