Production Management Techniques: Push-Pull Classification and Application Conditions

by
Alberto De Toni, Mauro Caputo and Andrea Vinelli
Business Organisation Institute, University of Padua, Italy

The new techniques of production management, developed and applied in important Japanese manufacturing firms in the seventies, have created a need for a completely new approach towards production management systems, which have been implemented over the years[1, 2, 3]. We refer particularly to the Japanese just-in-time philosophy[4, 5, 6] and its impact on Manufacturing Resource Planning systems (MRP II)[7, 8]. Starting with contributions to the literature our purpose is:

- to establish a scheme which classifies different management techniques, within the planning and control production sub-systems, according to the logic which is the basis of different techniques. The sub-systems which will be studied here are all part of the wider production management system;
- to point out the application conditions which influence the use of a technique within a management sub-system.

The aim of the scheme is to offer suggestions which will help to overcome the problems and confusion that arise when one compares different production management techniques. There are few universally accepted definitions of production management techniques. For example, in the literature, Material Requirements Planning is considered with both *push*[9] and *pull*[10] logic. Indeed, at seminars or conferences on these subjects, it is not unusual to hear questions such as:

- "What are the differences among Zero Inventories, Just-in-Time and Kanban?"
- "Are Just-in-Time and Manufacturing Resource Planning compatible?"
- "Why has Manufacturing Resource Planning been implemented when top management wants Just-in-Time?"
- "If a pull system is used, what is going to happen to Material Requirements Planning?"
- "Can Just-in-Time be applied to repetitive manufacturing?"
- "Are Just-in-Time and pull the same?"[10].