

Production planning in Japan: Rediscovering lost experiences or new insights?

Job de Haan^{a,*}, Masaru Yamamoto^b, Gerben Lovink^a

^aTilburg University, P.O. Box. 90153, 5000 LE, Tilburg, The Netherlands

^bOita University, Oita, Japan

Abstract

In previous research, De Haan and Yamamoto (International Journal of Production Economics 59 (1999) 65–75) found that Japanese production planning had specific characteristics such as being detailed and centralized. Nevertheless, Japanese firms succeed in meeting flexibility norms such as a high degree of customization as well as short delivery terms. In Western literature, Japan is associated with pull production whereas short delivery terms are associated with push production (planned, detailed and centralized) and customization is seen as a strength of pull production (planned, decentralized, within a broad overall framework). Therefore, this result was quite puzzling. In this paper, we study the Western literature on production systems and production planning strategies in more detail. The concept of “customer order decoupling point” appears to be of help in understanding the relationship between production systems, planning strategies and level of customization. Two patterns could be identified: (1) push production to stock and levelling (2) versus pull production to order and chasing. The Japanese practices do not fit into these patterns, as the case studies showed push production to stock but on the basis of a chase strategy. Specific characteristics of the Japanese production system, such as step-by-step planning, ringi/nemawashi decision-making and “kaizen”, nevertheless, made this pattern effective. © 2001 Elsevier Science B.V. All rights reserved.

Keywords: Production planning; Customer decoupling point; Japan

1. Introduction

Production planning is becoming more and more important because of the dynamism, the complexity and the globalization of the economy. Production planning is a tool which enables firms to react as flexibly as is required by the market. “Just-in-time” is a way to deal with the planning

problems, but it is a very demanding one. Even in Japan, the theoretical demands have not (yet) been met (completely) in practice (De Haan and Yamamoto [1]). However, Japanese practices are strongly directed at meeting these requirements and display a number of characteristics that are puzzling for a Western researcher. The flexible pull production is controlled with the help of a centralized and detailed production planning system. The production capacity is levelled to balance the capacity with the fluctuating demand, despite the levelled work load for each work station during the planning period. Schroeder [2] refers to this

*Corresponding author. Tel.: +31-134662422/2315; fax: +31-134662875.

E-mail address: j.a.c.dehaan@kub.nl (J.d. Haan).

strategy as one of the alternatives that can be chosen, while Heizer and Render [3] refer to this strategy as being typical of Japan, together with the Kanban system. Adam and Ebert [4] also indicate that pull production is characteristic of the Japanese production system. Bonney et al. [5] are much more in line with Schroeder as they question the difference between push and pull production. They conclude that, if lean production methods are used, push should do at least as well as pull.

This brings us to the central research question of this paper: Are the Japanese production planning practices in line with what the (western) literature advises? This question is divided into three sub-questions:

- does Western literature reveal a consistent pattern of production planning?
- is there such thing as a “Japanese” production planning system?
- to what extent are these patterns in line?

The remainder of the paper is structured as follows:

Section 2 is devoted to theoretical observations on production systems and production planning; Section 3 is devoted to the Japanese production planning practices in four firms, based on case study research. For this exploratory research we choose firms that were as diverse as possible with respect to technology (process, mass and small batch production), market (industrial, and consumer-markets with different buying patterns) and, size. Because of this richness we consider these firms as adequately representative for our purpose: discover (dis)similarities between Western literature and Japanese practices.

From documents, interviews and factory visits we get a picture of the patterns in these firms.

Section 4 confronts the findings from the two previous sections to answer the research questions and to find implications for management practices as well as for theory: new and improved questions can be asked.

2. Production planning: Some theoretical observations

When managing production, it is important to identify its character. In literature, a number of

dichotomies are mentioned such as: pull versus push, to-stock versus to-order, customer versus anonymous market.

Basically, production planning aims at balancing production capacity and demand. This balance can be reached using different “strategies”. One pure form uses capacity as a tool while the other uses demand as the tool, each keeping the other a constant factor.

To meet each of these “ends”, several “means” can be used as is shown by Schroeder [2], who refers to these forms as “chase demand” (where the workforce level is changed to meet (or chase) demand) and “level the workforce” (where any variations in demand must be absorbed by using inventories, working hours, external cooperation, or any demand-influencing options). Other authors use slightly different strategies.

In the literature, these and related terms are mentioned over and over again. We will summarize the way this is done to determine to what extent the terms are described in a consistent way and as dichotomies and whether or not they are combined to form distinct models. For this reason, we have selected a dozen recently published textbooks in the field from well-known publishers, written by acknowledged experts. We summarize these textbooks with respect to (a) basic production planning strategies (chase versus level), (b) production systems (push versus pull) and (c) whether production is aimed at one customer.

2.1. Basic production planning strategies: Chase versus level

Both the chase and the level strategy are mentioned abundantly in literature, although not always in the same sense (different definitions), nor as a dichotomy.

Chase strategy is mentioned by almost all authors. Their definitions have in common that the level of production changes every period to respond to a certain number of issues. Three groups of authors can be distinguished.

Firstly, the majority refer to actual sales. Others are more vague and/or ambiguous since they just mention “sales level” [6], or simply “requirements” [7]. However, these “norms” can be interpreted as

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