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The complex relationship between inventory control and organisational setting: Theory and practice

Jan de Vries*

*Department of Operations Management, Faculty of Management and Organisation, University of Groningen,
P.O. Box 800, 9700 AV Groningen, The Netherlands*

Abstract

Within companies it is widely recognised nowadays that the performance of inventory systems is not only determined by the way the inventory system is planned and controlled but also by its organisational architecture. Notwithstanding its importance, the field of production and operations management still lacks however, a comprehensive body of knowledge integrating both control and organisational aspects of inventory systems. One of the reasons for this shortcoming seems to be a lack of understanding of how inventory planning interacts with its organisational embedding in practice. In this article, this interdependence is further explored. Firstly, a conceptual framework is presented. The framework has been the starting point for five case studies performed during the last years. In this article data gathered over a period of more than fifteen years concerning one company is further explored. One of the main conclusions derived from this longitudinal case study is that organisations often try to neutralise shortcomings in the inventory planning and control system by applying organisational measures. In addition to this positive congruence, negative forms of congruence were also found. Shortcomings in the inventory control system are then negatively re-enforced by its organisational setting. The findings of the case study also suggest that companies often do not apply a clear and well-defined policy regarding the organisational setting of advanced inventory planning and control systems. We end this article by arguing that objectified notions on (re)designing inventory planning and control and its organisational design often under-emphasise irrational behaviour of the parties involved. A further elaboration of the framework presented in this article integrating operations management concepts and organisational theory therefore seems to be worthwhile.

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1. Introduction

Traditionally, the fields of Operations Management and Operations Research draw heavily on the quantitative modelling of inventory decisions. During the last ten years however, the attention

*Tel: +31-50-363-7020; fax: +31-50-363-2032.

E-mail address: j.de.vries@bdk.rug.nl (J. de Vries).

has gradually shifted towards more qualitative elements of inventory systems including also organisational aspects like the allocation of authorities and responsibilities, the application of cross-functional teams in improving inventory management decisions and the changing relationship between production and inventory. It is well recognised nowadays that the performance of inventory systems not only depends on the planning algorithms that are used but also heavily relies on the organisational context of the inventory system. One can conclude therefore that the field of inventory management no longer is an isolated field solely dealing with optimising inventory-decisions but instead has evolved into a management area of eminent importance including a wide array of management topics.

The awareness that inventory management no longer is an isolated field but a management area that relates to many different management and organisational issues makes the (re)design process of inventory systems often a very complex decision-making process. This decision-making process not only consists of defining operational day-to-day decisions but also includes many strategic issues. As a consequence, strategic decisions on the design of inventory systems are not only restricted to Production and Sales but relate to almost all the management areas of the company.

This article reviews some important strategic and tactical aspects of organising inventory systems. On a strategic level it is argued that in the decision-making process three dominant factors are of importance, e.g. the physical setting of the inventory system, the overall planning and control structure of the production and distribution system involved and the organisational setting and context of the inventory system. These factors are worked out and conceptualised by means of a framework. One of the central themes of the framework is that to a certain degree the 'performance' of the inventory system depends on the accomplished fit between the above-mentioned variables.

In the second part of the article the framework is confronted with practice. This is done by presenting the results of a longitudinal case study. The

case study describes and analyses succeeding changes in the inventory system of a Dutch paint manufacturer over a period of more than fifteen years. The case study indicates that an integrated perspective on inventory control including both the physical, planning and organisational context of the inventory system is very helpful in trying to understand the performance of inventory systems. In Section 4 the evolution of the inventory system of the company that was studied is further explored and discussed. In this analysis our main focus will be on the interaction and the inter-relationship between inventory control and the organisational context of the inventory system. The last section of this article elaborates on some of the major findings of the case study. One conclusion derived from the case study is that the interaction and interrelationship between inventory control and its organisational setting can vary from positive re-enforcement to negative re-enforcement. This conclusion and its implication is more underpinned and discussed in the last section.

2. The organisational design of inventory control

Although the field of production and operations management and behavioural oriented disciplines show some overlap with respect to the issue of planning and control, a number of important dissimilarities between these two disciplines can be distinguished. In literature it is for instance extensively argued that social science oriented disciplines seem to be less technique and method oriented, more concentrated on key features of the production system and more heavily focused on behavioural aspects of the production system. At the same time the production and operations management disciplines are often characterised as design and technology oriented, concentrating on the unique characteristics of individual production systems and dominated by planning and control issues (Meredith et al., 1989; Meredith, 2001; Ruffini et al., 2000).

Starting from these multiple competing paradigms it is not surprising that many of the concepts and frameworks regarding inventory management

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