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Just-in-time purchasing: an empirical study of operational practices, supplier development and performance

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Abstract

This paper examines the role of supplier development in establishing and managing efficient buyer–supplier operational links. The paper develops and assesses a measurement instrument for “operational” and “supplier development” just-in-time purchasing practices, followed by an examination of the relationships between the two sets, and an investigation into whether the use of “operational” and “supplier development” practices has a bearing on higher plant performance. A plant-level survey was carried out on a sample of electronics and machinery plants. The study empirically:

- documents the close connection between the buyer–supplier operational link and the buyer’s practices for supplier development;
- demonstrates that recourse to supplier development programs and their nature depend on the kind of vendor–vendee operational connection;
- test whether different plant performance outcomes result from the implementing of different “operational” and “supplier development” practices. It demonstrates that better-performing plants exhibit more advanced design and logistic links with sources, more formalised vendor-rating and ranking procedures, greater use of organisational devices for supplier-organisational integration and place greater importance on supplier assistance and training.

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1. Introduction

World-class manufacturing, that is, the “set of pro-

cesses designed to achieve a suitable global competitive advantage” [41], places particular emphasis on buyer–supplier interaction practices and on the role of the suppliers in the same extended production system [54]. However, the role of procurements in the effective implementation of modern approaches to operations has been a relatively recent rediscovery. Since the early 1980s studies on just-in-time (JIT) have shown a need

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to revise traditional supply management practices, in that the JIT system requires rigorous synchronisation of material flow [33,40].

Ever since the 1980s, the interest surrounding effective supplier relationship has grown. Literature on various JIT, total quality management, purchasing, and other operations management fields have dwelled on supplier relations topics such as supplier certification programs, supplier partnership and single sourcing. Within the operations management (OM) studies, a specific stream of research analyses issues concerning JIT buyer–supplier interaction, namely the “JIT purchasing” (JIT-P) stream of contributions. This literature often fails to adequately take into account existing organisation theory (OT) perspectives when exploring the determinants of effective JIT supply relationships. Furthermore, literature on JIT-P abounds in theoretical contributions. However, few studies examine the different JIT-P practices and the sets of practices on the basis of empirical surveys and statistical analyses [44].

In this paper, the authors focus on the supplier development actions set in motion by the buyer, perhaps the most crucial purchasing activity. In fact, the basic objective of the function is to secure supply sources that provide an uninterrupted flow of required materials at a reasonable cost. First, this involves selecting competent suppliers, and then working with them to upgrade their capabilities. A supplier development program can be defined as a systematic organisational effort to create and maintain a network of competent suppliers [19,30,47].

The importance of supplier development becomes even more critical when implementing JIT sourcing programs: JIT creates a demand for increased certainty in supply, in addition to other concessions from suppliers such as improved conformance quality, higher frequency of deliveries and a more customised supply service. In this context, characterised by the presence of specific investments and contractual incompleteness, the organisation theory and the transaction cost economy (TCE) perspective suggest that “relational contracting” [32,51,52] is the appropriate governance form of the buyer–supplier exchange. Supplier development practices represent an essential aspect of the “relational” exchange. The “relational (exchange) approach”, unlike the “arm’s length” approach, calls for continuous monitoring, assistance, incentives and integration of the pool of suppliers.

On the basis of an empirical research, the study:

- develops and assesses an instrument for measuring “operational” and “supplier development” JIT-purchasing practices;
- analyses the relationships between the two sets of practices, using both OM and OT perspectives;

- compares the use of “operational” and “supplier development” practices in high and low-performing plants, outlining which practices lead to successful JIT implementation.

In summary, this paper explores some key issues concerning the selection of a pool of suppliers integrated into a common design or production chain. Although several other authors have already faced this topic, few studies have carried out a detailed and empirical examination of the crucial relationships between buyer–supplier operational interactions and supplier development activities. The paper shows which aspects of supplier development are important for successful JIT implementation, findings which can also serve as a guide for practising managers.

2. Literature concerning just-in-time purchasing

The first contributions which specifically focused on the impact of JIT practices on procurements were the work of Schonberger and Gilbert [42] and Hahn, Pinto and Bragg [18]. They sparked a series of studies on buyer–supplier operational and relational practices promoted by new approaches to operations, namely JIT purchasing (JIT-P). Schonberger and Gilbert [42] examined a large number of JIT-P practices, including frequent and reliable deliveries, small shipment size, quality assurance methodologies used by suppliers, nearby suppliers or cluster of remote suppliers, standardised packaging, formal and sophisticated vendor rating/ranking instruments, and supplier assistance in meeting quality requirements. In addition, Schonberger and Gilbert discuss the importance of supplier-based reductions and long-term supply contracts towards developing a true JIT link with sources. A series of studies followed these pioneering contributions.

Hall [21,22], following a detailed analysis of the Japanese supply system, broadens the scope of the term JIT-P, describing the suppliers simply as the external extension of the manufacturing plant. The last operational activity within the supplier’s plant should be effectively linked with the first operation inside the buyer’s plant. The author investigates which supplier selection criteria, production planning procedures, packaging and shipment modes are more conformable to a JIT environment.

Ansari and Modarress [1–3] and Lee and Ansari [29] examined the differences between traditional and JIT-P practices, highlighting benefits and problems encountered in their implementation. The authors investigate issues concerning human (top management commitment, union support) and operational factors (incoming part inspection, mode of transportation, packaging, scheduling) involved in JIT-P programs.

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