
OPERATIONS STRATEGY AND PERFORMANCE

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PREFACE

Welcome to the first conference of the recently formed European Operations Management Association. Although it is the first conference of the EurOMA, it follows on from eight previous U.K. OMA conferences and maintains the same general format.

The theme of this year's conference is Operations Strategy and Performance. This reflects the growing awareness of the need to combine all elements of operations within an overall strategic umbrella which links closely to the performance of the organisation. Although the concept is widely accepted, the details and processes of strategy are not well understood, and the links to performance are often tenuous. For these reasons the whole area provides a very fruitful field for research. This is clearly demonstrated by the large number of papers presented and we hope that these and the associated discussions will help to move the field forward.

The abstracts of the papers for this conference were all double blind refereed and we would like to express our thanks to the following for their help in this process:

Colin Armistead, Manuel Baganha, David Bennett, Will Bertrand, John Bicheno, Ruth Boaden, Harry Boer, Neil Burns, Alberto Castro, Atila Chikán, Robert Collins, Peter Cox, Simon Croom-Morgan, Christian Delporte, Krisztina Demeter, Roland Van Dierdonck, Corne Dirné, Dirk Pieter van Donk, Gerry van Dyck, Roberto Filippini, Gerry Frizelle, Gerard Gaalman, Geoff Gardiner, Abby Ghobadian, Joaquim Borges Gouveia, Xavier De Groote, Willy Herroelen, Sven Åke Hörte, Keith Howard, Bob Johnston, Christer Karlsson, Ted Krumpfen, Marc Lambrecht, Richard Lamming, Per Lindberg, Roberto Luchi, Douglas Macbeth, Roger Maull, Robert van der Meer, Arnoud De Meyer, John Mills, Leslie Mitchell, Barbara Morris, Alan Muhlemann, Beatriz Muñoz-Seca, Colin New, José Mario Alvarez de Novales, Nick Oliver, Kul Pawar, Jim Platts, Vas Prabhu, David Probert, Jaume Ribera, Nigel Slack, Stuart Smith, Geoff Southern, Roy Staughton, Helen Valentine, Gustavo Vargas, Chris Voss, Luk Van Wassenhove, and Jacob Wijngaard.

Thanks also to Clare Price and Huw Richards for their invaluable help in putting together the final version of the conference papers, and for carrying out much of the organisation and administration associated with the event.

Finally, thanks to the delegates, without whom there would be no conference, and to our keynote speakers Steven Wheelwright and Nigel Slack.

Ken Platts
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Andy Neely

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control processes (table 1). The data resulted in seven different manufacturing types with a distinct performance profile (table 2).

Our data strongly suggest that guiding principles for formulating and implementing a manufacturing strategy are (1) a reduction in resource complexity, (2) a reduction in product complexity and, as a consequence, (3) a reduction in control complexity, and (4) a higher predictability of demand. This should be done without losing competitive ground, i.e. qualifying and order-winning criteria should still be met. If companies are able to reduce these complexities, the absolute performance of their manufacturing system will improve, which need not necessarily result in a better overall business performance. This also requires a reconsideration of the marketing and other functional strategies which should enhance each other and ultimately enable the realisation of a business strategy which outperforms competitors and enables the continuity of the company.

Performance criteria	cell	(1,1)	(1,2)	(2,1)	(2,2)	(2,3)	(3,2)	(3,3)
costs per unit		low	medium	medium	medium	high	high	high
delivery time		low	low	medium	low	low	medium	high
delivery reliability		high	high	high	high	high	medium	low
volume flexibility per product code		high	high	high	moderate	high	low	low
total volume flexibility		high	high	high	moderate	low	low	low
introduction flexibility		low	moderate	high	low	low	moderate	moderate
mix flexibility		low	high	high	moderate	high	high	high
product range		low	low	moderate	low	low	high	high
product flexibility		low	low	moderate	moderate	high	high	moderate
product modification flexibility		low	moderate	high	low	low	high	high

Key to the table:

poor compared with other cells

strong compared with other cells

Table 2: Overview of performance of each cell of table 1.

Our research indicates that the organisation structural approach, in contrast to the organization functional approach, enables us to link the internal dimensions and external, environmental dimensions, particular in the market place better. Since the data do not match completely with theories and empirical research done so far, the latter part of the paper will extent on theoretical and managerial implications of the research presented in the paper.

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JUST-IN-TIME AND TIME PERFORMANCE: REFERENCE MODEL AND EMPIRICAL RESULTS

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Introduction

The contribution of the authors, based on empirical research, focuses on existing relations between Just-In-Time (JIT) practices and time performance. With reference to JIT and to its application it can be seen that:

- research has concentrated principally on JIT practices in relation to the plant and it is only recently that the importance of the linking up of suppliers and customers has been underlined;
- JIT practices have traditionally been considered as instruments which were principally intended for the avoidance of waste, such as stocks and excess costs in general. It is only in the last few years that authors like Blackburn (1991) have underlined the importance of JIT in the achieving of high level time performance;
- the research on JIT which is available in the literature is principally of the descriptive type: JIT variables and ways of applying them are identified, while the links between the variables identified are rarely explored.

In the literature, therefore, there is a lack of models and empirical analysis of the relationship between JIT practices and performance. This is particularly true in relation to time performance. Schonberger (1990) is one of the few authors that, as a result of analysis based on experience, tries to analyse the relationship between JIT practices and time performance.

This empirical study is based on a sample of 34 manufacturing companies operating in the auto-supply, electronics and mechanics industries. Both objective and subjective types of measure have been developed. The measures were first subjected to reliability and validity tests, and then canonical correlation analyses were carried out.

The reference model

In order to analyse to what extent JIT is linked to time performance, a two dimension reference model has been used (see figure): "JIT plant" and "JIT chain". The "JIT plant" dimension considers JIT planning methods and other areas of action within the plant: the production process and human resources. The "JIT chain" dimension considers JIT planning methods and the links with suppliers and customers.

Two classes of time performance which can become a source of competitive advantage for companies have been identified: "external" types of performance, or rather, types of performance that are identified by the customer (timeliness, punctuality in deliveries, etc.), and "internal" types of performance, or rather, those types of performance which are not directly perceivable to the customer (lead time, inventory turnover, etc.).

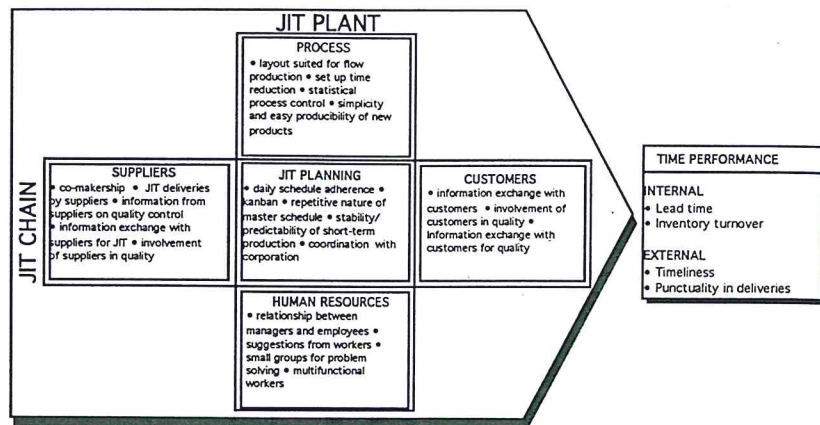
Discussion of the results of the empirical study

The hypotheses concerning the relationship between JIT factors and time performance are formulated in a null form with reference to the model proposed. In the discussion of the results the "internal" types of performance have been considered as a whole while the "external" types of performance have been considered separately: timeliness and punctuality in deliveries.

HP01 There is no relationship between "JIT planning" and time performance.

The canonical correlation analysis shows the existence of a link between "JIT planning" and "punctuality in deliveries", whereas the links with the other time performances are not statistically significant.

HP02 *There is no relationship between "JIT plant" variables and time performance.* The correlation between "JIT plant" variables ("JIT planning", "process", "human resources") and "punctuality in deliveries", is statistically significant. The links between "JIT plant" variables and the other types of time performance are not statistically significant.



HP03 *There is no relationship between "JIT chain" variables and time performance.* The correlation between "JIT chain" variables ("suppliers", "JIT planning", "customers") and "internal time performance" is statistically significant, as is, to a lesser extent, that between "punctuality in deliveries". The correlation with the "timeliness" performance is far less statistically significant, however.

HP04 *There is no relationship between all the JIT variables and time performance.* The correlation between the set of JIT variables and "internal time performance" is very strong, but the variables which have special significance are (in descending order of importance): "customers", "suppliers" and "JIT planning". There is also a strong link with the "punctuality in deliveries" performance, but in this case all the variables give the same contribution. The significance of the link with the "timeliness" performance is weak, however.

Conclusions

Some significant findings which seem to emerge from this exploratory analysis are the following:

- JIT practices have a considerable link to time performance although different JIT practices have different links depending on the type of time performance considered; and all the JIT practices influence in a similar way only the "punctuality in deliveries" performance;
- the "JIT chain" seems to have a considerable link with "internal time performances". This seems to confirm the theory that the production flow and stock levels are strongly related to downstream and upstream interactions;
- the concept of JIT can not be limited solely to plant planning techniques (load levelling, kanban, etc.), but it must also include other areas, both those which are internal to the plant (production process and human resources) and those which are connected to the upstream/downstream relationships (suppliers and customers).

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LINKING STRATEGY TO THE EVALUATION OF MRPII SYSTEMS

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Abstract

In order to gain competitive advantage, firms often introduce a system of manufacturing resource planning (MRPII). By integrating operational, marketing and financial planning, it plays an important role in the development of an organisation's business and operations strategies; and is frequently regarded as a strategic information system. Thus, considering its purpose and implementation costs, the system should be implemented and evaluated within the context of a planned operations strategy. Drawing on current research of companies in Scotland which have implemented MRPII, the paper explores the relationships between the introduction of the MRPII system, the operations strategy and the performance measurements used in its evaluation.

The strategic role of MRPII systems

It is generally accepted that a strategic information system is one that involves high expenditure, supports or shapes an organisation's competitive strategy; through improving productivity and performance, enabling better management and developing new business. Those involved with implementing the MRPII system within their company, generally supported this view, that MRPII was a strategic system. It was often cited that the aim of MRPII was to support the company's corporate goals, and reasons for implementation were based on the provision of greater access to information to enable better decision making, the provision of a system that would cope with current business needs, and improving customer service.

Methods used to evaluate the system

There was a great variation in the extent to which companies evaluated their MRPII implementations. It varied from no evaluation at all to a comprehensive evaluation including both quantitative and qualitative measures.

Where monitoring and evaluations did occur, it was often set-up or suggested by the finance departments of the organisations. The most frequent methods used, involved financial analysis and comparisons of actual achievements with intended targets. The most common performance measurements used, were those based on those used by Ollie Wight, relating to measuring data accuracy and customer service. Others also used performance measurements relating to the planning function.

A few organisations went further, to gain feed-back on user satisfaction with the system and their education and training. In all cases this was carried out by informal interviews.

Organisations that had a history of using continuous improvement techniques or where their industry required the a quality standard, made greater use of performance measurements and evaluation methods.