COMPETITIVE EDGE THROUGH FLEXIBLE WORK ORGANIZATION:
EVIDENCE FROM THE U.K. ELECTRONICS INDUSTRY

Paul Forrester, John Hassard and Louise McArdle
University of Keele, U.K.,
and
Michael Rowlinson
Aston Business School, U.K.

ABSTRACT

This paper addresses the issue of flexibility in manufacturing from two perspectives: the view taken by the operations management and engineering literature and then notions of flexibility in labour management as seen from an sociological paradigm. This dual theoretical basis is used to consider strategy and competitive edge in the U.K. electronics industry, where flexibility and response is frequently seen as a means to compete in world markets. The paper concludes that whereas flexibility does offer some opportunity for U.K. electronics companies to compete with "giants" in the industry [1], this approach does have consequences, often adverse, in terms of job security for employees. The reasons for this stem not only from the typical personnel policies adopted by companies, but also as a result of a retreat from component processing operations and a focus on downstream assembly activities. The latter in intended to increase flexibility and response and to slim down the organization as a whole, but with the obvious consequence of plant closures and reductions in employment numbers.

INTRODUCTION

Flexibility is now recognised as a, if not the, key managerial concept in the 1980's. Strategic and operations management in industrial organizations came to demand more of it, and the management literature abounded with discussions regarding its desirability, appropriateness, likely forms and consequences. However, despite the advance of manufacturing and computer technologies and automation, the need for labour and organizational flexibility is still seen today as a necessary prerequisite for operational flexibility. Without the adaptability and a willingness to change on the part of individuals, groups and structures, other forms of flexibility would not be possible.

Approaches to analysing flexibility are numerous. There is the pragmatic line adopted by the practitioner and consultants in comparison to the theoretical and analytical stance taken by researchers. Slack provides a useful bridge between the two schools by giving insights into managers' perceptions of flexibility [2]. Slack then used this material to test a framework previously developed in his research to explain the dimensions of flexibility within manufacturing organizations [3]. This approach, however, is rare, with research into flexibility normally tackled within the confines of distinct paradigms. The consequence is that confusion arises in the use of terminology and the meanings attached to flexibility. This is most evident when theorists from different backgrounds or interests get together to talk about flexibility.

The research upon which this paper is based has included a longitudinal study of systems design and organizational developments within a major U.K. electronics company over a five year period, 1986
to date. This has been supplemented by a series of detailed case studies in other U.K. electronics companies which have been used for industry-wide comparative purposes. The work originated as an analysis of the design and implementation of flexible assembly systems from, predominantly, an operations management and technical perspective. As the work progressed, it was apparent that labour developments in the industry, in particular the emergence of personnel policies based upon single status employment conditions and harmonisation, provided the opportunity for analysis from an industrial sociological perspective.

This paper will, therefore, address the issue of flexibility by consolidating a number of themes in the literature and relating these to the current state of work organization in the U.K. electronics industry. The means by which U.K. electronics companies are attempting to achieve competitive edge through the adoption of flexible work organizations will be considered and the consequences of these strategies will be discussed in relation to corporate performance, employee relations and the U.K. labour market in general.

CONCEPTS OF FLEXIBILITY IN OPERATIONS MANAGEMENT

The operations management and engineering management literature is characterised by a large number of taxonomies which seek to clarify the various forms of flexibility that may be inherent or designed into manufacturing systems. Examples of these categorisations include Slack (121), Gerwin (141), Stecke et al (151) and Zelenovic (161). Although variations in detail exist, the dimensions of flexibility usually identified include product (introduction and variety manufacture), process, volume, delivery, materials handling and labour. Slack, furthermore, suggests that all dimensions of flexibility can be further classified as "range", and "response", where range flexibility is the ability to manufacture high variety and to accomplish a large scope of tasks, whereas response is the systems adaptability to cope with change by offering short product design or order leadtimes. Thus a system may be flexible in terms of range by offering variety production, but may not handle frequent design or schedule changes. Similarly, a rigid mechanised flowline, although inflexible in terms of range, may have some properties in terms of response flexibility and reaction to customer needs.

The classifications above mainly concern flexibility at the level of the operational system. However, flexibility as a concept is a central theme in the literature on manufacturing strategy. Although frequently considered in isolation, the systems operation and strategy literature can be linked by considering, once more, the distinction between range and response. The increasingly popular concept of "Time-Based Competition" (171), whereby producers achieve competitive edge through the design and introduction of more products in less time and/or reduce order leadtimes, necessitates considerable response flexibility. In addition, the decisions regarding the amount of range and response flexibility can clearly be linked with Hill's discussions on the identification of "order-winning" criteria in manufacturing strategy formulation (181). Range and response flexibility and the incorporation of contingencies in the choice of manufacturing process and infrastructure provides organizations with order-winning properties and, therefore, the strategic edge they seek over their rivals.