



“Summary of article by Eileen Appelbaum and Rosemary Batt: Alternative Models of Production” in Frontier Issues in Economic Thought, Volume 4: The Changing Nature of Work. Island Press: Washington DC, 1998. pp. 125-129

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“Summary of article by Eileen Appelbaum and Rosemary Batt: Alternative Models of Production”¹

The breakdown of the mass production model in the industrialized countries has given rise to a number of alternative models of industrial organization. In an effort to help U.S. firms catch up with these new organizational innovations, a comparison is presented of the four leading alternatives to mass production developed by other industrialized economies: Swedish sociotechnical systems, Japanese lean production, Italian flexible specialization, and German diversified quality production.

SWEDISH SOCIOTECHNICAL SYSTEMS

Driven by efficiency concerns and the desire to humanize the workplace in the mid-1980s, Swedish firms began implementing what has become known as sociotechnical work systems. Sociotechnical work systems are more decentralized and more flexible than mass production mechanisms due to their utilization of work groups. This trait enables them to be more competitive in the low volume, high quality niche markets where many Swedish firms operate.

The work groups, or production teams, that have been most successful regulate themselves internally and are responsible for pacing, coordination, sequencing, and quality control. Some even allocate housekeeping tasks such as distributing work assignments among group members and scheduling vacation time. Production teams are also responsible for process improvements and problem-solving. Wage premiums give incentives for workers to be involved in continuous, often firm-sponsored training; some groups receive a portion of their pay based on group performance.

The following aspects of the Swedish system separate it from Taylorist work organization and have increased the efficiency of Swedish firms in several ways: (1) a variety of products can be assembled alternately with the same assembly lines; (2) integrating preventative maintenance and repair functions to work groups reduces downtime; (3) the use of quality controls by work groups increases quality and decreases reworking; (4) short absences by work group members can be covered without the need to find substitutes; (5) group work is more attractive to the labor force; and (6) managers see work groups as facilitators of decentralization, and of flattened hierarchies.

JAPANESE LEAN PRODUCTION

The Japanese lean production model arose from an effort to reduce impediments that cause delays and imbalances in production and force firms to hold on to inventory buffers or work in progress. Examples of such impediments are long changeover times, bottlenecks, machine downtime, and quality defects. To reduce these impediments, the Japanese model teaches statistical process control and problem-solving techniques to workers and uses quality control circles to improve quality.

Quality control circles (QC circles) are small groups of hourly workers that are led by a foreman and meet voluntarily to discuss job-related quality problems. Such an approach has reduced costs and increased productivity, while improving morale, motivation, and self-development among workers. However, QC circles are not autonomous and do not participate in managerial decision-making. Foremen perform and supervise most of the housekeeping duties, although the procedures for these duties are often developed and improved upon by the workers themselves. The commitment and capability of workers in these firms is enhanced through pay policies, training practices, and employment security-factors that also render these firms attractive to the external labor market.

In contrast with mass production, the Japanese model makes learning active, is able to increase quality without increasing cost, and supports increases in product variety. Active "learning" techniques, include just in time inventory systems, which ensure that problems are identified early in the production process and are responded to quickly by workers; also process simplification efforts that examine each step in the production process to remove wasteful steps. These simultaneous quality improvements allow for greater efficiency and reduced cost. In contrast to traditional mass production firms, where increased quality would increase cost, the Japanese system also allows for greater product diversification.

ITALIAN FLEXIBLE SPECIALIZATION

As a response to a turbulent market environment that arose in Italy during the 1970s, the system now called flexible specialization was developed. New market conditions required greater flexibility than was possible under mass production. Flexible specialization focuses on: (1) small-scale production of a wide array of goods; (2) small networks of producers that attain efficiency and flexibility through specialization and cooperation; (3) representation of worker interests through strong unions; and (4) governmental support for collective goods and service, thereby reducing costs and encouraging cooperation. Firms in these networks share a great deal of trust and information while still competing with each other for customers. These firms thus have the ability to achieve economies of scope, "an enhanced ability to respond to market-driven changes in product characteristics and marketing requirements." [38] In addition, they have a competitive advantage based on their ability to produce and deliver high quality products with a varied degree of characteristics quickly.

What sets flexible specialization apart from mass production is its ability to prevent excess capacity. This is due to the collaborative nature of the networks since they enable individual firms to adapt to increasing demand without additional equipment that could prove redundant. Networks also facilitate product innovation and customization that are advantageous in niche

markets. Flexible specialization performs best where competition is based more on quality and variety than on price.

GERMAN DIVERSIFIED QUALITY PRODUCTION

In the 1970 and 1980s, the German auto industry achieved a good deal of its success from its pursuit of quality conscious markets where competition focused on quality of design rather than price. To reach that market, German firms employed what has become known as diversified quality production. This approach combined the craft and experience of a highly skilled workforce with the use of microelectronic technology to produce high volumes of a wide array of products for the high end mass market.

To ensure such flexibility, the Germans put extensive effort into retraining to give the workforce a broad base of skills that could easily be adapted to different tasks. This was combined with microelectronically automated technology that enabled equipment to be adaptable to more than one product. German works councils are credited with making this transition run smoothly by practicing "negotiated adjustment" to new technology and changing market conditions. All of these factors altered the economies of scale that firms had traditionally experienced. Break even points were met much more quickly and at a smaller volume than before.

Diversified production is different from mass production in that it focuses on skills development and the ability to capture high end markets where customers are willing to pay for quality.

A COMPARISON OF THE MODELS

Each of the foregoing models confers a competitive advantage over mass production under particular conditions in the world economy. Italian flexible specialization is most advantageous during turbulent market conditions or in niche markets where rapid innovation is key. German diversified quality production excels in producing customized goods at high volumes for high end markets. In contrast, Japanese lean production has done best at reducing costs and therefore finds it more difficult to function in markets where quality is the key component of competition. Finally, Swedish sociotechnical systems perform best in luxury markets.

All of these new techniques use enhanced levels of worker participation, though the type of participation varies widely.

"In general, we can distinguish among employee participation schemes based on whether the participation takes place in parallel structures or affects the work organization or power relations between employees and managers; the level at which the participation takes place - shop-floor, establishment, or strategic firm decisions (implementation of new technology, investment plans, marketing strategies); and whether it is consultative (as most QCs are) or substantive." [79]

In Japanese lean production participation occurs via parallel structures, in Swedish sociotechnical systems it is substantive. Italian flexible specialization is characterized by informal participation by workers on substantive issues; in German diversified quality

production participation occurs through works councils who take part in plant level adjustments and strategic decisions.

CONCLUSION

There are a number of viable alternatives to the mass production model of industrial organization and each in particular suited for different types of markets. U.S. firms have borrowed in piecemeal from these models, but full applicability may prove to be difficult. In many cases, institutional and other socioeconomic concerns may stand in the way.

Notes

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