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JIT and Small Companies

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WHAT IS JIT?

Just-in-time manufacturing means producing the necessary items in necessary quantities at the necessary time. It is a philosophy of continuous improvement in which non-value-adding activities (or wastes) are identified and removed.
Putting this concept into practice means a reversal of the traditional thinking process. In conventional production processes, units are transported to the next production stage as soon as they are ready. In JIT, each stage is required to go back to the previous stage to pick up the exact number of units needed.

COMPONENTS

- Production Leveling
- Pull System
- Kanban system
- Good Housekeeping
- Small Lot Production
- Setup Time Reduction
- Total Preventive Maintenance (TPM)
- Total Quality Control
- JIT Purchasing
- Line Balancing
- Flexible Manufacturing
- Small-group Activities

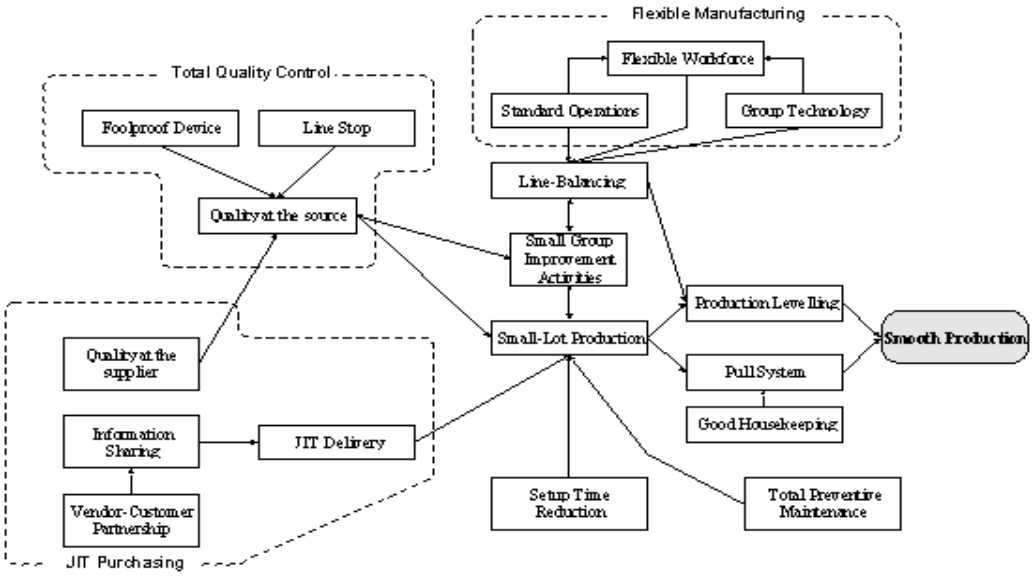

Figure 1: JIT Process

LONG-TERM COMMITMENT

Some operational issues also need alternative thinking to evolve. Taking the concept of Production Leveling (producing the same quantity and mix of items everyday), the small suppliers lack bargaining power at both ends. One is when they purchase, the quantity is normally small and they do not get any discounts. Second is when they supply to the large manufacturer. The lots are small and they are at the mercy of the manufacturer, because in JIT the commitment is for long term. So the price is literally dictated by the large manufacturer who procures from small suppliers.

Subsequently they have to cut the cost and quality is at peril. This defeats another component of JIT – TQC. The number of defective items increases and rejection rate also increases. It, in fact is against the very principles of Kaizen (waste in the form of defective units). Moreover it keeps adding to the total cost of the manufactured item because the loss incurred by way of defective items has to be compensated by non-defective parts.

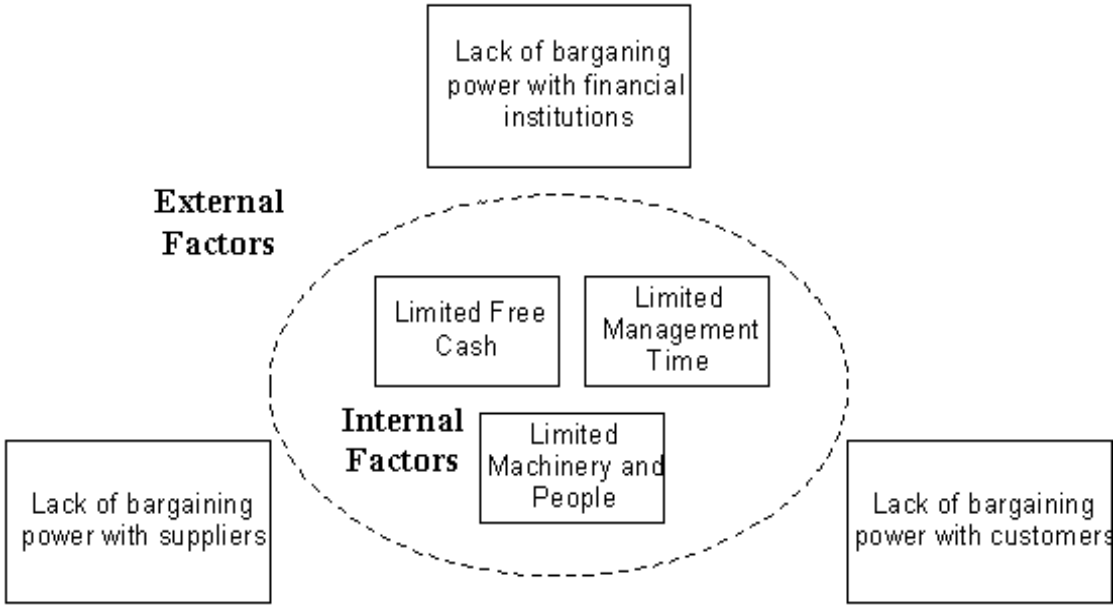

Figure 2: Factors Affecting JIT

REQUIREMENTS AND PROBLEMS

One of the key requirements of JIT is flexible manufacturing system (FMS), which requires the service of "multi-function" workers. Implementation of FMS may not possible for the small manufacturing firms owing to the lack of expertise to simplify the design of flexible manufacturing system. Even if the firm decides to train the supervisors, they will not be able to send them for training owing to their lean workforce.

To ensure continuous supply of materials, the firm can never risk breakdown maintenance. Essentially the firm has to adopt Total Preventive Maintenance. Here again cost constraint acts as a deterrent.

Another system requirement is Material Requirement Plan or Manufacturing Resource Planning at a higher level. Again cost constraint in computerization will be another problem faced by small supplier.

DESIGN

JIT manufacturing focuses on

- Elimination of *waste*
- Implementing *flow*
- Implementing *pull*

Variable demand
Principles of flow, *takt* time, level scheduling and pull (Kanban) all break down when attempting to serve variable demand with a large variety of products

(•*Takt* time is the time between completion of each piece)

–The JIT strategy was designed for situations with relatively stable demand and largely for replacement products (Womack and Jones, 1996).

ARE THE OBJECTIVES BEING DEFEATED?

Primarily for the manufacturer to run with low level of inventories, flawless supply of components is required. This may force the supplier to hold above-normal stock given the Indian situation of infrastructure problems. When this is thrust, a large portion of the working capital of the small supplier gets locked up in the inventory.

Ultimately the supplier is forced to take loans to meet the shortfall in working capital. The lending institutions always doubt the credit rating of small suppliers and they end up paying a higher rate of interest. This increases their total expense and is reflected in the product. This is passed on to the next stage resulting in a cascading effect.

On the contrary the large manufacturers normally have a better credit rating and can borrow at a lesser interest rate. If they can stock the inventories it will be relatively less expensive. In the process of adapting JIT this is one of the impediments.

ALTERNATE

Large manufacturers pioneered the components of JIT, and thus it is likely that some of them do not match small business characteristics. Different pathways may be chosen depending on the situation faced by the company, however some generic solutions are possible.

1. If the small suppliers demonstrate more reliability and consistency the problem of carrying large inventory will not be there.
2. Once this is achieved the problem of meeting additional working capital is also taken care of automatically. The locking of working capital is avoided.
3. When the supplier promises consistency, naturally his purchases will also be fairly regular and he can bargain on the purchase price.
4. Training need not always be provided ‘off the site’ and by training the supervisors and workers ‘on-site’ their skills and subsequently quality of the product can be improved.
5. Many corporate bodies have vendor development department, which can help to solve the problem of training the supervisors by extending the service of their executives to conduct training sessions.
6. The corporate bodies also have access to a much large and knowledgeable work force in designing the manufacturing system. They can help the vendors to develop the FMS.

Still it leaves the questions of Total Preventive Maintenance, MRP and post-training attrition unanswered. Small firms must develop their own solutions for these problems, which will work in their factory.

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