

Just-in-time (JIT) management

Just In Time (JIT) is an inventory strategy implemented to improve the return on investment of a business by reducing in process inventory and its associated carrying costs. JIT fits well under the TQM umbrella, for many of the ideas and techniques are very similar and, moreover, JIT will not work without TQM in operation. Writing down a definition of JIT for all types of organization is extremely difficult, because the range of products, services and organization structures leads to different impressions of the nature and scope of JIT. It is essentially:

- A series of operating concepts that allows systematic identification of operational problems.
- A series of technology-based tools for correcting problems following their identification.

An important outcome of JIT is a disciplined program for improving productivity and reducing waste. This program leads to cost-effective production or operation and delivery of only the required goods or services, in the correct quantity, at the right time and place.

Principle: The process is driven by a series of signals, which can be Kanban, that tell production processes when to make the next part. Kanban are usually 'tickets' but can be simple visual signals, such as the presence or absence of a part on a shelf. When implemented correctly, JIT can lead to dramatic improvements in a manufacturing organization's return on investment, quality, and efficiency.

Aims of JIT

The fundamental aims of JIT are to produce or operate to meet the requirements of the customer exactly, without waste, immediately on demand. In some manufacturing companies JIT has been introduced as 'continuous flow production', which describes very well the objective of achieving conversion of purchased material or service receipt to delivery, i.e. from supplier to customer. If this extends into the supplier and customer chains, all operating with JIT a perfectly continuous flow of material, information or service will be achieved. JIT may be used in non-manufacturing, in administration areas, for example, by using external standards as reference points.

The JIT concepts identify operational problems by tracking the following:

1. **Material movement** – When material stops, diverts or turns backwards, these always correlate with an aberration in the 'process'.
2. **Material accumulations** – These are there as a buffer for problems, excessive variability, etc.
3. **Process flexibility** – An absolute necessity for flexible operation and design.
4. **Value-added efforts** – Where much of what is done does not add value, the customer will not pay for it.

The operation of JIT

The tools to carry out the monitoring required are familiar quality and operations management methods, such as:

- Flowcharting.
- Process study and analysis.
- Preventive maintenance.
- Plant layout methods.
- Standardized design.
- Statistical process control.
- Value analysis and value engineering.

But some techniques are more directly associated with the operation of JIT systems:

1. Batch or lot size reduction.
2. Flexible workforce.
3. Kanban or cards with material visibility.
4. Mistake-proofing.
5. Pull-scheduling.
6. Set-up time reduction.
7. Standardized containers.

In addition, joint development programs with suppliers and customers will be required to establish long-term relationships and develop single sourcing arrangements that provide frequent deliveries in small quantities. These can only be achieved through close communications and meaningful certified quality.

Advantages of JIT

- Lower stock holding means a reduction in storage space which saves rent and insurance costs
- As stock is only obtained when it is needed, less working capital is tied up in stock
- There is less likelihood of stock perishing, becoming obsolete or out of date
- Avoids the build-up of unsold finished product that can occur with sudden changes in demand
- Less time is spent on checking and re-working the product of others as the emphasis is on getting the work right first time

Disadvantages of JIT

- There is little room for mistakes as minimal stock is kept for re-working faulty product
- Production is very reliant on suppliers and if stock is not delivered on time, the whole production schedule can be delayed
- There is no spare finished product available to meet unexpected orders, because all products are made to meet actual orders.