

Jit system advantages and disadvantages



Explain the concept of the JIT system in detail. Also, discuss the characteristics, advantages and disadvantages of the JIT system. It is a management philosophy which aims at eliminating waste from every aspect of manufacturing and its related activities. The term JIT refers to producing only what is needed.

JIT is defined as “ A technique for the organization of work-flows, to allow rapid, high quality, flexible production whilst minimizing manufacturing waste and stock levels.” (CIMA official terminology)

There are two aspects to JIT -

Just- in-time production and

Just- in-purchasing.

JIT production is defined as “ A system which is driven by demand for finished products, whereby each component on a production line is produced only when needed for the next stage.”

JIT philosophy aims at reducing waste, which is defined by Fujio Cho of Toyota as - “ any thing other than the minimum amount of equipment, materials, parts, space and worker’s time, which are absolutely required to add value to the product.” Thus waste is any resource used in excess of the minimum amount required to add value to the product.

More specifically JIT seeks to achieve the following goals.

1. Estimation of non-value added activities
2. Zero inventories
3. Batch size of one
4. A 100% on time delivery service

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The following are the key features / characteristics of JIT production.

1. The production line is run on a demand pull basis, so that activity of each work station is authorized by the demand of downstream work stations. Thus, parts move through production system based on end unit demand, focusing on maintaining a constant flow of parts rather than batches of WIP.

2. Set-up time and manufacturing lead time are minimized. Demand-led production may require manufacturing small quantities of the product and producing small batches is economical only if set up time are small.

3. The production line is stopped if parts are absent or defective work is discovered. In absence of buffer stock emphasis is placed on 'doing the job right the first time'. The focus is on eliminating the root causes of defect, waste or re-works. JIT goes hand in hand with 'total quality'. In a JIT environment:

a. Absence of large amount of materials and work-in-progress inventory enables to control inventory through personal observation;

b. work-in-progress constitutes, a lower percentage of total cost of production;

c. there is no need for an elaborate cost accounting system of stores requisition, material transfer notes, rework accounting and so forth.

All the above provide tremendous cost advantage to firms adopting JIT production.

In a JIT environment, EOQ model has lost its relevance because the focus is on synchronizing delivery and usage. Such synchronization requires no stock

be purchased in large and kept in stores. Should a firm adopt JIT purchasing depends on reduction in cost of quality, cost of delayed delivery, cost of early delivery, and ordering costs. All these cost be compared with premium payable to suppliers (by way of increase in cost of quality products for just in time supply).

Firms using JIT purchasing have reported significant saving in cost.

Advantages and Disadvantages of Just in Time systems

Traditionally manufacturers have forecasted demand for their products into the future and then have attempted to smooth out production to meet that forecasted demand. At the same time, they have also attempted to keep everyone as busy as possible producing output so as to maximize “efficiency” and (hopefully) reduce costs. Unfortunately, this approach has a number of major drawbacks including large inventories, long production times, high defect rates, production obsolescence, inability to meet delivery schedules, and (ironically) high costs. None of this is obvious -if it were, companies would long ago have abandoned this approach. JIT is a production and inventory control system in which materials are purchased and units are produced only as needed to meet actual customer demand. In just in time manufacturing system inventories are reduced to the minimum and in some cases they are zero. JIT works in the three types of inventories:

a) Raw materials: inventories provide insurance in case suppliers are late with deliveries. b) Work in process: inventories are maintained in case a work station is unable to operate due to a breakdown or other reason. c) Finished goods: inventories are maintained to accommodate unanticipated fluctuations in demand.

The main Advantages of JIT are the following:

1. Funds that were tied up in inventories can be used elsewhere. 2. Areas previously used to store inventories can be used for other more productive uses. 3. Throughput time is reduced, resulting in greater potential output and quicker response to customers. 4. Defect rates are reduced, resulting in less waste and greater customer satisfaction. 5. Customer Needs - Balancing the goals of avoiding stock outs while minimizing inventory costs is at the heart of just-in-time inventory. One of the main benefits of automated and efficient inventory replenishment systems is that you can quickly respond to reduced inventory levels. Companies are now equipped to pull back on stock in a given product category and ramp up inventory in another as customer needs and interests change.

Most companies find, however, that simply reducing inventories is not enough.

To remain competitive in an ever changing and ever competitive business environment, must strive for continuous improvement. A real business example: Dell Computer Corporation

In this company an order for a customized personal computer that comes in over the internet at 9 am, can be on a delivery truck to the customer by 9 p. m. In addition, Dell's low cost production system allows it to under price its rivals by 10% to 15%. How does the company's just in time system deliver lower costs? While machines from Compaq and IBM can languish on dealer shelves for two months Dell does not start ordering components and assembling computers until an order is booked. By ordering right before assembly, Dell figures its parts, on average, are 60 days newer than those in

an IBM or Compaq machine. That can translate into a 6% profit advantage in components alone. DISADVANTAGES of JIT:

Implementing thorough JIT procedures can involve a major overhaul of business systems -it may be difficult and expensive to introduce. Risk - JIT manufacturing also opens businesses to a number of risks, notably those associated with the supply chain. With no stocks to fall back on, a minor disruption in supplies to the business from just one supplier could force production to cease at very short notice. Coordination - A disadvantage of managing a just-in-time inventory system is that it requires significant coordination between retailers and suppliers in the distribution channel. Retailers often put major trust in suppliers by syncing their computer systems with suppliers so they can more directly monitor inventory levels at stores or in distribution centers to initiate rapid response to low stock levels. This usually means build up of technology infrastructure, which is costly. This coordinated effort is more involving on the whole than less time intensive inventory management systems.

A real business example: Toyota

Just-in-time manufacturing system is vulnerable to unexpected disruptions in supply chain. A production line can quickly come to a halt if essential parts are unavailable. Toyota, the developer of JIT, found this out the hard way. One Saturday, a fire at Aisin Seiki Company's plant stopped the delivery of all break parts to Toyota. By Tuesday, Toyota had to close down all of its Japanese assembly line. By the time the supply of break parts had been restored, Toyota had lost an estimated \$15 billion in sale