INSTITUTE OF
SUPPLY CHAIN
MANAGEMENT

Just in Time
A Guide to Managing Inventory

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Just in Time, commonly referred to as JIT is an effective strategy for managing inventory. As the name implies, the aim of JIT is to deliver material(s)just prior to their requirement to compete, a task, function, or process.

In this guide, we examine the advantages and disadvantages of Just in Time (JIT) as a strategy for managing inventory in any type of business.

The main objective of the Just in Time philosophy is to reduce inventory holding costs and boost inventory turnover. In other words, keeping parts of products moving through the supply chain quickly and efficiently rather than having them sitting gathering dust in a warehouse!

HOW JIT WORKS

Suppose we think logically about how an item or piece of inventory moves through the different stages of the supply chain. For example, in furniture manufacturing, a finished manufactured piece of furniture would be transported to a warehouse for storage until it was needed. The subsequent phase would be for the product to be selected and shipped to the customer, which is standard in most supply chains.

The concept of JIT is that the manufactured product would be delivered to the warehouse just prior to the transport function delivering to the customer, minimising the need for stock or inventory holdings, which is added expense to a logistics operation. In a more traditional inventory management system, finished products would be transported to the warehouse, held there and then at a later date, the product would be delivered to the customer.

The decisive factor or aim of JIT is to ensure that inventory or finished product arrives in the warehouse at the same time the manufacturer intends to ship it to the end user or customer.

Operating like this has many advantages:

- Minimises Inventory Holdings (Added Expense)
- Reduce Delivery Time
- Eliminate Waste

Meaning an organisation can meet customer demand with minimum delay.

HISTORY OF JIT

The philosophy of Just in Time (JIT), like many other management processes, can be traced back to the 1970s, Japan. As a concept, JIT was the brainchild of Taiichi Ohno, a Japanese industrial engineer considered the father of the Toyota Production System. Ohno also identified 'the seven wastes' as part of the same system, commonly referred to as TIMWOOD (which we will cover later).

Since its inception in the 70's, organisations, businesses and industries across the globe have implemented and adapted the JIT technique into their operations.

The logistics sector have worked to drive out waste by adapting JIT processes for the industry.

Benefits of Just In Time (JIT)

In this section, we will take a closer look at some advantages and strategic benefits that Just in Time will bring to an organisation:

1. **Reduced Inventory -** One of the most apparent benefits of Just in Time is seeing inventory holding levels reduced or eradicated across the supply chain. Suppose inventory arrives immediately before the start of a process. In theory, there is no requirement for stock holding or inventory. The reality though is that in real-world operations there is a need for some inventory (safety stock), as not everything is reliable 100% of the time.
2. **Operational Costs Significantly Reduced -** Storage costs will be reduced through lower inventory levels. It is recognised that holding inventory is an expensive process and as time and inventory accrues, so do the costs. So, reducing stock held in a location will minimise cost and improve the bottom line.
3. **Optimised Lead Times and Increased Operational Efficiency -** Another advantage of reducing inventory holdings is a shorter waiting time; if the logistics processing takes the same time as the process, this can be seen as a waste. If we can reduce the logistics or inventory functionality time, then this is a saving (time or resource), and the time to delivery will decrease.

JIT constantly focuses on reducing waste to optimise lead times allowing fulfilment to happen at a quicker and more cost effective rate.

OF COURSE, IT IS NOT ALL PLAIN SAILING,
Just in Time (JIT), does have negatives

We will look at some of the drawbacks of introducing JIT to an operation:

1. **Demand Forecasting (Accurately) -** If we do not have accurate data (demand forecasting), then it is just about impossible to implement to implement a JIT inventory management system. Organisations need the ability to predict the demand or requirement for an item or finished product and how these levels may evolve. A supply chain needs to plan and achieve On Time in Full (OTIF) to meet customer expectation.

   If demand outperforms forecast, we run out of stock.

   If the forecast is higher than demand, then we are left holding inventory.

   The data you use needs to be accurate and reliable.

2. **Impact of Minor Delays -** Organisations will normally hold safety stock at various pinch points in their supply chain, which undoubtedly would offset any such scenario where slight delays prevent the timely arrival of the stock, but the aim is to hold as little buffer stock as operationally feasible. Meaning that once you have optimised inventory levels, any slight disruption could have a far-reaching impact.

3. **Additional or Hidden Cost -** Implementing Just in Time, will see organisation incur various costs that need to be considered. They include;

   Training - All personnel involved with the operation will need to be trained accordingly. Whether the organisation has the ability to deliver organically or an external training provider is engaged, the cost will be financial, time driven or both.

   Systems - Many businesses use systems such as Material planning, warehouse management, customer management. Each may need its functionality programmed and tailored to support the JIT process. You could consider this a good time to invest in a new IT infrastructure that can host the applications and systems you need or provide new functionality.

   Managing Supplier Relations and Evolving your Supplier Network - The requirement for a more frequent supply will bring additional challenges, and remember one of the previous points, a small delay can have far-reaching impacts, so building on already strong supplier relations and bringing them in on the changes to your planned inventory would be a wise move. Consider the use of additional suppliers, that could provide an arterial feed of inventory when needed. If an organisations' supply chain cannot cope with disruption, costs can rise steeply.

Implementing JIT

When things are working well, Just in Time is the perfect inventory management system; however, when it goes wrong, the impact can be vast. It is therefore pivotal to prepare the organisation for the change before making the leap.

You should give the following issues some consideration before making any change:

1. Would JIT be a value add to the operation and organisation?
2. Are the cost savings to be realised significant enough to make the change a viable proposition?
3. You have identified that employees need training to understand the JIT process. Are the team capable of undertaking the training and do they have the ability to implement changes operational level?

Considering JIT as solution for your business?

Let's look at the data, information and actions to consider before making any decision.

1. **Identify any Bottlenecks and Inefficiencies:** Before we implement change, we need to study, so the first thing you are encouraged to do is to Process Map the organisation's supply chain, every step, every process. It will help you to identify inefficiency (bottlenecks) in the supply chain.

   Review historical data to highlight where you could potentially minimise lead times and inventory costs. The information will also enable you to look at and calculate delivery and waiting times throughout the supply chain.

2. **Embrace Big Data:** Whilst striving for JIT, data is our friend; you need to collect, store, and analyse data. It is fundamental to what you are trying to achieve.

   Key Performance Indicators - will help you identify if targets are being met and forecasts are achievable. Inevitably, when there is an issue, you will have the foresight to mitigate or reduce the impact.

   Communication and Data Sharing is key to success. Making decisions driven by data, critical to the operation. Once you have introduced JIT into your operations you still need to constantly evaluate the successes and look for further improvements. In the first iteration, businesses are often over cautious, and there are further improvements that can be made.

3. **Design the Process in Detail:** Once you have evaluated the supply chain, you can start to design a more efficient and streamlined process from sourcing to manufacture / production and shipment or final mile delivery. To support with this, consider the following;

   - When does packaging the item start?
   - Can you minimise touch points?
   - Can you optimise route planning?
   - How can we minimise the paper trail of documentation.
   - Is there a way to minimise manual data entry.
   - At what point do you replenish your buffer stock and when do you rotate?
   - Where will you store and calculate the inventory needed?

4. **Manage and Reduce Risk -** "When we look at performance requirements along with technological advances and an ever-increasing dependency on global demand and supply, we see before us a recipe for disaster". *Daniel Stanton, Supply Chain for Dummies.*

   Risk management is key to dealing with the unknown or the unexpected! With so many variables that can go wrong within a supply chain you can minimise the impact of problems through effective risk management. In fact, if executed efficiently you can realise opportunity and capture value!

   Accurate forecasting and big data do not consider anomalies that can occur in a supply chain. Even small variations can have a significant impact. If not managed or forecasted correctly fluctuations, will have an effect commonly referred to as the 'Bullwhip Effect'.

In a supply chain, the bullwhip effect occurs when each party gradually escalates an initially small spike in demand. Each member of the supply chain overcompensates for this demand with excess product, leading to increased production, inaccurate demand forecasting, and inconsistent inventories.

Fortunately, you can mitigate or prevent the supply chain bullwhip effect with the right resources and planning.

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Is Just in Time worth the Effort and Investment?

The benefits of introducing JIT into a business will differ greatly depending on the type of operation. There is a lot of research and consideration needed before any decision can be made; however, the increase in the number of supply chains utilising the JIT concept is testament to the value adding capabilities it can bring. If you do decide to implement JIT in your business it is imperative that you continue to utilise data, study market changes, prepare for the unknown and adopt a continuous improvement process to continue capturing inefficiencies and adding value.

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