Pull Systems, Push Systems, Kanban & Just In Time (JIT)

What are pull systems and JIT and how will they help my workplace?

Push systems describes a traditional manufacturing process where the factory makes product before the next process or even the customer is ready for it. The product is pushed onto the next process or into the market, as opposed to being made to order. Lean encourages pull systems through kanban control, with JIT (Just In Time) being a perfect (but not always achievable) goal.

Push systems come from the view that machines and processes should be always kept as busy as possible, as a priority over considering the volume the customer really wants. The downside to this approach is excessive inventory and Work in Progress (WIP).

Pull systems provide the ability to respond to customer demand by taking a signal – a Kanban – from an upstream process to produce. If no signal is received – ie no product is required – then nothing is produced.

Make only what the customer wants, when the customer wants it!

The advantages of reduced inventory and WIP are:

- *reduced clutter* – a workplace that requires less searching, walking, moving;
- *freed up cash* – less money invested in material and/or value added processes completed;
- *reduced transport* – less inventory, the less transport required shifting in and out of storage locations, also a smaller footprint for the value stream;
- *reduced storage costs* – more inventory requires more space, more staff and more equipment;
- *shorter lead times* – more inventory means there are more jobs in the system so it takes longer for a single job to flow from start to finish;
- *quicker reaction to quality problems* – inventory increases lead times so quality issues are buried for longer;
- *reduced stock damage* – the more inventory, the more transport, and so the more stray forklift tines, dropped boxes, incorrect stacking, etc. Also more inventory increases likelihood of damage from water, rodents, temperature, etc;
- *increased shelf life* – shorter lead times mean quicker stock turnover;
- *reduced stock obsolescence* – shorter lead times mean quicker stock turnover;
- *increased visualisation of process demand* – less clutter, less lead time, less work-in-progress, and defined kanban systems mean demand levels can better be matched with process capacity;
- improved process deviation escalations and root cause rectification – with less inventory , less work-in-progress and better matching of production demand and capacity, problems in the process (ie variation) are highlighted quickly and can be rectified.

Just in Time (or JIT) is the ultimate evolution in inventory control. In a JIT system such a low level of inventory is kept that the next shipment of material arrives "just in time" or just before it is required. This concept was perfected by Toyota, who recognised the cost of keeping inventory, but also recognised that inventory does form an important function of smoothing out variation in demand, to avoid the cost of stock shortages. So Toyota worked on the root cause (link to quality tools and root cause analysis) of the problem and optimised their production system to draw materials as smoothly and predictably as possible, hence reducing variation in demand, and hence reducing inventory levels to JIT.

To move away from push systems and realise the benefits of inventory reduction, the correct planning and systems improvements are required. A poorly planned and inexperienced implementation will result in

disorganisation and stockouts which cause enormous costs and can scar an organisation's views on lean improvements.

Vative have extensive experience with implementing pull systems in many different environments and know how to do it properly. Make sure you engage Vative to ensure your inventory reduction and pull systems work correctly the first time.

But what if I can buy cheaper in bulk?
This is a very common question:

(1) The real savings of buying in bulk need to be weighed up with all the costs of keeping excessive inventory;
(2) Lean and the Value Stream Mapping tool teaches you to look at the entire value stream. The Toyota JIT system could not have been developed without full cooperation and the close coordination and respect of suppliers. An agreed supply arrangement of smaller quantities over a longer period of time is often a better result for a supplier, so potentially an even lower price could be agreed upon.

Vative's experts can assist you to find and work on cost savings within the entire supply chain that will have the biggest cost impact on your business.

Can pull systems and JIT be applied to service industries?
Service industries suffer similar issues with work in progress build up, with increased lead times becoming the biggest cost.

Do you have a paperwork process in your business which takes much longer than it should? Vative will Value Stream Map this process to understand unnecessary steps, labour imbalances and unnecessary work-in-progress. This will then allow projects to commence addressing these issues and significantly improving the efficiency and lead time of the process. Now we have improved this process, let us find the next process in your business that will be improved!

Our lean practitioner course is a fantastic way to learn more about push systems, pull systems, kanban and JIT (Just In Time). In addition to covering the theory, our simulations allow you to take part in a practical demonstration of how these and other lean tools work.