

An Original



Article

Criticality – The Key To Inventory Rationalization (aka Reduction)

By Tom Gordon, CFPIM
Missouri Enterprise Project Manager

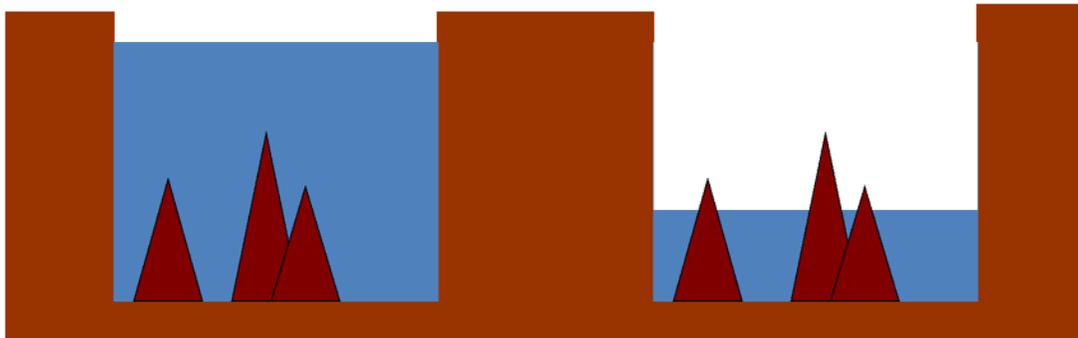
Abstract.

Inventory can be viewed as waste or it can be a strategic weapon in the marketplace of the organization, if it is used effectively. A good approach to inventory reduction is to use the analogy of a diet. Anyone can shed 20 – 30lbs without a great deal of difficulty – the key is (a) to shed fat not muscle and (b) keep it off. This paper is about shedding the fat and keeping it off: the strategic approach to inventory.

Most inventory reduction/rationalization programs are successful in the short term but over the next two or three years the inventory level just increases, generally to a level higher than it was before the reduction program started.

There are several reasons for this – a blame culture is the most pernicious. Top management not establishing a service level and then blaming the troops. This paper will not address this aspect.

The other reasons can be demonstrated by the “River of Inventory” analogy.



Imagine a river. The water level on the left is high, the rocks are hidden. It does not take a lot of skill to sail a boat down this river. However, if the water level falls, as on the right, the rocks are exposed and it takes a great deal of skill to navigate the river. Inventory levels are much the same as water levels. In a “just-in-case” manufacturing environment the rocks – poor quality, no PM, unreliable suppliers, inaccurate inventory quantities, inaccurate BOM etc – are hidden. However, once the inventory level is reduced, for whatever reason, these ‘rocks’ cause havoc. The excuse for excess inventory is often stated in terms of business resilience. The strategic role of inventory, as we are aware, can decouple supply from demand and this will bolster the system’s resilience but this can be costly. Andrew Zolli claims:

....Redundancy, which is also a time-tested way to improve the ability of a system to persist even when compromised, but it is also not quite the same thing as resilience. Keeping backups of critical components and subsystems is certainly wise on its face, as anyone who’s been stuck on a lonely road with a flat tire and no spare can attest. Highly resilient systems are frequently also highly redundant systems. But backups are costly, and in good times there can be a great deal of pressure placed on a system to eliminate them to improve efficiency. Worst still, these backups may become of little or no use when circumstances change dramatically.¹

Anyone who has wondered why there is a mountain of inventory in the Stores but a single component is not available for a shipment can empathize with Zolli’s statement.

All things being equal [which, of course they never are] the good reason to hold inventory is that it is cheaper to hold than not to hold inventory. If holding inventory creates a marketplace advantage, which outweighs the cost, then it makes business sense to hold that inventory but only after Top Management has determined the necessary service level and is aware of the cost. In these circumstances, the reasonable question is, “What to hold and how many?”

In a MTS, MTO or ATO environment the place to start is with independent demand items. A calculated safety stock based upon the variation in forecasting [but NOT to cater for bias in forecasting] is the sensible approach, straightforward to calculate and cost – again the caveat is that Top Management declares the required service level.

¹ Andrew Zolli, *Resilience, Why things bounce back* (New York: Free Press, 2012),13.

Although a general truism is that demand for dependent demand items should be calculated, it is not always the case. There are always exceptions and exceptions have a tendency to become general rules, resulting in inventory locations looking like Christmas Trees because they are covered in multi-colored inventory count tags!

The true key to inventory holding is **criticality**. How critical to the business and the Customer is a particular inventory item? This is the basic idea behind **J.E.D.I.** – Just Enough Desirable Inventory.

$$\text{JEDI} \propto [\text{Criticality} + \text{DDLT} + \text{Service Level} + \text{Opportunity Cost}]$$

For example, an item which has a low criticality index can be quickly and locally procured, high cost and Top Management are prepared to accept a high number of stock-outs per period would not be held in inventory.

As a general guide, a criticality level can be established:

- “1” Locally available, vendor holds inventory items, inter-changeable, will not prevent a shipment and has, perhaps, a high cost
- “2” As above but could prevent a shipment. For example, everyone who has spent any time in manufacturing has experienced a shipment to a Customer “on hold” because of the absence of something daft like a decal or label!
- “3” Lead time is reasonable, vendor is reliable, Customer may accept a substitute, accurate usage history.
- “4” Medium lead time, several suitable suppliers, Top Management declares 15% stock-out is acceptable
- “5” Long lead time, limited supply base, Top Management will not tolerate stock-outs. Customers can get the product from other organizations if there are delivery issues. Cheaper to hold than not hold.

In conclusion, there is much more to inventory levels than the rather crude Inventory Turns Ratio metric. The correct approach to inventory rationalization/reduction is to take the example of the gardener. A good gardener looks at the garden and removes the plants that are not needed; a ‘slasher’ gardener goes at the garden with a scythe and removes the good with the bad. Be a good gardener!