Research Reports
Articles

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DE-STRESS TO DELIVER

From inventory turns to norm turns

by **Vector Consulting Group**

In Distribution centric organizations, the level of Inventory is perceived to be a critical measure to understand the health of the system (inventory with respect to sale). The traditional measure is Inventory turns i.e. Annual (or monthly) Sales / Inventory on hand (on a particular day).

In companies that implement the TOC replenishment solution, the items under replenishment at the stocking locations are maintained with buffer norms. The norm level is distributed equally in three zones- Red, Yellow and Green, with Red being the bottom 1/3rd. On depletion (consumption) of the stocks from the buffer, the items are replenished in quantities equal to the depletion (consumption). The norms are increased only if there are continuous penetrations in the red zone, while they are decreased only when the stock levels remain in green for a long period. The increases are in steps of one third of current buffer norm. This mechanism of changing norms levels is called Dynamic Buffer Management.

Companies report the terminal inventory at the end of a period- a month, quarter or year. This measure is also used to evaluate and appraise managers. The higher the terminal inventory turns reported, more effective the management is perceived to be. Let us examine how managers can report good numbers:

- **Finished goods:** The sales team manages the environment of the organization such that a large chunk of sales happen close to the month/quarter/year end. In some cases this is as high as 40% of the total sales is achieved in the period end peak. This flushing out of the finished goods stock reflects a very healthy (low inventory and high turns) performance.
- **Raw Materials:** Entry of raw material (RM) in the plant is be controlled by issuing instructions to suppliers to keep material ready and deliver on the first day of the next month. This ensures that the period end inventory of RM is low. The same material arriving 2-3 days later gives an illusion of the plant being operated on low inventory turns.
- **WIP:** The plants produce to cater to the requirement of high sales in point one above and are also act accordingly to point 2, thus ensuring that the WIP in plant is quite minimal when the stock is taken for reporting purposes.

It, is quite evident what the combined effect of points 1, 2 and 3 above is, however, more importantly such a practice has no effect on cash flow which is one of the aims of having higher inventory turns.

What are the negative ramifications of actions which are seemingly so good from the reports?

In a distribution environment, a key enabler of sales is availability. When inventories are depressed at the period end, availability of the high runners suffers for any incremental sales increase that may exist. As inventory is easily measured and reviewed than lost sales, reviewing and pushing for higher inventory turns gets prominence over lost sales.

This practice of managing inventory turns with terminal inventory turns has other significant ramifications. In the plants RM shortages (created by holding off supplies at month end) can lead to considerable rescheduling. Rescheduling leads to deterioration of on time delivery performance. It also leads to subsequent increase in WIP and production lead times and consequently a decrease in the output of the plant leading to a potential loss of throughput.

Similarly in the case of distribution, the behavior leads to increased unavailability at certain locations. This unavailability leads to lost sales and lost customers. In non negligible cases it could also lead to permanent loss of customers. More ever it creates an impression of lower stocks at this location and could lead to either expediting supplies or increasing the buffer norms.

There are other significant problems that can be present by managing a supply chain based on such measures of inventory days:

If actual inventory remains the same and sales drops down, the number of days of inventory goes up which creates an impression as if actually the inventory has gone up BUT IT IS THE SAME. (the warehouse has same no of crates as before!!) – the managers swing into panic mode which may create further jeopardy for future sales. The sales figures used for days of inventory is actually a trailing average of the past – and future sales is a different reality. By using inventory turns for decision making, the managers make an assumption that past is a reflection of what the future will be...which is again erroneous assumption. Sales may drop or go up because of reasons which are nothing to do with the past sales – so taking decisions on days of inventory can actually be erroneous!! It is like rear view mirror driving.

The most critical question is can we achieve permanent and sustainable improvements in inventory turns with such practices. Companies want permanent and sustainable reduction in inventory turns. They want a concrete process to make this happen, and not the cosmetic way as described above. So how do top managers ensure that there is systematic and continuous process to reduce inventory turns and that the change is permanent and sustainable?

Introducing Norm Turns!!

What is Norm Turns? It is analogous to Inventory Turns but with reference to the buffer norm levels and not the actual inventory levels. Thus Norm Turns is annual sales /(Sum of all Buffer Norms).

The sum of all buffer norms exist as an absolute entity, irrespective of the stock levels in the system, they change only if the norms are changed. Thus to achieve lower Norm Turns the managers have to decrease the Norm levels of many items rather than take actions for cosmetic adjustment of inventory figures.

Norm levels are determined as (peak demand during the replenishment period x replenishment time x safety factor for the variability in demand and replenishment time).

The standard operating procedures in a TOC replenishment environment allow norm decrease only if the stock levels are in green for a prescribed period, say two replenishment periods. Since the stock position at any link in the supply chain is a function of supply service level and consumption, this can happen only if:

1. Replenishment time is decreased or
2. Demand has decreased.

No company would decrease the demand, hence the parameters for decreasing buffer norms is only replenishment time and the safety factor. If the replenishment time is reduced then-

- the norm level can be decreased by a factor of the reduction in replenishment time
- safety factor can be reduced as the variability of demand in a shorter period is lesser.

The above-mentioned effects result in a reduction in norm levels, which in turn increase in Norm Turns!

Since the replenishment SOP ensures that supplies are always topped up to the max of green level (no IRD), an increase in norm turns ensures increase in inventory turns! The inventory levels maintained are now within a lower level of buffer norm.

This takes away the attention of the managers from cosmetics of inventory management for the sake of reporting to an actual improvement in the system that will make itself evident in reduction of norms.

To conclude the key to improvement of norm turns is to decrease replenishment time.
The replenishment time can be decreased by-

- **Improving the availability at the source points** - such as the plant warehouse, the regional warehouses or the suppliers finished goods warehouses. Poor availability increases the time interval between 2 supplies for an SKU.
- **Decreasing the transportation time** - innovative work with the transportation routes and modes and the transporter's contract can decrease the transportation time.
- **Increasing the frequency of replenishment** - can be achieved by innovative and efficient route planning, transportation planning and transporter contracts. The frequency can also be increased with increase in sales. Increase in sales will lead to more volumes / trucks being dispatched. Sales can increase with increase in range of products and reach in the market and marketing activities in the market.

  In case of RM, increase in frequency of replenishment time can be achieved by decrease in batch sizes of the supplies by the supplier, having a finished goods warehouse at the supplier etc.

- **Decrease in order lead-time** by building systems to enable reporting of consumption on a daily basis.

Importantly, all the above can only be achieved by taking up improvement projects and ensuring the improvement achieved is permanent. This is POOGI (Process Of Ongoing Improvement)- identifying areas of improvement and ensuring a permanent change.

If and only if the above actions are accomplished will the Norm Turns increase. And thereby the Inventory turns and in a permanent and productive way.

To summarise, the critical aspects for sustainable increase in inventory turns are –

- Decrease in replenishment time
- Dynamic Buffer Management
- And POOGI

And the vehicle to achieve the sustainable improvement in inventory turns is Norm Turns.