

Inventory Turnover as Indicator of Health of Inventory and Business

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Abstract

Inventory management as well as Supply chain operations are often overlapping and hold the key to the success of sales operations. In all of the businesses be in automobile, manufacturing, pharma or retail industry, status of inventory reflects the health of the business. Inventory operations have two key elements namely Inventory System and Physical operations. Today inventory systems have replaced the book keeping and financial accounting that was being practiced earlier. Current inventory systems not only do the book keeping but are linked to upstream as well as downstream activities including procurement, sales processing, financial accounting. In terms of measuring a sales performance in relation to Inventory, we often use the term Inventory Turnover. Inventory turnover simply refers to the number of times the inventory is sold or used in a period of one year. Inventory turnover is also termed as stock turn, or stock turnover. Inventory Turnover is calculated by taking the Total Cost of Goods Sold, divided by Average Inventory. Adding together Beginning inventory and ending inventory and dividing the figure by 2 in turn calculate average Inventory. The inventory turnover as a measure of health of sales and business is used extensively in Retail, textile as well as FMCG segments. A higher inventory turnover does indicate a healthy trend of increased sales and indicates the need to maintain adequate inventory levels to avoid stock outs. In adequate stocks can result in loss of business opportunities and is something that the management needs to keep watching closely. On the other hand, a lower inventory turnover shows that either the sales of the said inventory is slowing down or that the unused inventory is building up clogging the system somewhere. A slow inventory turn can help the inventory manager focus on finding non-moving, obsolete and slow moving inventory items and thereby steps can be taken to deal with them appropriately. Inventory turnover also reflects the holding cost that is incurred in managing inventory. Increased inventory turns reduce the holding costs. The costs especially fixed costs like rent and cost of operations get distributed over higher inventory throughput and thereby the cost of inventory transactions reduces.

Keywords: Inventory Turnover, Health of Inventory, Inventory Indicators

1.0 INTRODUCTION

Any inventory of raw materials or finished goods runs into thousands of SKU items. Especially in case of Raw Material Inventory as well as Spare Parts Inventory these numbers could be much higher when compared to Finished Goods. Even in Finished Goods some products like clothes, grocery etc. could run into thousands of SKUs across the entire range. Every unit of Inventory has an economic value in the books of the company. Therefore, as an asset one needs to have a control over the inventory and ensure that the books stock matches with the physical stock. By book stock essentially we mean system stock. Inventory management on one hand consists of managing the inventory transactions and data in the system and on the other it involves physical processes on the ground. Both these have to work in tandem to ensure that all transactions are closed and completed both in the system as well as on the shop floor. In a warehouse a typical day operations begin with receiving materials from different vendors, which are unloaded, counted and updated in the system.

The system then issues a GRN and directs the location to which the material should be stored. Accordingly, the material is then moved to the storage location and a confirmation back in the system closes the entire transaction. At the same time, parallel processes for shipment delivery will be under process where the system releases pick orders on the warehouse. Operations staff picks up the materials as per pick list and confirm back to the system, which then releases a packing order and an invoice for shipment. Amidst these multiple transactions there would be quite a few operational transactions like bin

to bin transfers, kitting etc. which are again transacted in the system followed by physical process and re confirmation to the system.

In such situation where multiple transactions both in system as well as physical operations are going on and the tasks are interdependent, any process deviation in any one of the transactions is bound to occur resulting in differences between system transactions and physical inventory. Current trend in the industries is to outsource the warehousing operations to third party service providers, in which case the transactions increase manifold because of the introduction of additional system at the warehouse end, which belongs to the third party vendor. The principle customer maintains his inventory in his ERP, which transacts with the third party vendors WMS - Warehouse Management System and the Physical transactions on the shop floor, which have to run concurrently with the system.

1.1 Systems Issues

Normally the ERP system and the WMS are interfaced using standard interfaces. Both systems exchange standard interface files updating the transactions carried out in each of the systems and are downloaded at both the ends in periodic batch frequencies of half hour or one hour. Thus all receipts received physically at the warehouse in one hour get updated in warehouse WMS which then sends out the GRN information to Client's ERP for updating. Client's ERP similarly processes the orders based on the inventory available in its system and issues sales orders which are sent across to WMS. WMS then generates pick waves which when confirmed lead to releasing of packing list and invoice. These transactions are again completed physically and WMS is updated. WMS further sends out the information of dispatch to ERP for further updation. For these transactions to happen smoothly both ERP as well as WMS should match perfectly in terms of inventory and transaction information. When in case of day-to-day operations, hundreds of transactions are being processes at both the ends concurrently; the system updates may not happen on real time basis and can lead to inventory discrepancies. Therefore, it becomes necessary to have daily reconciliation of all transactions between both systems as well as operations.

1.2 System discipline required

Such transaction based systems call for strict discipline on the part of system users to ensure they complete all processes without deviation and regularly update the masters and reconcile on daily basis. Any lack of discipline can affect not only the inventory but effect transactions as well. For Example, if for any reason a particular SKU or consignment is blocked at the warehouse and is not to be dispatched, the inventory block should not only happen in WMS which controls floor operations but in ERP also. Otherwise in the ERP the blocked inventory may be showing as open inventory and get allocated for a sales order.

1.3 Master Data Up-dation is a MUSTM

SKU code numbers in any inventory are subject to frequent changes. You can also have the same description and same item being supplied by different vendors. Every time a new SKU is created at the Customer's ERP, one must ensure that the same new SKUs are created in the WMS too. WMS master data with regard to SKU Code, description and other SKU Master Data and Vendor Master information should mirror that of the ERP. If by oversight or carelessness this co-ordination is found lacking the inventory gets mixed up or does not get uploaded into the system.

1.4 System Inventory should match with Physical Inventory

The inventory that is setup and maintained in the ERP as well as WMS should correspond to the inventory on the shop floor. For example, the inventory shown in ERP and WMS with details of each location as to where, how much is stored in which location should match exactly with the physical reality. On the shop floor the physical location should have the same SKU, Exact quantity as per System entry. Any mismatch on the floor location resulting out of mistake from the operations staff of keeping inventory in wrong location will create havoc in both system as well as operations.

2.0 COMPANY'S APPROACH TO INVENTORY HEALTH

Inventory means an item of value and asset in the books of the Company. This is the most important category of item that needs to be focused upon by the management for in its management lies the business efficiency as well as profits. Inventory holding is a must for any business organization that is into manufacturing and selling or trading of products. Technically inventory is holding stock of raw materials or finished goods for a future point of consumption. This in fact blocks the working capital employed by the company. In any business, it is essential to have optimum inventory at all times. Over inventory stocking results in erosion of profits and increase in inventory carrying costs that effects the operational costs of the company, while shortage of inventory can lead to loss of business and sales opportunity which will not only result in revenue loss but damage company's reputation and reliability in the market and with customer.

Inventory by nature is operations intensive. With the number of items running into thousands, coupled with the number of transactions that are involved in managing inventory operations on daily basis, it is quite possible that without water tight controls over processes, systems and operations, inventory will go out of control resulting in pilferage, loss due to damage, mis-management, theft or shrinking. In case of inventories having extra sensitive characteristics involving perish ability, shelf life or temperature control, tilt meters etc. it becomes necessary to keep a tighter watch and control over such inventories and their management. Inventory Control and effective management is essentially based mainly on two prime factors, which are Company's Inventory Management Strategy and Policy as well as Management's focus on Inventory

2.1 Operation Management.

A company which identifies supply chain and inventory policy to be the enabler that will help the company gain an edge over competition in the market and use it to leverage its position will invest into engineering efficient supply chain models and inventory management practices to meet its business goals. Companies like HP, IBM, DELL, Wall Mart, Xerox, Procter and Gamble and Unilever etc have invested continually into reviewing and re-engineering their inventory as well as supply chain strategies to meet with emerging market situations. All these companies have done away with traditional concepts of storage and inventory management and adapted the more efficient VMI-Vendor Managed Inventory, JIT - Just In Time and Customer Response systems whereby they have management to get their suppliers to hold inventories for them right next to their manufacturing sites and supply on Just In Time Basis.

Retailing business being highly competitive most of the companies have invested heavily into soft wares and systems to be able to manage the inventory visibility and stocks as well as call offs thereby bringing efficiencies into inventory management operations. Systems driven catalogue management, system based forecasting, Statistical analysis of Sales Data and extrapolation using complex systems enabled forecasting methods and reports have brought in lean Inventory management concepts in these companies and their strategies have paid off very well. In effect their strategic focus and approach to inventory and logistics planning have been the key factors behind their success in the markets.

While the company's focus on strategic decision making, planning and defining of Inventory rules and methodologies relevant to their business operations, it is important to realize that the effectiveness is dependent upon the ground operations. Especially in case of Inventories which are stored at multi locations and handled by third party service providers, it is becomes that much more difficult to manage the inventory operations. Therefore, as principle owners of inventory, the companies should build very strong management focus to define processes, set up expectations, gather MIS data, analyze and control through checks and balances. This will involve setting up of very strong inventory and logistics team with right management and operational process capability and experience coupled with strong systems deployment. Companies would have to set up independent audit teams too to audit the inventory books, systems as well as processes both from operational as well as statutory compliance point of view.

It is not enough for companies to focus on monitoring the operations of the third party services, but focus should also be on internal management of inventory planning and operations too. Systems deployed should be capable of generating MIS reports and other data as per requirement. Secondly inventory analysis and review should be a periodic process as laid down by process document and manual, involving inventory planning, logistics, procurement as well as finance teams. It is only when

decisions and review of inventories are done in line with changes in demand pattern or other operational conditions coupled with speedy decisions to scrap or dispose of unused, unwanted and non-moving inventory will help in maintaining inventory balance and efficiency.

2.2 Inventory Operations

When a management student passes out from college and is absorbed into any business organization, if he is lucky he will get to spend a few months in getting orientation in all departments before being assigned to a particular department or function at the end of the induction program. Those who get to be assigned to working in Supply chain or inventory operations of the company are likely to learn very important lessons that is likely to give them an edge later on when they grow in ranks and take up higher and different responsibilities. Inventory management and supply chain operations both on the Raw material as well as Finished Goods side are very critical to the success of sales and marketing besides being major contributors to the profitability of the company.

Sales and Marketing can be said to be efficient not when they build sales leads and convert them. But the efficiency of being able to reach the right Finished Product to the Right Customer or Market and the Right Time is what determines the Success of S & M. Inventory is the other function that is critical to the Sales. An efficient inventory management will mean carrying balanced inventory and functioning at optimum efficiency as well as ensuring control over inventory carrying costs. Any increase in efficiency of inventory holding or operations impacts bottom line directly. Supply chain, having to do with movement of inventory to and from plant to the markets, holding inventory en route at various points and managing overall inventory logistics is also very critical both to inventory management as well as the Sales Function.

Once the trainee has understood the operations models and seen how the entire chain of functions involving multiple internal departments, systems, documentation as well as external vendors, third party service providers and the governmental organization all work in tandem to make the business a success, he would have pretty much understood the secret to building successful business. Time and again we have seen that the General Managers as well as the Marketing Managers who have been heading their departments in the companies have made headway and achieved breakthroughs in terms of marketing their products using innovative supply chain distribution strategies and thereby have been able to impact the bottom lines substantially. Direct marketing, E marketing, Network marketing are all new sales concepts but if you have to incorporate these into your marketing plan, then it becomes necessary first for you to be able to understand and define the supply chain and inventory strategy to service these delivery channels.

An inventory strategy can be designed on paper but then to be able make it operational, one needs to have a realistic exposure and experience to the field operations and have a hang of how things work on the ground. Inventory management and operations involve multiple agencies and service providers combined with multiple systems that need to be interfaced. Sales process has to be married to Supply Chain and logistics process, which in turn needs to drive the inventory operations process in the back end. All these different modules need to be working in tandem and seamlessly to deliver products across markets in time.

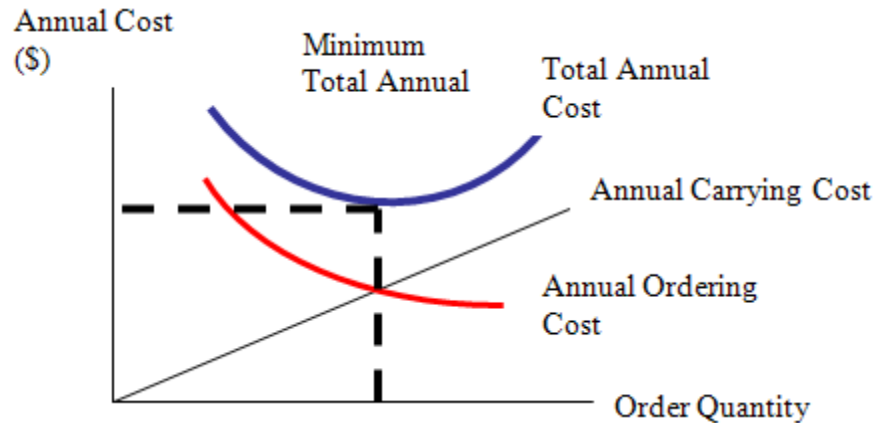
3.0 INVENTORY PLANNING

Every organization that is engaged in production, sale or trading of Products holds inventory in one or the other form. While production and manufacturing organizations hold raw material inventories, finished goods and spare parts inventories, trading companies might hold only finished goods inventories depending upon the business model. When in case of raw material inventory management function is essentially dealing with two major functions. First function deals with inventory planning and the second being inventory tracking. As inventory planners, their main job consists in analyzing demand and deciding when to order and how much to order new inventories. Traditional inventory management approach consists of two models namely:

- EOQ - Economic Order Quantity
- Continuous Ordering
- Periodic Ordering

1. EOQ: Economic Order Quantity method determines the optimal order quantity that will minimize the total inventory cost. EOQ is a basic model and further models developed based on this model include production Quantity Model and Quantity Discount Model.
2. Continuous Order Model: works on fixed order quantity basis where a trigger for fixed quantity replenishment is released whenever the inventory level reaches predetermined safety level and triggers re ordering.
3. Periodic System Model: This model works on the basis of placing order after a fixed period of time.

3.1 EOQ Model



Example: Biotech.Co produces chemicals to sell to wholesalers. One of the raw material it buys is sodium nitrate which is purchased at the rate of \$22.50 per ton. Biotech's forecasts show an estimated requirement of 5,75,000 tons of sodium nitrate for the coming year. The annual total carrying cost for this material is 40% of acquisition cost and the ordering cost is \$595. What is the Most Economical Order Quantity?

$$EOQ = \sqrt{2DS/C}$$

D = Annual Demand

C = Carrying Cost

S = Ordering Cost

D = 5,75,000 tons

C = 0.40(22.50) = \$9.00/Ton/Year

S = \$595/Order

$$EOQ = \sqrt{2(5,750,000)(595)/9.00} \\ = 27,573.135 \text{ tons per Order.}$$

This model pre supposes certain assumptions as under:

- No safety Stocks available in inventory.
- No Shortages allowed in order delivery.
- Demand is at uniform rate and does not fluctuate
- Lead Time for order delivery is constant
- One order = One delivery no shortages allowed.
- This model does not take into account other costs of inventory such as stock out cost, acquisition cost etc. to calculate EOQ.

In this model, the demand increases for production the inventory gets depleted. When the inventory drops to a critical point the re order process gets triggered. New order is always place for fixed quantities. On receipt of the delivery against the order the inventory level goes up. Using this model, further data extrapolation is possible to determine other factors like how many orders are to be placed in a year and what is the time lapse between orders etc.

3.2 EOQ for Production Lot

This model is also used to determine the order size and the production lot for an item to be produced at one stage of production and stored as work in progress inventory to be supplied to the next state of production or to the customer.

4.0 GOOD INVENTORY MANAGEMENT PRACTICES

Good inventory Management practices in the company help by adding value in terms of having control over and maintaining lean inventory. Inventory should not be too much or too less. Both the situations are bad for the company. However often we see that inventory is not focused upon by the management and hence lot of inefficiencies build up over a period of time without the knowledge of the management. It is only when we start a cost reduction drive that the inventory goof ups and skeletons come out of the cupboard and results in revamping the entire operations.

However, those companies, which have always focused on inventory as a principle function and recognized that the inventory effects their sales, as well as the books of accounts and profits, have managed to introduce and improve inventory management processes. Many business models work on lean inventory principle or JIT inventory along with other models like VMI etc. Inventory management to a large extent is dependent upon the supply chain efficiency as well as operations. Inventory management is a management cum operations function. It requires operational processes to be followed and maintained on the floor and in inventory management systems. Coupled with operations, it entails continuous study; analysis and decision making to control and manage inventory levels. I have covered below briefly few of the points which when followed, can go a long way in ensuring that the inventory is lean and clean.

Review Inventory periodically and revise stocking patterns and norms: Inventory is dependent upon the demand as well as the supply chain delivery time. Often companies follow one stocking policy for all items. For example, all A, B & C categories may be stocking inventory of 15 days, which may not be the right thing that is required. While some items may have a longer lead-time thus affecting the inventory holding, the demand pattern and the hit frequency in terms of past data may show up differently for each of the inventory items. Therefore, one standard norm does not suit all and can lead to over stocking of inventory as well as in efficiencies in the system.

Get into detailed inventory planning - One size does not fit all: Understand the inventory types and the specific characteristics of the items you are carrying. Then build the inventory stocking parameters taking into account the unique characteristics of the particular inventory. From amongst your inventory list, you will find that all types of materials are not of the same value. Some might be very expensive and need to be carried in stock for a longer period, while another item might have a shorter lead-time and may be fast moving. Quite a few items often have shelf life and hence require separate norms and focus to manage such items. Getting into the detailed understanding will help you identify the inventory-stocking norm required to manage these characteristics to ensure optimum efficiency. The solution quite often may not be to carry stocks, rather it may involve setting up the customer service standard for such items and specifying a delivery time depending upon the frequency of demand. Quite a few items often have shelf life and hence require separate norms and focus to manage such items.

Study demand pattern, movement patterns and cycles to build suitable inventory norms for different categories of inventory: Companies which are into retail segments and dealing with huge inventories in terms of number of parts as well as value will necessarily need to ensure they practice review of inventory list and cleanup operations on ongoing basis. Popularly known as catalogue management, inventory norms review should be carried out based on detailed study of the sales data, demand pattern, sales cycles etc. Understanding of the business and sales cycles specific to the product category helps one manage inventories better. For example, in case of retail garments, with every season

certain SKUS become redundant no matter how their demand was in the previous months. This helps identify those stocks which are required to be managed at a micro level and identify the high value and fast moving items that need to be always on the radar to avoid stock outs. It does not help for example to carry standard stocks of all items including low value items as well as high value items. If the low value items are locally available and the lead-time is less, one can cut down on the inventory and change the buying pattern. Similarly, high value items too can be managed by cutting down the delivery lead times and in turn reducing inventory. It helps to periodically study the past data and extrapolate the same to identify slow moving and obsolete items. The dead stocks should be flushed out and active catalogue items should be made available.

4.1 Inventory Management Systems

Modern day inventory is managed by sophisticated system applications that are designed to manage complex inventory plans and to a large extent contain processes that initiate and streamline the operations and inventory management. In the wake of improvements in the communication technology, companies are deploying one single ERP system across all factories, offices, departments and locations, thereby ensuring seamless transactions, visibility and controls. Inventory in the earlier days used to be managed by a system known as cardex system. Bin cards were printed and kept in every bin location. Whenever inventory was put into the bin or removed, the card had to be updated. Apart from the bin cards, books or registers were maintained to note down the transactions and reports were prepared manually.

The system was basic and did not provide flexibility to manage warehouse locations as dynamic locations. The operations being manual were time consuming. In the next phase come the basic inventory management systems, which were a replica of the accounting books containing debit and credit entries along with the balance and the Cardex System continued to be used to manage the shop floor operations. With the ERP System introduction, MM modules are deployed which work in tandem with procurement and other modules. Inventory modules contain intelligent applications that manage the inventory, help in analysis, categorization and to a large extent initiate actions and processes based on auto inputs derived from other sources.

ERP systems do contain WMS modules, which can be deployed along with the inventory module to manage the warehouse operations. Basic inventory modules in ERP do contain location management of inventory but do not support warehousing operations in detail. WMS System applications are designed to work like an extension of the inventory system but are standalone applications that help in warehousing, control, direct and manage inventory and operations. In fact, a robust system suite comprising of ERP and WMS with interfaces built in between the two systems can play a major role in managing inventory efficiencies. Both the systems need to be robust, strong and built to suit the business operations requirement as well as logistics operations requirements. While the inventory management efficiencies depend upon the ERP functioning and features, the inventory operations management is heavily dependent upon WMS System.

WMS system is different from an ERP based inventory system in the sense that WMS manages inventory but manages inventory operations and warehouse operations. Though it mirrors the inventory that lies in ERP, the rest of the operations that are carried out through WMS are different and operations intensive. Until a few years ago the inventory operations used to be carried out with basic WMS where most of the operations were manual. Put away lists and pick lists had to be printed and issued to the operators, who had to note down the bin location and the pallet ID etc on the slip and give it back to the operator to do the data entry into the WMS and update the systems. With the introduction of scanning technology things became a lot easier where barcodes labels could be pasted on the inventory which could then be scanned via hand held or wireless scanners and the data could get uploaded into the WMS.

This was further replaced by RF scanners, which work in real time basis. Today most of the warehouse operations are carried on through RF Scanners, which are like the extension of the WMS and are connected to the system on real time basis. The operators can now download tasks, carry out the tasks and upload confirmation of task completion into the system through RF scanners. This has not only improved operations efficiencies and ensure better housekeeping but has greatly improved the inventory as well as data efficiency.

Both ERP and WMS systems along with RF technology have helped improve inventory visibility, accuracy and operations efficiency, resulting in faster operations, leaner inventory and good warehouse management practices. RF Tag IDs have made an entry into the inventory and supply chain arena and are currently being adapted by retail and textile industries as well as aero spares industry etc. Tag IDs will provide inventory visibility at all times throughout the supply chain and thereby ensure inventory accuracy. They are expected to help cut down and ease a lot of operational processes too. However exorbitant cost of the RF tag IDS has been the entry barrier that kept the industries from adapting this technology. The rates are dropping fast making it viable for all industries to adopt these into the inventory management and operations systems.

5.0 CONCLUSION

Inventory turnover is the indicative of the health of inventory operations. When the inventory turnover is higher, the inventory operations efficiency will also be high to meet with the increased operational requirements thereby good housekeeping and increased responsiveness to market requirements. Inventory turn in some cases or some systems is also calculated based on the numbers sold rather than the average value of inventory.

In such a system the Inventory turn is calculated by dividing the Number of Units Sold divided by the Average number of Units inventory held in a given period of time. Over a number of years, each industry has developed methods to check inventory turnover and industry standards have been standardized. So whenever a new business venture is set up, they are able to have the industry standard as benchmark to be achieved and use it as a guide to streamline operations.

The company should have clearly defined metrics to measure and define inventory health as well as inventory operations health and this needs to be viewed by the senior management periodically with operating management and the rest of the team. Any aspiring manager who wants to head an organization as General Management or Marketing Manager would have to first get firsthand experience of these brass tacks that will help him later to be able to devise practical and achievable strategies to take his business ahead.

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