FACTORS INFLUENCING INVENTORY CARRYING COST & VARIOUS WAYS TO TACKLE IT WITH INVENTORY REDUCING TECHNIQUES FOR DIFFERENT CLASSIFICATIONS OF INVENTORIES

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ABSTRACT:

Inventory cost is very significant area to minimize the cost in today's world, Inventory carrying cost / inventory holding cost play important role in minimizing cost. In this paper Factors influencing inventory carrying cost have been elaborated such as cost of capital , storing and handling cost , insurance cost, shrinkage cost, tackling of large inventory , speed up delivery , to reduce ordering cost, set up cost, Labor & equipment utilization . Minimizing transportation cost, quantitydiscount have also been rethought. Paper also classifies various types of inventory Raw material ,WIP, finished goods, RMO, which is normal way of classification .It has been attempted to classify based on cycle inventory, safety stock inventory , anticipation inventory & pipe line inventory . Inventory reducing techniques have been discussed based on these classification.

KEYWORDS: Inventory Cost,Costs of capital,Ordering Costs.Raw Materials,Work in Progress .

1. INTRODUCTION

In today's scenario world is opting for replacement rather than repair. Hence Life cycle of products are reducing to as minimum as possible because economy is flourishing & hence people are in position to replace rather than repair .Because of booming of economy world over, there is pretty good supply of money in market hence there is inflation. This leads to inflation in repair cost too. That compels the customer to go for new one instead of repair as he too can afford more price for replacement rather than just repair .In every person's mind there is desire to have new out of greed than repair, if they can afford.

That is very reason that now world in moving toward new model at lower price with less life cycle duration. This has drastically affected on core concept of design of product, marketing of product & its inventory management. All investment for it, is expected to be returned within 3 to 4 years at the most. Its return are expected to be started within 2 years.

We will concentrate on how it is going to effect on inventory management .The fundamental question is how much inventory be kept in stock for smooth flow of operations in changing scenario.

If we hold inventory, it is having inventory carrying cost associated with it. On an average most companies are having Carrying cost about 15 to 35 %

For example sake let us take about 20 % inventory carrying cost.

In India .Many companies are having 4 to 6 time annual turnover of their inventory in terms of cost. Only form is getting changed from raw material to finished goods if it is production. So for example if we

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take 5 times turnover of inventory, & company having 100 crore turnover, its 20 crore is always blocked in holding inventory. & its carrying cost is about 20 % of it i.e. Nearly 4 cores is carrying cost of company which is too high

      All such companies are normally earning about 10 % profit on turnover so their profit can be significantly improved by reducing the inventory carrying cost if they control certain factors which influence carrying cost as follows.

2. FACTORS INFLUENCING INVENTORY CARRYING / HOLDING COST

2.1 Cost of Capital: Cost of capital is investment in inventory which would have fetched some return if invested in bank or other instruments available in market. Many companies are taking loan for working capital that interest rate itself is a cost of capital. Normally it is 15% per annum. As the Inventory is varying throughout the year weighted average value be considered for cost of capital lessor is inventory lessor is total cost of capital, even if % of cost of capital remains same.

2.2 Storing & handling cost: Inventory is required to be moved in & moved out So to move in some space is required Rent / cost of that space & handling cost to take it in & take out These costs are significant when there is more inventory because of tracing, moving other inventory aside for their movement, more time is consumed to keep inside / to take out. Hence inventory should be bae minimum.

2.3 Insurance ; if there is more inventory, there is more insurance premium which can be reduced if inventory level is reduced.

2.4 Shrinkage : There are chances of shrinkage of inventory by way of theft & also by way of pilferage This probability increases when there is high level of inventory If level of inventory is low, these things are immediately surfaced & company take corrective and preventive action . In case of high inventory these thing remain unnoticed for long span hence difficult to trace root cause for improvement .There company becomes more professional when there is low level of inventory .One more way of shrinkage is that of obsolescence . If level of inventory is high, there are more % of obsolescence due to high level Which brings down the professionalism of organization .& companies in stead of looking for opportunities in emerging market , always struggling with their own shackles of heavy inventory, in a way they loose opportunities because of these shackles

3. PURPOSE OF KEEPING LARGE INVENTORY & HOW THEY CAN BE TACKLED.

3.1. One reason is to speed up delivery to customers & to avoid stock out. There are types of situations in market one is stock out where we are not able to fulfil customer's demand due to unavailability of market & in other situation there can be backorder, in this situation orders cannot be fulfilled due to immediate unavailability but can be fulfilled later as a back order. Some customers are ready to wait & there are chances of losing to customers in case of stock out.
In 2016 Redmi mobile had huge demand. There used to be stock out as soon as launched on net within couple of minutes. The company always preferred stock out rather than producing in excess.

3.2. To reduce ordering cost , is one of the basic fundamental reason , but nowadays these cast can be minimized by expecting staggering delivery to reduce the inventory

3.3. Set up cost : If the component is processed in house then set up cost is given consideration & batch is formed of certain quantity ,,Set up cost can be reduced by change in technology which minimizes set up cost .eg. SMED, CNC machines

3.4. Labor & equipment Utilization : In old traditional way to improve productivity, maximum production was a concept New fundamentals is to produce only as per required & do not waste raw material, labour, & equipment utilization by producing more which has no immediate market. As there can be modification in product as per peoples' test

3.5. To minimize transportation cost. It was okay when it was seller' market Now days have changed Product popular today may not be the test of customers' of tomorrows Hence to save on transportation buying more quantity which has no certain demand in days to come , Hence it is incorrect to buy more quantity to reduce its transportation cost.

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3.6. To get quantity discount: To avail the discount we are procuring excess quantity. But while buying we must take in to account whether it is consumable item or non-consumable item. If it is non consumable item it is going to occupy the space for ever hence one should give reconsideration for it . Whether it has expiry date in case of food / chemicals & pharmaceuticals products, then even if it is consumable one should buy only as per requirement. Products which are fragile

4. TYPES OF INVENTORY
4.1 Raw Material : RM needed for production of goods and services
4.2 Work in Progress : Items such as components , subassemblies, assemblies either in semi-finished or finished stage required to make products
4.3 Finished goods: Product
4.4 RMO : Spare required for repair /maintenance & operations
5. Another way to classify the inventory is how & why it is being there with us
5.1 Cycle : which is routine production Normally it is as per lot size or EOQ, Longer is lead time , more will be routine inventory Ig Q is lot size average cycle inventory will be Q/2
5.2 Safety stock: To ensure demand is met when incoming supply of raw material / components are delayed or when demand is more than anticipation. It is surplus inventory to protect against uncertain demand and to avoid interruptions in production. If lead time is 3 weeks , companies keep 5 weeks stock thereby 2 weeks safety stock
5.3 Anticipation: This inventory is used to absorb uneven rate of supply & demand. This can also be used when there is capacity constraints.
5.4 Pipe line: Inventory that is created when order is released but it is still to be received. It also includes in transit inventory. Longer the lead time higher will be inventory. It is also valid for higher is demand, higher will be the pipeline inventory

$$Pipe\ line\ inventory = Average\ demand\ per\ unit\ time * lead\ time$$

       To illustrate how above classification help to take decision of cycle level is shown with an example below
       A firm buys a product in lot of 400 and its average sale is 100 per week supply a lead time is 3 weeks.
       Now the firm has an option from supplier to raise lot purchase to 500 quantity with assured lead time to 2 week what should firm do?

Previous Cycle inventory is $\frac{Q}{2} = \frac{400}{2} = 200$

Previous pipeline inventory is $d * L = 3 * 100 = 300$

Total inventory is =200+300=500

Now with new proposal

Cycle inventory is $\frac{Q}{2} = \frac{500}{2} = 250$

Pipe line inventory is $d * L = 2 * 100 = 200$

Total inventory is 250+200 = 450

Though inventory level is increased still it is beneficial as lead time is reduced.

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So in inventory one has to give consideration to lead time as it reduces pipeline inventory .so the new proposal will reduce the investment in inventory.

6.   INVENTORY REDUCING TECHNIQUES
6.1   For cyclic Inventory;
6.1.1 Reduce the lot size design new information flow so that there will be smaller lots with more turnover, very core part of inventory reduction
6.1.2 Improve on quality, which in turn will increase demand. This will reduce changeover required in machine when demand is less. That will improve productivity.
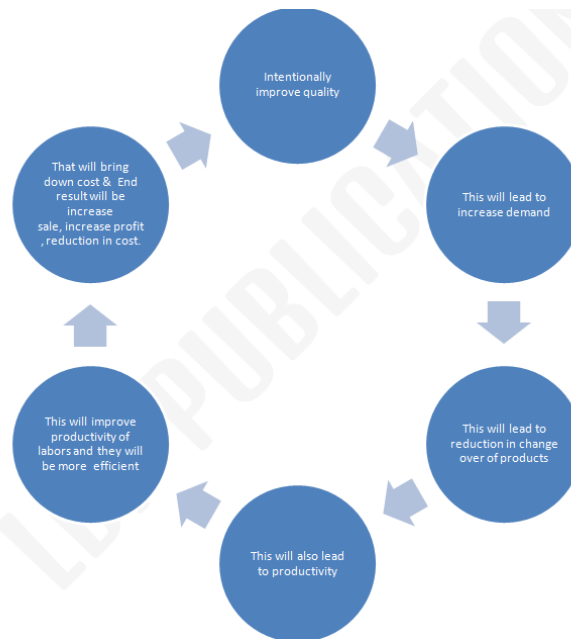

Fig 1. A Cycle of improvement

This is just one cycle . Like Deming's PDCA cycle, once one cycle is complete , take it as a mission & continue it will swhirl like a tornedo or hurricane as shown below
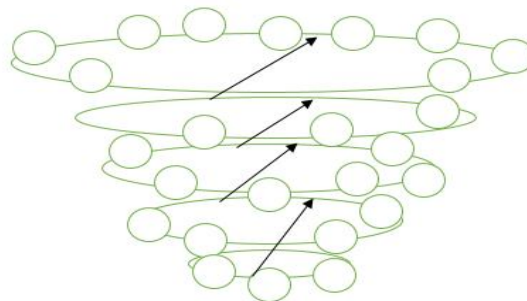

Fig.2 Hurricane effect of . Multiple cycle of Improvement

6.2   For Safety stock inventory
6.2.1 Improve demand forecast so that we can reduce safety tock
6.2.2 Minmize the lead time of purchased components

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6.2.3 Share production plan with supplier so that he will be aligned to production plan

6.2.4 Keep more Machine equipment than necessary to avoid failure & to meet excess demand when needed , make man power multiskilled flexible to play any role as demanded by situations.

6.2.5 In cse of service sector, keep a bit more manpower than needed as services can not be invetoried .

6.3 For anticipatory inventory

6.3.1 Introduce a product which will have cyclic trend opposite to existing product that is when one product is in crest other product would be in trough. When one product has more demand other product has less demand & vice versa. So that product can be switched over as per season & no question of getting inventory built up

6.3.2 Run off season campaign to increase sale

6.3.3 Introduce off season prices to pick up sale to avoid inventory built up.

6.4 For pipeline inventory

6.4.1 Imporve suppply chain management so that lead time is reduced

6.4.2 Have dialog with supplier to what quantitiy lead time will be minimum accordingly design quanity plan

7. CONCLUSION :

There are various factors that influences inventory carrying cost Al these factors are required to be analysed & there are various way to tackle then . Appropriate measures can be taken based on the influencing parameters. Inventory can also be cladssified based on its usage & after clasifications measures can be taken based on classification .It suggest best way to control carrying cost .

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