Approach to the control of inventories in shipping

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Abstract

Economic conditions in recent years prerequisites volume, composition and structure of inventories are key parameters that play a role in the course of the production process. Detailed knowledge of the quantitative and qualitative state inventories in each plant is essential for its functioning. One of the most important challenges facing build-to-order ship manufacturers is the wide variety of product offerings, commitments to rapid order fulfillment and near-zero inventories creating demand for individual parts that vary wildly from day to day, while supplying these parts globally with long and variable lead times.

Key words: *shipping, inventories, control.*

Introduction

The term "inventory" is often used synonymously with materials. The former has, however, a wider meaning and it covers not only the raw materials consumed or utilized in production but also such other items as sundry supplies, maintenance stores, fabricated parts, components, tools, fixtures and other equipments. Finished and partly finished products are also often included under the term "stores". The term "inventory" covers the stock not only of raw materials but also components, work-in-progress and finished goods.

The term inventories applied to all goods that will ultimately be sold. The term merchandise inventory is normally applied to goods held by a trading concern, either wholesale or retail, when such goods have been acquired in condition of resale.

In short, inventory may be defined as the materials which are either in market or usable directly or indirectly in the manufacturing process and it also includes the items which are ready for making finished products by some other process or by comparing them either by the concern itself and/or by outside parties. In other

words, the term 'inventory' means the materials having any one of the following characteristics, It may be

- saleable in the market;

- directly useable in the manufacturing process of the undertaking;

- useable indirectly in the manufacturing process of the undertaking; and

- ready to send it to the outside parties for making useable or saleable products out of it.

In the present study raw materials, stores and spare parts, finished goods and work-in-process have been included in the inventories [1].

Overview

A fundamental objective of a good inventory management is to place an order at the right time from the right source to acquire the right quantity at the right place and quality. While developing an appropriate level of inventory the following objectives should be kept in mind:

- Investment in inventory should be kept minimum so that undue amount is not locked up in it as investment in inventories involves costs.

- A firm should make effective efforts in buying quantity of raw materials in accordance to its needs.

- Continuous efforts should be made to shorten the production cycle. The longer production cycle runs heavy costs and the risk of the extra inventory investment.

- A firm should maintain inventory to such a level that smooth and unhampered production is ensured without any obstruction.

- A firm should maintain sufficient amount of finished goods to meet the demand of customers regularly because if it is not done then the customers may shift to the competitors, which will amount to a permanent loss to the firm.

- To the extent possible, a firm should try to minimize the possibility of the risk of loss through obsolescence or shrinkage in the market value between the time of purchase of manufacture on the one hand and the time of sale, on the other.

- To serve as a means for the location and disposition of inactive and obsolete items of store.

- To keep all the expenditures within the budget authorization.

Inventory management, therefore, should strike a balance between too much inventory and too little inventory. The efficient management and effective control of inventories help in achieving better operational results and reducing investment in working capital. It has a significant influence on the profitability of a concern [2]. Determine the optimum level of inventory and it can be done through the following inventory management techniques:

➤ ABC Analysis - this technique is based on selective control of inventory. Inventory optimization is critical in order to keep costs under control within the supply chain. Yet, in order to get the most from management efforts, it is efficient to focus on items that cost most to the business [3]. Where there are many items in the inventory, it becomes essential to have a value-item analysis (known as ABC analysis) that attempts to relate how the inventory value is concentrated among the individual items and it is also known as Control by Importance and Exception (CIE). As the items are classified according to the importance of their relative value, this approach is also known as Proportional Value Analysis (PVA). The ABC inventory control technique is based on the principle that a small portion of items in inventory may typically represent the bulk of money value of the total inventory used in the production process, while a relatively large number of items may form a small part of the money value of stores. The money value is ascertained by multiplying he quantity of materials of each item by its unit's price. According to this approach to inventory control, high value items are more closely controlled than low value items. Each item of inventory is given A, B or C denomination depending upon the amount spent for that particular item. 'A' or the highest value items should be under the tight control and under responsibility of the most experienced personnel, while 'C' or the lowest value item may be under simple physical control.

This concept may be made clear with the help of the following:

"A" Category – It consists of items that have a high velocity or speed in usage and have a high unit value. The items included in group A involve the largest investment i.e. 70 to 75 per cent of the total value of stock and represent 10 per cent of the total number of items. This category of items requires rigorous control.

"B" Category – It consists of items that include relatively small investment i.e. 15 to 20 per cent of the total costs of inventory and 20 per cent to 25 per cent of the total number of items. Hence, slightly lesser time and efforts should be devoted to the control of such items.

"C" Category – It includes those items which are of meagre unit value i.e. 5 to 10 per cent of total value of inventories, having a low frequency in usage. These inventories represent 70 to 75 per cent of the total number of items.

The task of inventory management is the proper classification of all the inventory items into one of the above three categories. In brief, it can be prepared as follows:

Table 1. Inventory reach down between number of items and inventory value under ABC analysis

Particulars	"A" Items	"B" Items	"C" Items
Control	Tight	Moderate	Loose
Requirements	Exact	Exact	Estimated
Postings	Individual	Individual	Group or none
Check	Close	Some	Little
Control	Exact	Exact	Approximate
Expediting	Regular	Some	No
Safety stock	Low	Medium	Large

➢ In shipping transport, an approach to organization and technology of control of inventories in maritime transport is through the introduction of online computer system AMOS (Asset Management Operating System). No matter how buoyant the shipping market, shipping companies are always looking for ways to reduce costs, increase operational efficiencies and maximise charter income [4]. AMOS Business Suite is an extensive and powerful Windows based program capable of handling most of the daily ERP functions encountered in organisations that may consist of multiple locations. It is a client/server application, where the client program is run on a Windows PC, and the server program may use one of several different database systems. A stand-alone configuration on a single PC is also possible – table 2.

The traditional problem has been that communication between buyers and suppliers is typically done by email, fax or at best by online ordering systems unique to each supplier. The result may be cumbersome - faxes go missing, emails can go unread and the overheads in remembering which suppliers require orders in which format become significant. This is where Ship Serv steps in. For the first time, buyers and suppliers can go through a single online hub, ShipServ TradeNet,

instead of trying to create custom, hard-wired integrations between every supplier and buyer.

All requisitions and orders created in AMOS M&P are automatically channeled through ShipServ. The resulting quotes, confirmations and acknowledgements are seamlessly returned back from the supplier into AMOS M&P. The lingua franca for all of these transactions is the Marine Trading Mark-up Language (MTML), the industry standard communications protocol.

AMOS is an acronym for Asset Management Operating System; this new acronym reflects the changes that not only the Maintenance world, but the AMOS software, have incurred in the last years.

With equipment becoming more and more complex to install, operate and repair, ensuring that any equipment lives as long as possible while remaining as close as possible to the initial operating conditions (and thus to the initial forecasted output, whatever this output maybe), has become a paramount task for any company. This is why there has been an evolution between Maintenance Management, which was essentially a way to make sure that the equipment was maintained in the best possible operating conditions, to Asset Management, which entails that the equipment has to be kept operational in the most effective way. In Asset Management, issues such as RCA (Root Cause Analysis, i.e. determining the reasons – there may be several – why a given equipment has failed), LCA (Life Cycle Cost Analysis – determining how we can keep any equipment running before it becomes more convenient replacing it instead of repairing it), Stock management (determining the right quantity of spares to be kept in stock, with the lowest possible Rotation Index so that we do not waste money in keeping spares on shelves unnecessarily) all intervene to increase the Operational costs of any equipment. Large companies need to understand how much a given asset is depreciating and when it will need to be replaced. Maintenance thus becomes a still important but just a part of the total equation on how much managing a company (or a ship or an oil rig) costs.

Table 2.

Consultancy and Customer Support					
Enhancement		**Add-On**		**Product**	
Maintenance Optimisation		Risk Analysis	Criticality Analysis	Maintenance Plan Setup	
Spare Parts Optimisation			Availability Analysis	Spare Parts Setup	
Legislative Compliance	Classification	Condition Monitoring	Application Exploration	Training	Standard AMOS Training
	Flag State		Implementation		Bespoked Training
	SIRE/ TMSA/CDI /ISO				Onboard Training
					CBT/Online Training
					Bespoked CBT/Online
					Licensed Crew Training Centres

Conclusion

Using software such as AMOS gives us the following advantages:

- Asset Management Operating System software - allows operation and control of all technical and documentation aspects in the fields of: Maintenance, Spare parts and Stock control, Purchasing and Procurement, Quality and Safety documentation management, Voyage management (for shipping), Personnel management;

- In its first incarnation, AMOS was a relatively simplistic program comprising only a few thousands lines of code and running under the text-based MS-DOS environment. Now, the program contains several million lines, and is used by many of the largest players in shipping and offshore energy industries.

References

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