



An Analytical Study on Inventory Management Practices For an Auto Component Major in Chennai City

KEYWORDS

Inventory Management, Economic Order Quantity, Safety stock, Trend Analysis

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ABSTRACT

With the emergence of Toyota Production System, Inventory management has become an integral aspect and touches every facet of operations in a manufacturing organization. The purpose of inventory management is to ensure availability of materials in sufficient quantity as and when required and also to minimize investment in inventories. Higher the inventory holding period; higher will be the loss, risk and uncertainty to the company. Therefore a proper balance must be struck to maintain proper inventory with the minimum financial impact on the organization. A firm neglecting the management of inventories will be jeopardizing its long run profitability and may fail ultimately. The present study focuses on the inventory management practices followed at a major automotive firm in Chennai by using various inventory management techniques.

1. INTRODUCTION:

"Inventory" means physical stocking of goods in warehouse for smooth and efficient running of day to day operations of an organization. Raw materials, goods in process and finished goods all represent various forms of inventory. Inventory management is the integrated functioning of an organization dealing with supply of materials and allied activities in order to achieve the maximum co-ordination and optimum expenditure on materials. Inventory control is the most important function of inventory management and it forms the nerve centre in any inventory management organization. An Inventory Management System is an essential element in an organization and comprises of a series of processes, which provide an assessment of the organization's inventory.

The investment in inventories constitutes the most significant part of current assets/working capital in most of the undertakings and can make or break the success of an organization. The reduction in excessive inventories carries a favourable impact on the company's profitability at the same time non-availability of material will impact the production and delivery of material and may result in customer looking elsewhere in order to have their requirements met. Thus, it is very essential to have proper control and management of inventories in place to ensure long term profitability and retention of customers.

2. REVIEW OF LITERATURE:

Graman and Magazine (2006) argued that today, the cost of holding inventory, extensive product proliferation and the risk of obsolescence, especially in rapidly changing markets, make the expense of holding large inventories of finished goods excessive and that high demand items naturally have safety stock assigned to them, but in many organisations there are so many very-low-demand items that keeping any stock of these items is unreasonably expensive, so they argue that companies must now provide good service while maintaining minimal inventories. Therefore, inventory management approaches are essential aspects of any organisation.

Wallin et al. (2006) has argued that that a typical manufacturing firm spends on average, 56 cents out of every dollar of revenue to cover the direct cost of purchased goods. Wallin et al. (2006) argued that a firm carrying \$20 million in purchased goods inven-

tory would incur an additional \$6-7 million in material handling and inventory holding costs, but once these direct and indirect costs are reduced, the firm's net profits increase.

3. OBJECTIVES OF STUDY:

The objectives identified for the present study are as follows.

1. To identify the optimum inventory level and compare it with the current performance of the organization.
2. To find the lead time, safety stock and reorder level for each components.
3. To project the inventory requirement in terms of monetary value for the current financial year.

4. RESEARCH METHODOLOGY:

4.1 Area of Study:

The area of study is in the field of 'Operations Management' with reference to 'INVENTORY MANAGEMENT' at a major auto component firm in Chennai.

4.2 Research Design:

The exploratory research design has been selected for the study.

4.3 Period of Study:

The present research was done for a period of two month between March to April 2013.

4.4 Validity of the study:

Validity of the study has been ensured after extensive literature study and discussion with the plant manager, plant supervisor and employees of the organization.

4.5 Sources of data:

In this present research, the primary source of data consist of data's collected about inventory practices followed in the plant through observation and the secondary sources of data consists of purchasing data, MRN data, consumption report and balance sheet from the organization as well as books, journals, periodicals, electronic papers and web-sites.

5. RESULTS AND DISCUSSIONS:

5.1 Economic Order Quantity:

Table 1: EOQ for various components

Materials	Unit Price	Demand	Ordering cost	Carrying cost	EOQ	No. of orders / Month	Time Between Orders (Days)	Materials Ordered
CRS								
Rubber boot	3.45	92000	99	0.01	51381	1.79	16.75	92500
Plastic Bearing	8.63	48000	100	0.02	23584	2.04	14.74	83200
End Ring	3.15	92000	100	0.01	54043	1.70	17.62	87000
Top clip	1.3	48000	100	0.00	60764	0.79	37.98	86200
Bottom Clip	3.45	48000	100	0.01	37300	1.29	23.31	0
PMMK								
Rubber Boot	5	60000	100	0.01	34641	1.73	17.32	81000
Plastic bearing	2.06	30000	100	0.00	38162	0.79	38.16	73500
End Ring	1.75	60000	100	0.00	58554	1.02	29.28	179000
Clip	0.36	60000	100	0.00	129099	0.46	64.55	100700
JK								
Rubber boot	7.3	42000	100	0.01	23986	1.75	17.13	0
Clip	0.36	42000	100	0.00	108012	0.39	77.15	405000
Plastic Bearing	2.72	21000	100	0.01	27786	0.76	39.69	0
JC/JS								
Rubber boot	6.65	104000	100	0.01	39546	2.63	11.41	297000
Toe plastic bearing	1.65	52000	100	0.00	56138	0.93	32.39	110100
Camber plastic bearing	6.83	52000	100	0.01	27593	1.88	15.92	80100
SMALL PT								
Plastic Bearing	1.65	1200	100	0.00	8528	0.14	213.20	0
Rubber boot	6.65	2400	100	0.01	6008	0.40	75.09	0
End Ring	3.5	1200	100	0.01	5855	0.20	146.39	0
BIG PT								
Plastic Bearing	1.65	450	100	0.00	5222	0.09	348.16	0

Inference:

In the above table the Optimum Order Quantity (EOQ); No: of orders per month and Time between successive orders has been calculated. The calculated EOQ is compared with the materials purchased by company for this month. It is found that there is a variation in the EOQ & no. of units purchased. The company is not following EOQ for purchasing the materials and the inventory management practices followed by organization is not satisfactory. The organization is not following any scientific practices while ordering the stocks and is holding the inventory for a larger amount of time thereby reducing its profit margin.

5.2 Lead time, Safety stock and Reorder level:

Table 2: Lead time, Safety stock and Reorder level for various components

Materials	Average Daily Usage	Lead time (in days)	Safety Stock (in units)	Re-order level (in units)
IN-HOUSE SUPPLIES				
CRS				
CRS Ball sleeve	3400	2	6800	13600
CRS Housing	3400	2	6800	13600
PMMK				

PMMK ball sleeve	3000	2	6000	12000
PMMK Housing	3000	2	6000	12000
JK				
JK Ball sleeve	800	2	1600	3200
JK Housing	800	2	1600	3200
BIG PT				
PT sleeve	600	2	1200	2400
PT Housing	600	2	1200	2400
SMALL PT				
SPT Sleeve	600	2	1200	2400
SPT Housing	600	2	1200	2400
TOE/Camber Housing	3800	2	7600	15200
TOE/Camber Bracket	3800	2	7600	15200
TOE Tube	3800	2	7600	15200
Camber Tube	3800	2	7600	15200
TOE/Camber ball sleeve	3800	2	7600	15200

TOE Housing Assy	3800	2	7600	15200
Camber Housing Assy	3800	2	7600	15200
TOE 4.2 mm	400	2	800	1600
TOE Housing Assy 4.2	400	2	800	1600
SUPPLIES FROM EXTERNAL SOURCES				
CRS				
Rubber boot	7000	7	49000	98000
Plastic Bearing	3600	7	25200	50400
End Ring	7000	7	49000	98000
Top clip	7000	7	49000	98000
Bottom Clip	7000	7	49000	98000
PMMK				
Rubber Boot	7000	7	49000	98000
Plastic bearing	3600	7	25200	50400
End Ring	3600	7	25200	50400
Clip	7000	7	49000	98000
Grease(gms)	12200	7	85400	170800
JK				
Rubber boot	1800	7	12600	25200
Clip	1800	7	12600	25200
Plastic Bearing	850	7	5950	11900
JC/JS				
Toe Clip	8000	7	56000	112000
Rubber boot	8000	7	56000	112000
Camber End Ring	4000	7	28000	56000
Toe End Ring	4000	7	28000	56000
Toe plaastic bearing	4000	7	28000	56000
Camber plastic bearing	4000	7	28000	56000
SMALL PT				
Plastic Bearing	800	7	5600	11200
Rubber boot	800	7	5600	11200
End Ring	400	7	2800	5600
BIG PT				
Plastic Bearing	800	7	5600	11200
CAMBER-Packing Materials				
Wooden Pallet	3	7	21	42
Box	3	7	21	42
Box bag	3	7	21	42
Layer Pad	45	7	315	630
Edge Board	12	7	84	168
Angle Board	12	7	84	168
Angle Board-1	12	7	84	168
TOE-Packing Material				
Wooden Pallet	3	7	21	42

Box	3	7	21	42
Box bag	3	7	21	42
Layer Pad	33	7	231	462
Edge Board	12	7	84	168
Angle Board	12	7	84	168
Angle Board-1	12	7	84	168
CRS,PMMK-Packing Material				
Wooden Pallet	1	7	7	14
Box	1	7	7	14
Box bag	1	7	7	14
Partition	6	7	42	84
LID Pad	2	7	14	28
Layer Pad	7	7	49	98
Edge Board	4	7	28	56
Angle Board	4	7	28	56
Angle Board-1	4	7	28	56

Inference:

The safety stock; Lead time and Reorder level for the various components per month are calculated. This calculation shows how much inventory the company should hold in reserve stock per month. The raw materials used are classified based on in-house supplies and materials supplied by external sources or vendors. The in-house supplies are steel components which has a lead time of 2 days while the materials supplied by external vendors are non-steel components such as plastic; rubber etc which has a lead time of 7 days.

5.3 Trend Analysis:

Table 5: Inventory requirement for FY 2013 in terms of rupee value

Year	Inventory (in rupees)	Percentage
2008	1593478	0.43
2009	6028273	1.62
2010	48929348	13.14
2011	92024753	24.71
2012	97073194	26.06
2013	132216583	35.50
Total	372445629	100

Inference:

The above table shows the percentage of inventories increases from Rs. 15,93,478 to Rs. 9,70,73,194 for the FY 2008-2012. The inventory for the FY 2013 is expected to be Rs. 37,24,45,629 which are again in the increasing trend. This infers that the inventory requirement is increasing in the future period also. It shows satisfactory position of inventories as it implies increasing production & demand for the product.

6. Conclusion:

The present study clearly identifies that the organization is not following any scientific approach towards its inventory management resulting in huge pile up of inventories and increased working capital. The organization in order to increase its profitability and sustain in the long run should adopt appropriate inventory management techniques such as JIT, Kanban etc.

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