

A Case Study At AGI Glaspac, Hyderabad

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Abstract : Inventory (American English) or stock (British English) is the goods and materials that a business holds for the ultimate goals to have a purpose of resale (or repair). Inventory management is a discipline primarily about specifying the shape and placement of stocked goods. It is required at different locations within a facility or within many locations of a supply network to precede the regular and planned course of production and stock of materials. Inventory constitutes the most significant part of current assets of larger majority of Indian glass manufacturing industries. The main objectives to know the financial performance on inventory management. The study employed Economic Order Quantity (EOQ) model and chi-square method. Consequently, recommendations on the right quantity, quality and timing of material at the most favorable price conclude the research study.

Keywords - Demand, Economic order level, inventory, production and sales.

I. INTRODUCTION

In the organization, all functions are interlinked and connected to each other and are often convoluted. Some key aspects of supply chain management, coordination and inventory form the backbone of the business delivery function. Therefore these functions are highly important to marketing managers as well as finance controllers. It is a relevant function that determines the health of the supply chain as well as the impacts the financial health of the balance sheet. Every organization constantly aims to maintain maximum inventory to be able to meet its prescription and avoid over or under inventory that can impact the financial figures. The stock is constantly powerful. Stock administration requires equable and mind appraisal of outer and interior elements and control through arranging and audit. The majority of the associations have a different division or occupation work called stock organizers who ceaselessly screen, control and survey stock and amalgamate with creation, acquirement and back offices. The stock administration is an accumulation of interdisciplinary procedures that incorporate a full hover from store network administration to request anticipating, through stock control and including reverse arranging. Stock administration begins and finishes with production network administration on the grounds that a large number of the chances to lift efficiencies begin with truncation request to receipt time without bringing about the extra cost. All things considered, alternate phases of the stock administration cycle are no less vital in accomplishing outright proficiency.

II. OBJECTIVES OF THE STUDY

- (i). To know the financial performance on inventory at the organization
- (ii). To calculate the economic order quantity for each raw material at AGI Glaspac.
- (iii). To recommend the measures for enhancing the stock level.

III. REVIEW OF LITERATURE:

Asfaque Ahmed (October 12, 2004) He said that the vast majority of the assembling organization sellers have arranging and planning item which expect either endless generation limit with regards to computing amounts of crude material and work in advance prerequisites or unending amounts of crude material and WIP material for ascertaining creation limit. There are numerous issues with this approach and how to maintain a strategic distance from these by ensuring that the item you are purchasing surely considers limited amounts of required materials and in addition limited limits of work focuses in your assembling offices.

Silver, Edward A (dec22, 2002) his research makes an attempt in setting of a mainstream of things for which the supposition fundamental the EOQ determination holds sensibly well. However as is as often as possible the trade out practices there is a total requirement are the presence of spending plan to be designated among the

supply of the things and A buying generation office having the ability to handle at most a specific number of recharging every year. In view of the requirement, the individual renewal amounts can't be chosen freely. **D.Hoopman (April 7, 2000)**, he investigates that the stock improvement perceives that diverse industry has distinctive stock profiles and prerequisites. Inquire about has shown that arrangements are estimated in a substantial range of a huge number of dollars to a great many dollars. In this market division cost is certainly not a pointer of the nature of the arrangement, ROI and ease of use is vital.

Hari R. Swami in his research work materials management in public undertakings evaluates the performance of materials management in the central public undertakings in Rajasthan. The study covers various aspects of materials management in these enterprises from 1977-78 to 1981-82. The methods of investigation includes questionnaire interview, on the spot study and desk work techniques etc. It is observed that the cost of materials accounts for more than 50 percent of the total cost of production in the selected units of the study. The importance of proper materials management has not been fully realized by the public undertakings in Rajasthan and very little attention has so far been paid to the task of controlling investment in inventories through the application of various scientific techniques of materials management. The researcher expresses the view that materials management should not cover the inspection function and that an autonomous and independent cell be created in 70 the organization for this purpose. The study reveals that the lead time in the selected public enterprises is considerably long and suggests reduction of administrative lead time by expediting purchase matters.

Sambasiva Rao. K In his review of Materials Management in Public Sector Ship Building Industry evaluates. The performance of materials management and identifies some problems faced by materials management in the heavy engineering industry. The method of investigation involves the management in Andhra Pradesh State Road Transport Corporation (APSRTC) in 2006. In his study, he examines the materials management practices and purchasing systems in APSRTC on the basis of various parameters like material consumption per vehicle, material consumption per kilometer, inventory per vehicle, inventory in terms of number of months consumption etc. He highlights some major problems in the procurement of materials. The study is primarily based on the secondary data collected from the published annual reports of APSRTC, the records of MIS, the reports on performance of National Road Transport Undertakings of CIRT, Pune etc., In addition to the personal discussions held with various officials of the corporation.

Bansal In his study on Materials Management: The need for automatic replenishment system in the undertaking offer studying the application of ABC analysis and EOQ technique of inventory control. He also points out the accumulation of surplus stores and non-moving items in the organization and recommends that the surplus and absolute stores which are no longer required should be disposed off as early as possible at the best available price.

VI. RESEARCH HYPOTHESIS

The following hypothesis was tested in this research work.

H0: AGI Glaspac manufacturing industry does not make use of economic order quantity [EOQ] optimization model to evaluate their inventory.

H1: AGI Glaspac manufacturing industry makes use of economic order quantity [EOQ] optimization model to evaluate their inventory

V. RESEARCH METHODOLOGY

This study was conducted by using primary and secondary data with the time period of 5 years (2013-2017). The sources of data includes personal interview with the key personnel in the stores, purchase, production and inventory department of the company. The record analysis was obtained from the annual reports, schedules, store, ledgers, budgets and purchase orders. The best known and most fundamental inventory decision model EOQ and chi-square test is taken for the analysis.

VI. DATA ANALYSIS & HYPOTHESIS TESTING

The data in table 1, 2, 3 show the usage rate of AGI Glaspac company's raw material (soda ash, lime stone and cullet white). The data were used the economic order quantity (EOQ) formula. The expected frequency was determined at 5% confidence level and 4 degree of freedom, see table 1, 2 & 3.

CALCULATION OF EOQ:

Soda Ash:

Year	Total Demand	ordering cost	carrying cost	EOQ
2013	40,150	47,000	1,440	1618.920251
2014	43,070	47,500	1,485	1659.91562
2015	42,340	48,000	1,530	1629.916394
2016	42,340	48,500	1,575	1614.808456
2017	43,800	50,000	1,620	1644.294287

Lime stone:

Year	Total Demand	ordering cost	carrying cost	EOQ
2013	9,490	4,775	136	816.329212
2014	10,585	4,800	140	851.9557333
2015	10,220	4,830	145	825.1445015
2016	10,220	4,900	149	819.8706724
2017	10,950	5,000	153	845.9824316

Cullet white:

Year	Total Demand	ordering cost	carrying cost	EOQ
2013	31,025	14,575	464	1396.098898
2014	32,485	14,650	479	1409.637644
2015	32,120	14,700	493	1384.006003
2016	32,120	14,800	508	1368.049361
2017	32,850	15,000	522	1374.020027

CALCULATION OF CHI- SQUARE TEST:

SODA ASH:

YEARS	0 (EOQ)	E	(O-E) ²	(O-E) ² /E
2013	1619	1633.6	29.2	0.017875
2014	1660	1633.6	696.96	0.426641
2015	1630	1633.6	12.96	0.007933
2016	1615	1633.6	345.96	0.211778
2017	1644	1633.6	108.16	0.06621

$X^2 = 0.730436$

INTERPRATION: Using soda ash as parameter, table 1 depicts the X^2 calculated value of 0.7330436 which of course is the lower when compared with table value of chi-square (X^2) of 9.488. The null hypothesis was thus accepted AGI Glaspac company does not make use of economic order quantity (EOQ) optimization using soda ash component as a parameter for measurement.

LIME STONE:

YEARS	0 (EOQ)	E	(O-E) ²	(O-E) ² /E
2013	816	832.2	262.44	0.315356885
2014	852	832.2	353.44	0.4247056
2015	825	832.2	27.04	0.032492189
2016	820	832.2	125.44	0.150732997
2017	846	832.2	190.44	0.228839221

$X^2 = 1.152127$

INTERPRETATION: Using lime stone as parameter, table2, depicts the X^2 calculated value 1.152127 which of the course is lower when compared with table value of chi-square (X^2) of 9.488. Company does not make use of economic order quantity (EOQ) optimization model to evaluate their inventory using lime stone as parameter for measurement

CULLET WHITE:

YEARS	0 (EOQ)	E	(O-E) ²	(O-E) ² /E
2013	1396	1386.6	88.36	0.063724
2014	1410	1386.6	547.56	0.394894
2015	1384	1386.6	6.76	0.004875
2016	1369	1386.6	309.76	0.223395
2017	1374	1386.6	158.76	0.114496

INTERPRETATION: Using cullet white as parameter, table 3 depicts the X^2 calculated value of 0.801385 which of course is the lower when compared with table value of chi-square (X^2) of 9.488. The null hypothesis was thus accepted AGI Glaspac company does not make use to evaluate their inventory using cullet white as parameter for measurement.

FINDINGS & RECOMMENDATION:

The findings as presented above in all the three cases show that we should reject the alternative hypothesis and accept the null hypothesis. The study analysis shows that the company operates a policy of making order on quarterly basis within a period of one year provided, every one week stock has to be verified and inform to the store department. The study observed that the company adopts the EOQ model in placing order for its raw materials. It also observes that there is a positive correlation between sales and inventory usages. The study concludes that inventory usage depends on sales which means when sales increases, inventory usages should increase. Therefore, inventory management is a must for the continuity and survival of any goal focused manufacturing organization. First, the material will be ordered by reaching the minimum stock level, material management unit should also pay attention to sales growth over the years. Secondly, in the analysis we also mentioned that there was a negative relationship between the inventory and sales and inventory cost and production cost. This implies that inventory automatically determines production cost or sales and vice-versa. Lastly, emphasis should be normally placed on the economic order quantity model because it was seen to be in the best interest of manufacturing companies to maintain an optimal level of materials in store, the level that minimizes total cost of investment in inventory.

V. CONCLUSION

The inventory management technique is more useful to determine the optimum level of inventory and finding answers to problem of safety stock and lead time. Inventory management is an important activity in manufacturing concern. And since the production of glass involves different raw materials like soda ash, cullet white and lime stone etc. The results of the analysis show that the efforts to increase efficiency of inventory used must be directed towards several directions: speeding inventory rotation because by shortening its stationing period within the economic cycle it transforms rapidly into money; increasing turnover to the level demanded by the market; improving the whole trading system for products; reducing specific consumptions, etc.

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