

Abstract of Doctoral Dissertation

Analytical Study of Inventory Management in Punjab State Electricity Board*

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INVENTORIES ARE VIEWED by most of the business world as a large potential role and not as a measure of wealth as was prevalent in old days. The inventory stocked in excess of demand may lead to drastic price cuts, so as to be saleable before it becomes worthless because of obsolescence. The inventory stocked less than the demand may lead to the business out of the market. There is a constant fear in the minds of businessmen because of uncertainty in the market situations, whether to stock or not to stock.

With rather tight monetary market, optimisation of resources through proper inventory control becomes one of the major challenges for the material managers in every organisation. Widening gulf between theory and practice has become remarkable phenomena in this age of science and technology. When the frontiers of knowledge are widening and the theory is developing at fast rate, the practice is lagging far behind. This is probably true about all branches of knowledge and specially true for inventory management area.

The material function in power Industry has a distinct importance as every power plant, alongwith the transmission and distribution system, is committed to provide the consumers at his premises, the uninterrupted supply of electrical power adequately as and when required ensuring the quality, reliability and economy of supply at the same time with emphasis on overall economy. The entire power system is one line process and failure of any vital component in the process results into partial or total outage of the Industry. Inventories play essential and pervasive role in the power sector.

Problems Studied

In the study, efforts have been made to conduct a detailed analysis of inventory management functions in the PSEB. For this purpose, detailed research has been conducted as follows :

1. Existing purchase system of the Board was observed. In which organisation structure of procurement deptt., purchase policies, record relating to purchases were analysed.

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2. Detail organisation structure of stores of Controller of Stores Deptt., were studied. Inventories held in the stores, their receiving, issuing procedures, techniques of stores control adopted by the board were analysed.
3. Treatment given to wastages, spoilage and dead inventory by the stores were taken.
4. Existing system of inventory control adopted by the board was studied.
5. New Inventory control technique applied to improve the efficiency of material management department and to reduce cost of inventory.

Research Methodology

The relevant data and information have been collected from primary as well as from secondary sources. For collection of information detailed questionnaires pertaining to raw-material management general and purchase control as well as stores control specifically were drafted and got filled up from all the senior personnel and some from supdt. level employees of the material management deptt. of the P.S.E.B.

Direct interviews were also conducted from the concerned deptt., of the board. This helped together actual prevailing conditions of purchasing, maintaining and controlling of materials/components. Moreover the boards' thermal power plant, was also visited many times to study the inventory management systems in Ropar thermal power plant.

Major Findings of the Research

The study has been divided in 7 chapters. First chapter is related with 'Introduction'. In this chapter, overall position of electricity in India has been mentioned. Then introduction of PSEB is explained.

Second chapter is titled as 'Literary Survey of Inventory Management Techniques'. An attempt has been made to summarise and present the theories and important concepts of inventory management. After explaining the need and importance of inventory management techniques, some of the inventory management techniques have been explained.

Name of the third chapter is 'Procurement System in PSEB'. Theoretical concepts of purchasing have been discussed in the beginning of the chapter. Then, the procurement system followed by the board has been explained.

For the purpose of analysing purchase activities, a detailed questionnaire was prepared and circulated among the employees of Central Purchase Organisation (CPO). 35 questions relating to purchase activities were asked. CPO has adopted standardised purchase procedure and the employees of CPO are following these procedures like making comparative statements, preparing purchase order and forwarding it to suppliers, pursuing legal matters with supplier in the court, preparation of records, fixation of delivery schedules etc. However, there are other many activities which are to be performed in purchase deptt. But these are not performed, if performed, then not adequately in the CPO. Some of these are, purchasing records, Purchase Budgeting, suppliers performance and Rating, Buyer seller Relations (Suppliers Goodwill),

Evaluation of performance of Purchase activities, training to the employees, purchase research and purchase ethics.

Name of the Fourth Chapter is 'Stores and Stores Control in PSEB'. In the beginning of the chapter, theoretical concepts of store keeping have been discussed. Then store procedures followed in the stores of controller of stores deptt. are mentioned like receipts, issues, transfer, maintenance of material, reporting system adopted by the stores, security measures adopted in the stores. For the purpose of analysing store activities, a details questionnaire was drafted. In this questionnaire, 38 questions relating to store activities were written. A seven point scale was used for the purpose of evaluation of store activities. It is concluded that store employees are stressing mainly on routine/ordinary types of activities in their respective stores like, receipt and issue of materials, inter-store transfer, preparing routine reports and records including shortages, damages etc.

Whereas more activities are required for running stores efficiently e.g. efficient material handing, maintaining various levels of inventories, replenishment of stocks in stores, measuring efficiency of stores, cost reduction programmes, training to the store employees, care has not been taken properly on above mentioned activities in store department. Some of these activities we are discussing here.

Major material handling activities are performed manually in controller of store Department (COS). There are 597 number of work charge/Daily wage workers for material handling in the stores. Total wages paid to these employees are Rs. 1 crore approximately. Mechanical handling is done only for bulky material. Efforts should be made to handle the materials mechanically so that cost of handling can be reduced.

Only store verification activities are done seriously by store employees and stock verifiers appointed by the department of Material Service. There are so many store control techniques which can be used for managing stores efficiently. Some of these are, inventory turnover ratio, standardisation, levels of inventory, ABC analysis, making in the stores, storewise replenishment of stock etc. So these techniques are suggested for better control in the stores of COS deptt. Efforts are also made to calculate storage cost of inventory. The carrying cost of COS deptt. is coming 34.6% approximately.

Fifth chapter is framed for analysing inventory management techniques in PSEB. Here efforts are made to apply some more Inventory control techniques for efficient management of purchase and store activities in material management department.

Inventory Turnover Ratio:- Inventory Turnover Ratio of 25 Major items of COS deptt. were calculated for the years of 1988-89, 1989-90 and 1990-91 respectively. By comparing different years Inventory turnover ratio of each item, it is concluded that the stock level of each item is not maintained properly in different years by COS deptt.

Economic Order Quantity: - (EOQ) The CPO is procuring items worth Rs. 100 crores every year. The employees of the CPO are procuring these items on the basis of their past experience. EOQ of 25 major items, have been calculated. Order cost per order calculated is coming Rs. 8,900.00 and carrying cost is 34.6%. Total inventory cost of 25 major items of COS is coming Rs. 1,00,94,000.00 (approx) by applying EOQ technique. Whereas total inventory cost as per PSEB's purchase procedure for 25 major items, is coming Rs. 5,36,53,00.00 (approx). There will be saving of more than Rs. 4 'Crores' in a year if items are purchased through EOQ system.

Efforts are made to classify store items into A,B. & C category. it was analysed that only few items are coming under A & B category. 14 items out of 1374 are in A category, 56 are in B category. So strict policies can be developed and implemented for controlling A & B category of items.

In the study, different policies are developed for A,B & C category of items respectively so that the store items can be controlled properly.

The sixth chapter is named as 'Inventory Management in Thermal Power Plant' in the study. Ropar Thermal Power Plant is covered under the study. This chapter has started with some salient features of RTP, Ropar. Then the organisation structure of entire plant has been explained. After that, procurement system used in the RTP was studied. Store of RTP, Ropar were visited and store activities were analysed, in which, activities performed in stores, material handling systems followed and store control techniques used in the stores were discussed.

As we know coal and oils are the main inputs of the Thermal power plants. So details regarding procurement, maintenance, issue and handling of coal and oils in the RTP has been written. Various records prepared by the RTP relating to these inputs has also been mentioned in the chapter. Different problems faced by the RTP relating to coal have been highlighted.

Chapter seventh concludes our study. This chapter integrates the finding and recommendations of the study.