

A STUDY ON MATERIAL MANAGEMENT IN ARINGAR ANNA SUGAR MILLS

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Abstract: The objective materials management is to ensure that the right item is bought and made available to the production at the right time, at the right place and at the lowest possible cost it is also known as Inventory Management. We undergone review of literatures around forty four regarding material management it is observed that most of the studies were conducted in the areas concerned with mass production system. No studies were found to be done in the area of continuous production system. To fill the gap this study intended to assess the role of materials management in Aringar Anna Sugar Mills and its effect over the profitability. The Sugar industries are basically depending upon the agricultural production, geographical and climate conditions. Management of materials has the biggest problems for many years to most of the sugar mills in production of sugar.

Keywords: Material Management, Inventory Management, Profitability, Sugar Industries.

I. INTRODUCTION

India has long been regarded as the birthplace of sugar and sugarcane. After Brazil, India is the world's second-largest sugarcane producer. As on 2020, around 28.9 (17%) million tons of sugar is produced in India. The largest producers are Brazil stands 29.93 (22%) million tons, and the third largest producers are European Union stands 17.3 (10%) million tons. Sugar production began in India between the fourth and sixth centuries A.D., by crushing cane with heavy weights the juice is extracted. After that, the juice was boiled and stirred until solids formed. Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Maharashtra, Punjab, Uttar Pradesh, and Tamil Nadu are the nine Indian states where sugarcane is primarily grown. Sugarcane is the source of income for more than 50 million farmers and their families. Via direct and indirect jobs, the sugar industry employs approximately 12% of the rural population in these nine states. Next to the textile industry, the sugar industry is a significant agro-based industry. It plays a major in the economic development of the country's rural areas.

Materials management is an indispensable business activity that deals with the procurement, storage, control, and movement of materials and supplies used in the final product's development. Without the idea of proper material management preparation, surplus materials will be purchased early, and materials placed in inventory will result in overstocking of stocks. It is extremely significant in the sugar industry and plays a crucial role in the development of economic growth. Material management faces numerous problems and challenges in sugar mills, including a lack of flexibility, a lack of information flow, inadequate material handling, and improper inventory control, a high cost of sugar production, poor factory maintenance, a low sugar extraction rate, old technology, insufficient cane storage, and wastage in the cane yard. These issues can be solved in the sugar industry by adopting effective material management with using proper preparation and control.

II. IMPORTANCE OF THE SUGAR INDUSTRY

In India's economy, the sugar industry is extremely significant. It is probably one of the most regulated sectors of the Indian economy. Sugarcane is India's most important commercial crop, with 5.0 million hectares under cultivation. Since 1942, this industry has been under the rule of the Indian government. The sugar industry is credited with laying the groundwork for India's modern capitalists. After independence, the sugar industry was primarily diversified from this basic industry, and its development requires difficult policy tradeoffs in terms of growth, productivity, and equity. However, in a protected domestic market, the fastest-growing sugar industry had shifted its location, raising policy questions. Surprisingly, the new Industrial Policy Statement (1991) has not touched the sugar industry in terms of deregulation or liberalization, despite the fact that many other important agro-based industries have been opened up to foreign investment.

III. SUGAR INDUSTRIES IN TAMILNADU

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IV. ABOUT ARIGNAR ANNA SUGAR MILLS

The Arignar Anna Sugar Mills is one of the units of Tamil Nadu Sugar Corporation Limited. It is an ISO 9001-2008 certified industry. The Arignar Anna Sugar Mills is situated in Kurungulam village, Thanjavur. The total area of land, in which the mill is situated, is 155.48 acres. The mill was established in 12/02/1977 with the crushing capacity 1250 Metric TCD. Under expansion and modernization scheme the crushing capacity of the mills was expanded to 2500 Metric TCD. In Mill Crystal Sugar S-30 grade is produced and its by-product bagasse and molasses are stored and retailed. The crushing operation will be going on for about 6--7 months in between November to May and during June to November the work of overhauling of machineries will be undertaken. Currently around 440 employees are working in the mill.

TABLE I: PRODUCTION OF SUGARCANE IN THE LAST 5 YEARS

Season	Cane crushed (In M.Ts.)	Sugar Bagged (In Qtils.)
2015-2016	268281	197865
2016-2017	261941	205105
2017-2018	185370	144695
2018-2019	196707	157140
2019-2020	204481	174470

Source: Secondary Data

PROBLEMS AND CHALLENGES IN SUGAR MILLS:

- Inefficiency in milling, transportation, and sugar production.
- Improper material handling.
- Getting raw materials ahead of time.
- Failures in on time order will delay the production.
- Materials were not scheduled properly.
- Insufficient storage space in the inventory.

V. REVIEW OF LITERATURE

Dr. S. Saravanan and Kamalanathan K.A (2021), had made a review around forty four papers regarding material management. From the literature review it is very clear that material management plays a vital role in success of firm and it is a tool to optimize customer service requirements at the same time increasing the profitability and making the best use of available resources. Whether it is a small firm or large firm the material management should be done and also observed that most of the studies were conducted in the areas concerned with mass production system. No studies were found to be done in the area of continuous production system.

Fadipe (1996), defines material management can be characterized as a set of conventional material activities unified by a common concept: an integrated approach to preparation, procurement, conversion, flow, and distribution of production materials from raw materials to finished products. He further said that this concept considers the entire flow of materials and components from suppliers to manufacturing establishments, where it stores, and production lines, as well as the flow of parts and goods through warehouses and distribution centers and to consumers after they've been manufactured.

Hemsworth Martinez-Lorente Clavel et al. (2006), stated that material standardisation is a significant buying department decision. The primary goal of this research is to look at the effect of material and purchasing process standardisation on purchasing and business efficiency. The findings of this study show that purchasing standardisation has a substantial positive impact on both purchasing and business success. They provided some points to help people understand how purchasing standardisation, which is described as the standardisation of materials and purchasing procedures, can affect a company's purchasing and business efficiency. Standardizing materials and purchasing processes is critical because it can help companies achieve their material expenditure goals while also improving material quality, supplier on-time delivery, and inventory efficiency.

Chary (2008), noticed that inventory management allows the company to enhance the inventory by economic order quantity (EOQ) and by monitoring the system level by two bin methods and red line methods. Management of inventory saves the organization from unwanted losses by other departments. For three purposes, material inventory is maintained; precaution, speculation and transactions.

Dr.A.P.J.AbdulKalam (2010), had a word for the sugar technologists, that they need to form a collaboration between agricultural scientists, extension staff, and farmers so that they can continue to work to increase per hectare productivity in all of the country's states, drawing on the experience of high-yielding varieties from various states.

Balasubramanian (2012),in his study of the Performance of Sugar Industries in India is an attempt as to review progress of sugar industry in India, in the context of the ongoing liberalisation process, understand its problems and challenges. He concludes that in the time of globalisation, the sugar industry requires a stronger competitive advantage, which can be achieved through modernization, increased efficiency, and the production of high-quality sugar at low prices. To improve its efficiency, it requires quality management at all levels of operation. The majority of sugar mills lack by-product utilisation plants. Bagasse and molasses-based projects should be started. Ethanol, alcohol, and paper-based projects have a lot of potential in India. Sugar recovery can be used to set ten to fifteen percent rates in the future.

Pauline JerutoKeitany, Daniel M. Wanyoike and Salome Richu (2014), analyzed the role of material management in organizational performance. Finally, the involvement of an inventory management system resulted in an improvement in operational efficiency. Furthermore, the results indicated that lead time was extremely important in terms of obtaining and delivering the necessary materials in the shortest period of time.

Deepak M.D et.al July (2015),the author discusses material management concepts and methods in this report. When there's not adequate inventory handling, project costs diverge. Thus a procedure is constructed to arrange materials by EOQ investigation.

Rohan J. Madgi, Prof. hashank U. Vanakudari (2018), describes about the importance of material management and of the different inventory control techniques that could be applied in order to make effective material management in the infrastructure projects. This study of the material management in different infrastructure projects and analyze the material handling process undertaken by the company and applying inventory control techniques like ABC analysis along with EOQ analysis etc. to achieve the desired results and suggest the best suitable techniques.

Rajesh Hukum, Vivek A Shrouy(2019), perform a value analysis of the inventory by evaluating the different variables and functions that influence raw materials inventory management. The research is primarily concerned with ABC

analysis. According to the ABC report, goods are graded into A, B, and C groups based on unit usage value. Based on this analysis, it is recommended that proper cost-effective material procurement and storage be implemented in order to reduce waste and material holdup and effectively meet the supply and demand of raw materials. Data collection is done for 3 months through the general store manager and other staff involved in inventory control operation.

Dr. Cross Ogohi Daniel (2019), research aims include determining how an organisation can address issues and determining how efficient material management can improve an organization's profitability. The study discovered that the organization's inventory control contributes to the company's profitability, and that adequate storage facilities avoid interruptions in the manufacturing process, among other items.

VI. STAGES IN MATERIAL MANAGEMENT

A. Material Planning:

Material planning is the first step in the process; it lays out a clear path for all tasks to be planned. Its aim is to decide the raw materials, spare parts, material ordering, and scheduling. It manages the process of material procurement preparation and forecasting.

B. Material Procurement:

Material procurement entails determining the needs of consumers. Vendor collection, contract negotiation, payment terms creation, strategic vetting, and sourcing of products and raw materials for the manufacturing phase are all part of material procurement.

C. Inventory Control:

Inventory control refers to keeping track of what's on hand and anticipating potential demand. Inventory control is such a critical piece of an organization's operations the ultimate goal of inventory control is maximize organization inventory. By maintaining proper inventory levels, a company can ret easily know that capital is not unnecessarily tied up in inventory. If company is in manufacturing, inventory control also protects production if there are problems with bottlenecking or the supply chain.

D. Production Control:

Production control relates to the basics of inventory stocks, customer delivery schedules, and policy growth. It will be in control of production scheduling, shortage prevention, and potential delay avoidance.

E. Material Handling:

Material handling is the method of moving raw materials from their origin to the production facility. It also has control over the goods and materials that are used. Manual handling and automatic handling are the two main types.

F. Packaging and Shipping:

Material management plays a critical role in proper shipping and packaging. Inventory, transportation, and manufacturing are all integrated in it. The long-term customer loyalty approach is depend upon product packaging and delivery.

G. Warehousing and Distribution:

In distribution, material management has a responsible role for moving products from the factory to the point of sale or customer. It is used in warehousing to store and maintain products properly. Customer satisfaction and loyalty are extremely important.

VII. OBJECTIVES OF MATERIAL MANAGEMENT

- Continuity of supply
- Low procurement
- Effective material planning and Product improvement
- Delivery of materials in time at right place
- Good supplier relation and information system

VIII. TECHNIQUES IN MATERIAL MANAGEMENT

Material management techniques symbolize the operational aspect. There are several material management techniques in use. Techniques are used based on the convenience of the company. Some of the techniques are:

1. ABC Analysis
2. VED Classification
3. SDE Classification
4. Inventory Turnover Ratio
5. High, Medium and Low Classification.
6. FSN Classification
7. SOS Analysis
8. XYZ Analysis
9. GOLF Analysis
10. Economic Order Quantity
11. Minimum-Maximum Technique
12. Two-bin Technique

IX. OBJECTIVE OF THE STUDY

Material Management's primary goal is to maintain an optimum level of investment in the inventory which minimizes the cost and to classify the various components based on their value. The study's main objective is to analyze the efficiency of material management at Arignar Anna Sugar Mill.

X. CONCLUSION & FUTURE SCOPE

From the study we came to the conclusion that the material management plays major role in the Sugar industries to improve the productivity of materials and performance. In future by using the costing techniques we are going to evaluate the efficiency of material management in Arignar Anna Sugar Mill. The secondary data were collected from the inventory maintenance records maintained by the company for the past five financial from 2015 to 2020. Among the various techniques listed above, Inventory turnover ratio and Economic Order Quantity analysis have going to adopt in the work. The purpose of choosing this technique is because as it mainly focuses on categorizing items based on their varying impact on the overall profitability.

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