

# To Improve the Productivity of Printing and Packaging Industry –A Review

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## Abstract

Increase in the Productivity is the important factor for the organization to achieve the maximum output in required time. In today's world different types of plastic bags are used like carrying, security and for storage purpose. In production unit there are some unwanted processes which are taking extra time & effort. The production line of a company is taken as a case study and effort is made to reduce the lead time and material handling time. Main aim of this project is to increase the productivity of the Bag Making Industry using different techniques and methods. Different types of techniques used for increasing the productivity are SLP (Systematic Layout Planning), Proper Handling of material, Lead Time Reduction and different types of methods used are Operation Process Chart, Flow Process Chart, and String diagram.

**Keywords:** SLP (Systematic Layout Planning), Material Handling, Lead Time Reduction, Flow process chart, Operation Process Chart

## I. INTRODUCTION

Decrease in material handling cost and increase in productivity can be achieved by improving the plant layout. Thus an effort has been made in this task to improve the existing layout of the plant by making small changes in the position of department. Material-handling system is defined as movement, protection, storage and handling of different material and products throughout the manufacturing process. The main objective of using material handling system is to assure the right amount of material to the right place in right time with minimum cost. Material handling is not a production process and hence not added to the value of the product but affects the total product cost by 30-75%. Properly designed material handling system assures the reduction in manufacturing cycle time, material handling cost, operation cost. In determining company performance and operation level time plays an important role. Time is defined as an element that used in comparing duration time of event, motion of work element. Productivity of a company can be increased by using different techniques like SLP (Systematic Layout Planning), Lead Time Reduction, and different types of chart like Operation, Flow process chart, and Man Machine chart, string diagram.

There are different techniques like Total Quality Management (TQM), plant layout are used to solve problems related to productivity. For ensuring proper work flow departments are arranged in proper manner according to the production processes.

Systematic layout planning pattern (SLP) theory is used to analyse the step-by-step of layout facility from raw material storage to finish product dispatched. This method helps to develop a new plant layout with improved process flow and effective utilization of space. On the Basis of production, designing a new layout may follow different ways such as product, process, mixed, fixed position and group layout. Since yarn is produced in mass production system with a limited variety on a steady demand, product layout is the matter of concern.

## II. LITERATURE REVIEW

Abdul Talib Bon and Daiyanni Daim (2010) have carried out the “Time Motion Study in Determination of Time Standard in Manpower Process” with the considerations for Time and Motion Study for industry. By using time and motion study productivity is increased and cost can be reduced. This study includes time study with the help of stop watch, proper observations, and discussion. At the last results are analyzed and improve which in turn increases the productivity. [1]

Ajit Kumar Senapati et al (2012) has examined the “Lead Time Reduction in Inventory Control”. Time and cost are very important factor for any organization for achieving maximum profit in business. One major disadvantage was noted while studying literature on lead time reduction in inventory models is that the majority of the authors assumed that lead time is independent of lot size quality and a piecewise function is well suited to describe the relationship between lead time reduction and crushing costs. [2]

Abdul Talib Bonl and Aliza Ariffin (2013) have studied the “impact of time motion on small medium enterprise organization” with Time and Motion technique to improve work process at SME. Under this study problem are identified in the production work process and improved in terms of plant layout, production time, and numbers of process. With this study it is concluded that by the combination of production, layout, time measurement and work processes current production processes can be improved. [3]

“Improvement in Plant Layout Using Material Handling Technique” has been proposed by Amrita Kirtane and Nagendra Sohani (2014). The proposal was with the considerations for material handling cost for medium job type small scale industry. Travel Chart method is used to minimize man work, cost and wastage of time to improve profits for the similar work from the same resources. Two layouts have been improved by considering the material movement. As a result, the material movement and handling time reduce which increases the productivity. [4]

Vinod arya, Prof, Sanjeev singh Chauhan (2014) in their article “Increased productivity and planning by improved plant layout using systematic layout planning at NCRM division” Bhushan Steels Ltd. Khopoli, Mumbai. The objective of this research is to study layout of NCRM. They conclude that by using SLP method a new plant layout was developed which significantly decreases the distance of material flow. [5]

Dinesh B. Shinde, Prashant N. Shende (2014) in their article “Improvement of plant layout by using 5S technique An industrial case study”. The objective of this work is to improve the productivity. They concluded that use of 5s technique lead to the subsequent movement in the organization. The 5s improved environmental performance, reduction of physical effort, improved safety, reduce waste, reduction in accidents, improvement in quality, maintenance, shorter lead time.[6]

Md. Riyad Hossain et al (2014)in there artical “Increasing Productivity through Facility Layout Improvement using Systematic Layout Planning Pattern Theory ”. The objective of this research is to study the production process layout and to develop new layout based on the systematic layout planning pattern theory to reduce production cost and increase productivity. New plant layout shows that there is a decrease in overall cost and distance travelled by the material from store to dispatch area. [7]

Parthiban and Raju (2014) have carried out the “Productivity improvement in shoe making industry by using method study”. To be tough and distinct competitor the firm has to improve productivity to meets its customer needs. By using method study current process can be improve by reducing number of operations, workers fatigue, transportation time, number of workstations. [8]

Subodh B Patil and S.S. Kuber (2014) have carried out the “PRODUCTIVITY IMPROVEMENT IN PLANT BY USING SYSTEMATIC LAYOUT PLANNING (SLP) - A CASE STUDY OF MEDIUM SCALE INDUSTRY “. Layout design is an important task when a manufacturing system is constructed, or expanded. The existing plant layout is improved using systematic layout planning theory SLP for better plant area utilization. Installation of new machines helps to improve the productivity and space utilization. By using SLP method material handling time, labor cost, transportation cost and are minimized. [9]

Mayank Dev Singh et al (2015) in their article “Overall Productivity Improvement in Casting Industry by Using Various Industrial Engineering Techniques”. The objective is to improve productivity in effective manner without compromising product quality. Overall productivity of company can be increased by minimizing the problem through changing plant layout. [10]

Abhilasha Dongre and Professor N.Y. Mohite (2015) have carried out the “Significance of Selection of Material Handling System Design in Industry”. They had preceded with the considerations for material flow design problems for related product design in the Industry. A abridged study on developing material Handling technology. They have also concluded that material handling activity and selection of appropriate material handling equipment is an important activity in any manufacturing company. Thus material handling system plays a major role in productivity. Distribution, Manufacturing, and Warehousing and help to give the best optimization to increase the productivity, Reduced cost and idle time, Proper utilization of labour, Product quality and safety. [11]

Rishabh Mishra (2015) has carried out the “Productivity improvement in Automobile industry by using method study”. In production department some unwanted work are going on which are taking extra time and extra effort as well as increasing the cost of product and worker fatigue. By the proper utilization of machine and material, method study, work procedure processes can be improved. It will improve the current process by reducing the transportations and worker’s fatigue. After implementing the suggested ideas, the firm is able to increase its productivity. [12]

Dr Ashish Jain and Dr Punit Yadav (2016) have carried out the “Method Study to Improve Work Flow Process in a Dietary Facility” they had proceeded with method study flow process chart. They have concluded that Method study flow process chart is a means of raising the efficiency and productivity of an operating unit by the rear- generation of work which normally involves little or no capital expenditure on facilities and equipment. The present study utilises this scientific technique to improve working conditions and develop safer and hygienic methods of per- forming operations. However, it must be remembered that the success of either system will depend on facilities and equipment, equitable distribution of workload, organized of duties and a good employee orientation. [13]

### III. CONCLUSION

Productivity of company can be increased by using different industrial engineering techniques like SLP, Lead Time Reduction, and different types of chart like Operation process chart, Flow process chart, and Man Machine relationship chart. In SLP technique existing plant layout is compared with revised plant layout which helps in reducing material handling time, labour cost, transportation cost and reduction in material handling. In lead time technique each and every activity of the worker is observed clearly and based on this observation worker unwanted activities are eliminated. Operation process chart gives information about the different types of operation done in a firm. Flow process chart give the complete idea for the material flow from starting to dispatch of product.

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