International Journal of Interdisciplinary Innovative Research &Development (IJIIRD)
ISSN: 2456-236X
Vol. 05 Special Issue 01 | 2020

# A Review on Innovative Methods to Increase Efficiency in Production Field

S.M.BHOLE[1], S.R.MUNDALE[2]

[1,2]*Asst. Professor, Department Of Mechanical Engineering, Padm. Dr. V. B. Kolte College of Engineering, Malkapur, Maharashtra, India*

**ABSTRACT**

***There are a number of common problems facing today's industries. Such concerns require enhancement of productivity in all fields of organizations. Any small change that will increase the organization's productive capacity will have a direct effect on its growth. While attention to the technology aspect is crucial, attention to the changes issues affecting people and the activities they carry out, which are their processes and practices, is equally relevant. The basic idea of improving efficiency cannot always be correct. If a company wishes to increase its profits, it should improve productivity while also taking into account the quality of the production. Productivity is the biggest obstacle for production engineers in every manufacturing or development industry. This paper aims to cover several factors that affect manufacturing sector productivity and Organizational productivity.***

***Keyword: - Productivity, SMED, TPM, Kaizen***

## I. INTRODUCTION

Manufacturing industries are primarily causing productivity issues. Such industries have several variables that are essential to their productivity. Like cost of the project, time management, and training. Changing time, setting up job times. Added work leads to low quality, lack of concentration and job goals, insufficient resources at the right time, Productivity is a measure of the rate of output of products and services per unit of input (labor, capital, raw materials, etc.). Measures for growth are implemented at the level of firms, sectors and whole economies. Productivity measurements may have different meanings depending on the context and the choice of input and output steps. Productivity is a common indicator of how well resources are being used, or an indicator of resource efficiency typically expressed as output-to-input ratio.

## II. LITERATURE SURVEY

Lean manufacturing is a technique that focuses on reducing waste within production processes while increasing efficiency at the same time. Wastes are seen as something that consumers don't think adds value and won't pay for. Some of the advantages of lean manufacturing can include lower lead times, lower operating costs and increased product quality.

Short Cycle Time Manufacturing (SCM) was developed to help comprehend and quantify line output and power loss components. Total Productive Maintenance (TPM). What is a constructive approach to solving the question of manufacturing, aiming at zero defects and thus increasing productivity and quality in manufacturing? The paper also discusses the TPM pillar outline and how it plays an important role in the manufacturing system. OEE (Overall Device Effectiveness) is used to assess the TPM changes or achievements. In his article, Norihiko Saiga notes that a service industry's productivity is weak and triggers a decline in all of Japan's global competitiveness. There are numerous explanations on why a service industry's productivity is poor. Improving efficiency by Lean manufacturing means maximizing and organizing the input capital to minimize the wastes to reduce overall cost of output. This can be achieved by Lean thinking (to identify and eliminate wastes) and Lean Manufacturing (to improve efficiency and effectiveness of equipment).

G. S. Nhlabathi et al discuss the use of the production method known as kaizen. Development kaizen refers to a method of enhancing a process of work by removing waste within an enterprise. The findings show that kaizen tool transforms workplace will help increase organization’s productivity.

## III 7 TYPES OF WASTE

Generally, there are 7 basic wastes which affect productivity of organization. In lean management system, they are Over Production (production continues even after target complete), Waiting time (non-value added activities time)

1) Transport 2) Inventory 3) Motion 4) Waiting 5) Over-Processing 6) Overproduction 7) Defects

These are main wastage in Industries which generally causes Production loss, extra cost, cost of recovering loss, and cost of labor all this ultimately affects Productivity of Organization.

## IV PRODUCTIVITY ENHANCEMENT THROUGH WASTE REDUCTION

In manufacturing industries there are seven basic mudas (waste) which are described in previous sections. Some strategic strategies come into the picture to minimize those that tend to reduce mudas.

**A. Lean Manufacturing:** Lean Manufacturing's seven wastes are what we aim to remove from our operations by eliminating the triggers of Mura and Muri as well as directly tackling Muda. Lean manufacturing process principles find continuous improvement and emphasis on waste management and removal of non-value-added activities. Lean manufacturing principles are used by the companies to eliminate work-in-progress inventories, as well as to minimize inventory for global market competitiveness. The ultimate goal is to speed up the cycle there by increasing efficiency through proper human and computer utilization. Within a manufacturing industry the productivity is determined by the layout and material flow in the shop floor. Material handling system also plays a major role in affecting the product's efficiency, time throughput and cost.

**1) *SMED:* Single Minute Exchange of Dies** – The Single Minute Die Exchange (SMED) is an important lean tool for reducing waste and enhancing flexibility in manufacturing processes that allows to reduce lot size and improve the flow of manufacturing. SMED eliminates the non-productive time by simplifying and standardizing the exchange tool processes, using basic techniques and easy applications.

The first step in introducing SMED is to distinguish internal (activities that can only be done when the machine is stopped) and external (activities that can be done when the system is running) configuration activities. The second stage of Shingo's SMED approach is to move internal practices to external set-up. This will reduce waste related to Waiting Time. “Quick Changeover” is still a suitable method for manufacturing improvement.

***2) TPM:* Total Productive Maintenance** - TPM is a special Japanese maintenance program, established by Japan Plant Maintenance Institute (JIPM). It was a very useful resource for intensive machinery manufacturing sectors; it is a vital means of increasing the availability of machines. Total Productive Maintenance (TPM) is a maintenance program which includes concepts for the successful maintenance of plant and equipment. The TPM's goal is to increase the efficiency of workers, and to reduce maintenance costs. It is a methodology which aims to increase the availability of existing equipment thus reducing the need for further investment in capital.

TPM is a strategy that relies on the complete participation of everyone from top management to all workers over their lifetime to incorporate a robust maintenance program for all equipment. This strategy results in full equipment efficiency, a more orderly, efficient and clean place of work and morally boosted employees. TPM has been identified as one of the main operational techniques for restoring output losses due to inefficiency of the machinery. TPM helps to reduce waste such as waiting time, inventory, over-processing, etc. It is now well understood the value of introducing TPM in industry.

***3) KAIZEN:*** Kaizen means improvement, continuous change from top management to managers then to subordinates and to staff, including everyone in the company. In Japan, Kaizen's idea is so deeply rooted in the minds of both managers and staff that they sometimes don't even know that they're thinking of Kaizen as a customer-driven change technique. Kaizen is best done to increase productivity.

– Key steps to improve productivity:

a) Smaller Task Breakdown – Smaller Tasks are more manageable, simpler to schedule, and time-set. Every mission you accomplish is an accomplishment that inspires you to achieve your ultimate objective

b) Eliminate waste – This approach helps in the detection and removal of 7 essential wastes.

c) Continuous Improvement – You'll improve the process using continuous improvement. Simple to use, simple to prepare for and easy to execute.The implementation of Manufacturing Kaizen, labor productivity cold over time, would result in increased productivity within the organization

## V CONCLUSION

The eight main factors that affect Organizational productivity are-

- Technical factors,
- Production factors,
- Organizational factor,
- Personnel factors,
- Finance factors
- Management factors,
- Government factors, and
- Location factors.

This context reviews some major methods of reducing waste which ultimately helps in recovering Organizational productivity. Few things concluded after reviewing above methods are:

- Every method primarily focuses on reducing muda (waste) in production, technical, organizational area. Because every section of organization incorporated with one of the seven types of waste.
- Continuous Improvement is not work of only top level management or only bottom level management. It should involve human beings who are working on different level of work structure.
- Implementing one method at a time is more beneficial than implementing all method at same time.

Unless the awareness of all these method among all people in organization is increased, one cannot gain success based on this method. Management must understand and believe in the link between 'doing it right at first & always' and the business strategy; understand the practicalities of these strategies and error proofing and be able to communicate the principles and techniques to all employees; participate in the problem-solving process to reduce waste. So training is must.

## REFERENCES

[1] K. Hemanand et al, “Improving Productivity Of Manufacturing Division Using Lean Concepts and Development of Material Gravity Feeder – A Case Study”, International Journal of Lean Thinking Volume 3, Issue 2 (December 2012)

[2] Dr. Donald P. Martin, “Maximizing Productivity Improvements Using Short Cycle Time Manufacturing (SCM) Concepts in a Semiconductor Manufacturing Line, IBM Microelectronics Division”, IEEE/semi Advanced Semiconductor Manufacturing Conference, River Road USA, 2000

[3] M. S. Desai, “Productivity Enhancement by Reducing Setup Time - SMED: Case study in the Automobile factory”, Global Journal of Researches in Engineering Mechanical and Mechanics Engineering, Volume 12, Issue 5, Version 1.0, 2012.

[4] Norihiko Saiga, Meijo, “Problem to Productivity Improvement of Service Industry Japan”, Service Research and Innovation Institute Global Conference, Japan, 2012.

[5] G. S. Nhlabathi, P. Kholopane, “Using Manufacturing Kaizen to Improve a Manufacturing Process”, Proceedings of PICMET '13: Technology Management for Emerging Technologies, South Africa, 2013.