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A Review of Productivity Improvement in Manufacturing Industry Using Work Study Technique

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Abstract- Work study is the systematic examination of the methods of carrying out activities so as to improve the effective use of resources and to set-up standards of performance for the activities being carried out. It is one of the most powerful tools that management can use to improve productivity. By the application of method study and time study in any organization, we can thus achieve greater output at less cost and of better quality, and hence achieve higher productivity. In this study, The prime objective of this study are to Reduced machine idle time, Increase productivity, Reduce worker's fatigue. Establish the standard performance methods and standard cycle time involved, optimally use equipment and manpower, and Eliminate wasteful efforts, as well as useless handling material. The study area includes production lines of Gear manufacturing. This production line includes 5 machining centers, and 1 CMM machine for inspection.

Keywords: - Work study, idle time, productivity, worker's fatigue, CMM machine, method study.

I. INTRODUCTION

Work study was widely known for years as "time and motion study", but with the development of the technique and its application to a very wide range of activities it was felt by many people that the older title was both too narrow and insufficiently descriptive.

Productivity is the ratio between output and input. It is quantitative relationship between what we produce and what we have spent to produce. 70 Productivity is nothing but reduction in wastage of resources like men, material, machine, time, space, capital etc. It can be expressed as human efforts to produce more and more with less and less inputs of resources so that there will be maximum distribution of benefits among maximum number of people. Productivity denotes relationship between output and one or all associated inputs.

European Productivity Council states that, Productivity is an attitude of mind. It is a mentality of Yesterday and continuously. It is constant adoption of economic and social life to changing conditions. It is continual effort to apply new techniques and methods. It is faith in human progress‟. In the words of Peter Drucker productivity means a balance between all factors of production that will give the maximum output with the smallest effort.

On the other hand, according to International Labour Organization productivity is the ratio between the volume of output as measured by production indicates and the corresponding volume of labour input' as measured by production indices and the corresponding volume of labour input as measured by employment indices2. This definition applies to an enterprise, industry or an economy as a whole.

II. LITERATURE REVIEW

Chouhan (2019) Productivity is the most important and popular thing in the manufacturing world. This paper highlights a methodology developed for enhancing the worker productivity & efficiency and

also minimization of fatigue in manufacturing line by using Time Study techniques revealed the excessive movements of operators and workers. Work study in productivity improvement could be done in time study.

Gujar and Sahare (2018) Productivity increase by means of a work study in a manufacturing industry is the area of interest in this project. The project was conducted live, where in numerous types of tools and techniques were employed to improve the efficiency and productivity of industry.

Nagaich (2017) Productivity improvement is an important aspect for any organization to survive and to achieve competitive edge. This study deals with improving the productivity in an automobile industry.

Singh and Yadav (2016) the globalization of the Indian economy has faced a great challenge to the Indian small industries in respect of productivity, quality, cost, delivery etc. To achieve success in the global market it is required fundamental improvement in the way of production in small process industries.

Patil (2016) Market trends and consumer requirements get modernize in relatively fast comportment. Globalization developed trade opportunities to fulfill consumer needs, but along also resulted in competition, improved quality and increased productivity.

Mishra (2015) Productivity improvement is the very important factor for a firm to survive and to achieve breakthroughs the work carried out deals with enhancing productivity in an automobile industry.

Centindere (2015) used to implement work and time study technique for earth energy glass Manufacture Company they worked upon the location of mold room subject to the work and time study forces the molder walk for meters during the days and this applies also to the machine operator who comes and collects the ready molds.

Duran et. al. (2015) Production and trade growth opportunities brought about by globalization and increased competition, productivity growth requires in business. Sources declined with each passing day, constantly increasing needs.

Deshmukh (2014) used to improve material handling efficiency by discovered the problem areas, like lack of space in different areas of the company and also lack of appropriate equipment for material handling.

Raju (2014) used to implement method study principle in a shoe making industry to improve work procedure and proper utilization of machine and material by reducing number of work stations, transportations, combining the operations, and reducing the worker's fatigue.

Bagri (2014) in automotive industry even original equipment manufacturers (OEMs) are out sourcing their product to small and medium enterprises (SMEs). In spite of small profit margin OEMs are providing excellent product quality but their growth are limited. They cannot afford large investment to purchase new equipment and recent software licenses Productivity improvement.

Raut (2014) this paper presents a case study in the development and application of a time study in an engine block manufacturing plant. The organization engages in the production of two product lines: engine blocks, heads of diverse categories.

Tapiwa et. al. (2013) explored the use of work study techniques in the optimization of manufacturing plant maintenance processes. An overview of work study strategies from literature is first done and then performance indices for maintenances practices are explored.

Chandra (2013) focused on the crucial area of productivity improvement with the astute use of work study technique mixed with modern soft skills.

Singh (2012) used work study technique to improve productivity he had worked on "To improve productivity by using work study and designed a fixture in small scale industry".

The According to **Mayank Dev Singh (2012)** they working on "To improve productivity by using work study & design a fixture in small scale industry".

Singh et. al. (2012) improved production capabilities for small scale industry and this research focused on the company, which produce Stay vane

of Francis turbine. This research used work study technique to improve work process in company, and the research objectives towards accomplished this study is to identify problems in the production work process and improved it in terms of production time, number of process and production rate by proposing an efficient work process to company.

Khalid (2011) used time study technique to improve productivity he had worked on" Productivity improvement of a motor vehicle inspection station using motion and time study technique" this research was carried out at the motor vehicle periodic inspection (MVPI) station to improve and enhance the bottleneck inspection point.

III. CONCLUSION

Work measurement includes time study and motion study as well. Work measurement should be carried out by conducting both time and motion study in order to achieve reasonable results. Before conducting time study, it is very much necessary to consider the motion study also. Hence motion study can be considered as a basis for time study.

In today's challenging market, every organization is looking to achieve higher quality and productivity. Productivity improvement is an everlasting continuous activity in manufacturing. Industries need to develop capability of coping up with customer demands to deliver quality products on time. Continuous improvement is the need of the hours which can be achieved by incorporating flexibility in layout, design and processes.

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