e-ISSN: 2456-3463
International Journal of Innovations in Engineering and Science, Vol. 2, No.3, 2017
www.ijies.net

Time Study Approach for Productivity Improvement of Furniture Industry

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Abstract

The growth of any industry depends largely on its productivity. Quality with quantity is a main characteristic which helps a company stay in the competition. Productivity depends upon many factors, one of the major factors being manufacturing efficiency with which the operations are carried out in the industry. Productivity can be improved by reducing the total machining time, reducing manpower, reducing cost of machining, combining the operations etc. Technology has taken leaps of development lately and this has brought about an increase in the customer demands. The work focuses on the crucial area of productivity improvement with the astute use of time study technique mixed with modern soft skills.

Key Worlds: *Time study, Productivity, Cycle time*

I. INTRODUCTION

Manufacturing industries are now facing challenges with its competitors and day by day competition is escalating. To deal with these challenges, they have to improve their production efficiency, reduce operations time and incurred cost for each operation. Management need to regulate over their production process to continue their production schedule, workforce planning, estimating labor cost, budgeting and time standard for operating a job. They also need to understand its application not just from angle of production improvement or finance improvement or resource utilization, but also should address critically the soft side of workers psychology to give the best to not only for accepting the productivity solutions, but also be a part on forefront during actual implementation to make the study really worth its time and effort. The systematic application of method study, and time study to improve productivity, reduce costs and improve profits. To execute all of these efficiently time study is one of the crucial operation need to perform. This paper focuses on developing a time study for a reputed furniture industry. The objective is to establish a time standards for carrying out specified job and thus helping the company in scheduling.

The productivity in furniture industry depends on many factors. Time and motion study is very important factor that control the productivity of garment sector. Industries need to develop capability of coping up with customer demands to deliver quality products on time. The work measurement of various elements of the work cycle has been made. The work cycles were divided into small measurable work elements. These elements were recorded on the observation sheet. Observations have been recorded for different trails to analyse the operation effectively for identification of value-added and non-value added element. By making the time and motion study an assumption of total time needed for any particular product can be made, that is really important to make the delivery of the product to the buyer on exact time.

II. LITERATURE REVIEW

Analysis of operations required to produce a manufactured article in a factory, with the aim of increase efficiency. Each operation is studied minutely and analyzed to set up a benchmark time and it will helpful for production schedule, forecasting etc. The first effort at time study was made by F. W. Taylor in the 1880s. He published his famous article "The Principle of Scientific Management" which involved getting the best

person for each job and trained them to do it in the best possible way. In the early twentieth century Frank and Lillian Gilbreth developed a more systematic and sophisticated method of time study for industry taking into account the limits of human physical and mental capacity and the importance of good physical environment[1]. Time and motion study is used in radio theraphy. It is also used to reduce accidental cause. Though Time Study in furniture industry is not performed yet so the focus of the study is on furniture industry.

A work measurement technique for recording the times and rates of working for the elements within specific conditions, and for analyzing the data so as to determine the time necessary for carrying out a job at a defined level of performance. Time study evolved from the work of Taylor and was the original work measurement technique [2].

III. TIME STUDY

The technique of random sampling used for analysis of the time spent for rendering each phase of various professional work or services performed by worker ofservice man is known as time measuring or needed time to perform a work. Productivity is the relationship between output and input. It actually means adding value to input to enhance value of output. Productivity can be achieved by enhancing the value-added content of products/services, or by decreasing the unit cost of production, or a combination of both (Erlendsson, J. 2006). Organization develops time standards in a number of ways. Most common work measurements are Stopwatch time study, historical time study, predetermined data and work sampling. Among them stopwatch time study is used most frequently. The basics steps in a time study are define the task to be studied and inform the worker will be studied and determine the number of cycles to observe.

The objectives of the study is,

a. To study the operation at elemental level through time study technique,
b. To eliminate the non-value added elements,
c. To optimize the cycle time to increase the production,
d. To evaluate the worker's performance.

Productivity studies analyze technical processes and engineering relationships such as how much of an output can be produced in a specified period of time, (Toronto Globe and Mail, 1995). It is related to the concept of efficiency, which is the amount of output produced relative to the amount of resources (time and money) that goes into the production. It provides measures of the efficiency of production. Productivity is a ratio of production output to what is required to produce it (inputs). The measure of productivity is defined as a total output per one unit of a total input as shown in fig.1.

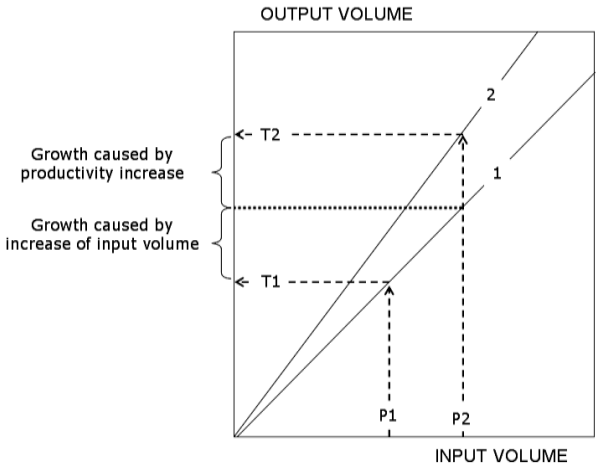

Fig 1. Definition of Time study

A. PRODUCTIVITY IMPROVEMENT TECHNIQUES

There are two techniques that have been developed in the past to improve productivity

a. By reducing work content b. By reducing ineffective time.

Time study conducted for measuring work in process as shown in fig.2. Before making this time study each operation was broken into definite number of elements, which are not large or too short in time, then selected average cooperative operator(s). The stopwatch time study is used to analyze a specific process by qualified workers in an effort to find the most efficient ways in terms of time. Moreover, this method measures the time necessary for a work process to be completed using the best ways. The time was measured using snapback stopwatch equipment because it is easier and faster in data recording. Moreover, this type of stopwatch is suitable for this research because it can develop accurate data. This allows the element times to be entered directly on the time study sheet without the need for subtractions. Observe operators performing a task: record time taken for each element, over several cycles. Our objective is to record the time taken to perform an activity and to give the ratings of that activity. Assign appropriate allowances (e.g. Allow time for necessary but non-

productive activities, such as rest, cleaning eyeglasses, etc. Determine appropriate work standards, with the objective to eliminate idle activities and to set a new standard time to calculate the standard time of each operation.

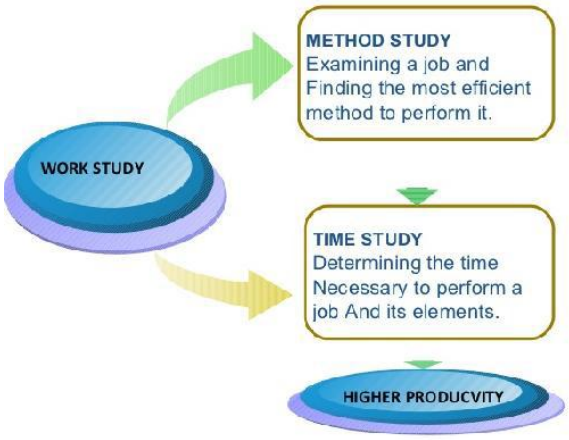

Fig 2. Structure of improvement of productivity [4]

B. PERSONAL DELAYS

These are included to perceived time necessary for maintaining the general well being of the employee. This includes, for example; trips to the rest room and water cooler. Working conditions, temperature at the workplace, a person's physical health, etc. all effect personal time needs.

C. MISCELLANEOUS DELAYS

They are used to pay for random interruptions of the worker caused by influences outside his or her control. Interruptions by supervisors, material irregularities, or malfunctioning equipment are examples. These "lost" times must be accounted for in the standard. Not allowed are interruptions and delays that are the fault of the worker, such as: excessive personal time or rework because of poor workmanship.

D. FATIGUE ALLOWANCES

They are closely associated with personal time needs and the types of work being done. Throughout the years, as heavy or undesirable work became mechanized, fatigue allowances have been reduced proportionately. This trend is good because fatigue is hard to validate and is subject to much argument.

IV. CONCLUSION

Some employee groups refrain from any comment until after the methods and rates have been established, taking action on disagreement through the grievance procedure. This technique may vary from the use of observers who merely check and suggest to trained personnel who make motion and time studies in cooperation with company engineers.

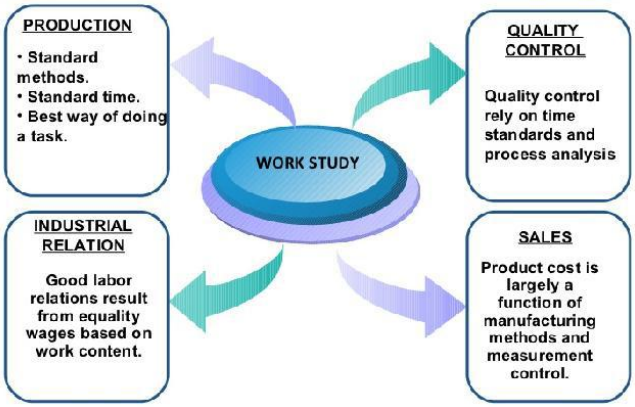

Fig 3. Schematic diagram of work study[4]

As shown in fig.3, Increases in productivity also can influence society more broadly, by improving living standards, and creating income. They are central to the process generating economic growth and capital accumulation. Productivity helps an organization to not only in increasing economy at micro level benefiting at both financial as well as labor performance output standard. But still in today's organization I feel that total factor productivity, by contrast, captures the contribution to output of everything except labor and capital: innovation, managerial skill, organization, even luck. But finally we conclude that this technique adopted depends entirely upon the complexity of the labor-management relationship that exists in each individual situation. From the above discussion, it is clear that a standard can be maintained in the garment sector to get the maximum production by using the time properly. Different time is needed to sew the different parts of a garment. As a result time variation is must. Since garments are made with the help of different operator, time limitation must be given to achieve the target production. To set a standard target for different product time and time study is mandatory.
By making the time target production can be achieved. As a result shipment of a particular product can be made in exact time and there would be no delay to get the payment to the seller.

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