

Review-Value Stream Mapping to Increase Productivity

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Abstract

Value stream mapping (VSM) is one of the predominant tools of lean methodology to identify waste in production, business and manufacturing by recognizing and removing redundant activities. This map helps us to detect the redundant activity in the entire process line by which we can eliminate it. The existing process steps are scrutinized to reduce the process steps up to the fewest necessary steps. By the consequence, redundant time will decrease and the output speed will increase. So, considerable profit can be earned by increase in productivity.

Keywords: VSM, productivity, value adding activity, non-value adding activity

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INTRODUCTION

It is a technique of lean manufacturing and it came into existence as most convenient way to help and to make lean principles practical to increase productivity and to eliminate the waste from the processes. Hence, the produced product can reach the customer in very little amount of time, of best quality at minimum cost.

LITERATURE REVIEW

By the invention of automation in manufacturing, the manufacturer can easily produce the product in minimum time to fulfill the need of the customer. Hence, the manufacturing becomes more and more advance to survive in the cut throat competition with the competitors to increase the efficiency.

The benchmarking practices have left little scope to compete the competitors and hence all the companies throughout the globe try to improve the process by eliminating the unnecessary waste called muda from the process. In the manufacturing context, operations are classified into three categories [1]. They are: (1) Value added, (2) Non value added and (3) Essential but not value added.

The VSM is an illustrative tool which came into existence by Toyota to reduce the waste in their production line. VSM assists in to

paraphrase and eliminate the waste from the production line with the help of the concept of lean manufacturing. The first and foremost aim of this VSM is to detect the waste, and then to procure the methods for decreasing the desired non-value adding activities. The waste means any redundant event which doesn't add any kind of extra value to the ultimate product, and it is frequently used to identify and eliminate the waste in entire manufacturing system. Hence, value stream mapping plays its duty as an initial stage to assist the engineers, managerial team, production fellows, schedule makers, raw material provider, and the king of market none other than customers by identifying the redundancy and its reasons.

The wonder of VSM lies in its very effective and simple operating procedure. Value stream mapping is a map which engrosses the existing and what you expect in the final state of given production system, which allows the owner of VSM user to paraphrase entire system like, where they are at present moment and what kind of action should be taken to eliminate the redundant operations. Afterwards the operator implements the lean manufacturing concepts to switch over from existing state to the desired final stage [2]. This author has introduced the concept in production industries. He has signed out the advantages from different areas like lead time, work in process, time of processing, required

inventories and man force [3]. When a product comes into the picture, surely a stream of value will be there. The task is to identify all the value adding and non-value adding parameters and to eliminate the non-value adding parameters. This wonderful instrument not only detects the lack of efficiency in processes, or any mismatch in transaction or communication but it helps to improve the faults. VSM is a tool to enhance the productivity of any enterprise, with the help of emerging entire process by drawing on the paper with all the required parameters.

The VSM is a bunch of all the processes whether it is value adding or not, which ultimately brings the product or the group of products at its optimum level by eliminating the non-value adding activities and to provide it to the final consumer [4].

Different seven tools for mapping are quality filter mapping, process activity mapping, physical structure mapping, supply chain response matrix, demand amplification mapping, production variety funnel and decision point analysis along with their area of application; which are also useful in value stream mapping [5].

Womack *et al.* described the five tenets of lean concepts and they emphasized that VSM should be taken as a first step, so that we can get the thorough idea of entire process [6]. VSM is a method to describe the flow of material and information through the production system. It also helps to find where value is added and where value is lost, by graphically portraying the processes. Value stream mapping is a technique to explain the flow of information and material throughout the system of production. It is also helpful to highlight the areas where the values were added and where they were lost.

The final ratio of value adding activity to total lead time is considered by existing lead time, level of inventory and cycle times. This illustration of VSM helps us to identify that where the incurred cost can be reduced or eliminated and improvement can be done. After that final state can be made where the redundancies are removed and constant flow along with pull type production system can

come into existence [7]. To implement VSM in process industries as a lead to recognize the good chances for different lean methods and a model for simulation to differentiate between earlier and after situations in depth, was constructed in order to show the powerful advantages of VSM e.g. reduction in total lead time and minimum work in process inventory [8].

METHODOLOGY

No other tool is so effective like VSM is, because it helps us to identify and eliminate the waste by the assistance of lean concepts. This VSM is an illustrative tool, which came into existence under the heading of lean manufacturing concepts in Toyota production system. VSM helps in understanding the process line and by which we can get the idea of how can we stream line it, so that we can get the optimum output. Manufacturing system operates by the timing of step by step activities. The different steps of how to implement the VSM are mentioned in Figure 1.

The analysis of different processes are carried out by gathering the data from different enquiries which are expertise in shop floor, workers and direct participation in measuring the time of various events or processes. Waste is the activity which doesn't add any value to the ultimate product, frequently used to represent it and so we can eliminate it from the manufacturing system. Hence value stream mapping can serve as a road map for lean concepts to implement. Here, the methodology is presented by the following Figure 1.

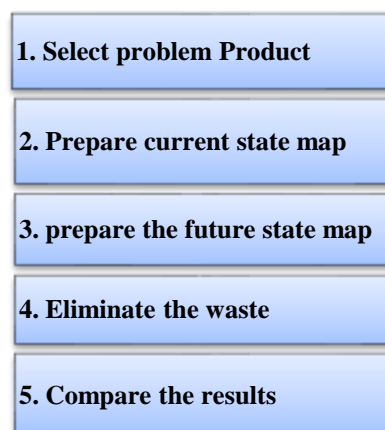


Fig. 1: Methodology of VSM.

DISCUSSION AND CONCLUSION

VSM is an effective tool for lean manufacturing which is useful to eliminate the mudas and optimizing manufacturing efficiency. VSM can be applied successfully for reducing the time of process by recognizing the redundant activity within it.

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