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LEAN MANAGEMENT IN MODERN MANUFACTURING PROCESSES

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ABSTRACT

The resources of production are limited; therefore the companies must utilize their resources in the optimal manner. These days various techniques are used by the corporate houses to avoid wastage and make the best use of their resources. The traditional manufacturing which was prevalent in the past has shown various changes to make much more organized system today. Presently, we find much smaller batch sizes and shorter production cycles as far as assembly work is concerned. However the varieties of products and models which are being manufactured have increased to a great extent. Lean management is a popular technique to make the optimum use of resources. This concept is applicable to service operations along with the manufacturing operations. This system is the most suitable for the companies which wish to create an innovative look to their existing manufacturing system. The concept of lean management is strong enough to eliminate the need of sophisticated and expensive machinery and reducing the cost through the efficient system of manufacturing. This paper deals with the principles and methods related to lean management. Moreover, it has also been studied that how modern companies are using the lean management practices to utilize their resources to the fullest.

KEYWORDS: *Lean Management, Manufacturing Operations,* Problem Solving, *TQM.*

Introduction

The demands of the customers are ever growing and changing. The companies configure and expand their manufacturing system to make it more quick, efficient and capable. The lean manufacturing system has the ability to include new techniques without demanding much investment for expensive machinery. It is a unique condition where the varieties and models increase while decrease in outlay is seen. In this situation, companies have a proper system to keep control on the production of obsolete products (Fliedner, 2011). The last one decade has shown tremendous transformation in service operations too. The Lean manufacturing concept also applies to the service operations and it includes sectors like education, software development, health care services, call centre services and other professional services. The success of lean manufacturing highly depends on flexibility of the production system of any organization. The system may be defined as the commendable beginning point for the companies which want to create an innovative look to their existing manufacturing by introducing new production methods. The lean management methods are worth to analyze and study because they are powerful enough to eliminate large capital investment in sophisticated and expensive machinery. This kind of manufacturing concept signifies the decline of automated set-up which remained highly popular during last few decades. Lean management system is based on the concept of 'less is better' and results in uncluttered, clearer and simplified environment. The environment is tuned cautiously according to the demands of the manufacturers (McGiven, 2013).

According to this concept, the smaller batches are produced after getting confirmation from the customers, which results in no stocking resulting in preventing wastage and less chances of obsolete stock. The main objective of the lean management is to produce the quantity which is needed and not more than that. It is observed that lean management is a unique kind of system that provides flexibility to

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the problem-solving. The changing of the process during the day is important to accommodate various parts of the product and employ maximum efforts from the employees along with proper utilization of equipments and space (Wincel, 2004). The example of Toyota Manufacturing System is worth mentioning here. They also used just-in-time practice which is also a part of lean management and apply it their low volume and high variety manufacturing system.

Research Objectives

To analyze the novel techniques of operations or production management is to study their outcomes in some major goods and services corporate.

Origin and Techniques of Lean Management

The lean management concept was originated from Japan. Japanese use group of tools which enable them to identify and eliminate the wastage. The elimination of waste not only improves the quality of the product but also saves time and cost of production. The most popular tool of lean management is just-in-minute technique. The other tools are Value Stream Mapping, Six Sigma and Kanban. The objective and focus of these tools is to remove the unevenness in the production process. (Kilpatrick, 2003) The technique which supports the flow of the work includes production leveling and pull production. The lean management focuses that any activity which does not contribute to adding value to the product must be completely eliminated from the production system. Thus the principle of 'more value for less work' is followed. Toyota is the pioneer of lean management system; thus, the system is also known as lean manufacturing and Toyota production system.

Thus, the process is not machinery or infrastructure based but it is performance based. This system is used by manufacturing firms to increase their advantage and making their product different from their competitors. The lean management cannot be implemented in vacuum. The difficulty in lean management is that the firm must have a lean culture which would sustain and enhance the long term goals of the top management (The Folk Group, 2009). Lean management is based on the principles that make it possible to attain the organizational goals. These principles are described below:

- **Flow:** The disturbance is eliminated from the manufacturing process to ensure there is no stoppage in the value streaming.
- **Value:** There is a need for value streaming which analyses the price our customer is willing to pay for the product (Tailor and Brunt, 2001).
- **Value Stream:** There is a need to identify and make the mind map of the precise actions to eliminate non-value activities right from the design stage to the post-sales stage.
- **Pull:** There is a need to streamline the process during the production.
- **Perfection:** The right things should be promoted through efforts that would improve the overall production process.

Figure 1: Principles of Lean Management

Source: Jersey Automotives Production Management Techniques Chart

Techniques of Lean Management

The work force should continuously be trained to develop their skills to measure the wastage and making a scoreboard for monitoring the progress. Some examples describe that the waste accounts up to 90% of the cost in non-lean manufacturing system environment. This waste is originated due to over production. This can be corrected if production is in accordance with the demands of customer (Panneerselvam, 2005). Another observation is that waiting time for information, material, equipment and tools are also the reason for waste. The logistics part that is the transportation of material should also be on time. Moreover, the raw material should be delivered directly to the point-of-action; not with long procedure like shipping to vendor, then warehouse and then assembly line. This technique is known as point-of-use storage (POUS) as the non availability of goods impact the choice of customers to buy the goods negatively; in the same way, excess inventory related to overproduction also hugely affects the customer negatively. This results in incorrect utilization of floor space for which rent is paid. Kanban is one of the methods of lean blocks. It is defined as the method for the maintenance of flow of material. In this, some cards are made which are utilized for the order point of material, the quantity of material needed and the place where material will be delivered.

The bottom line is that the operating cost rather the overall cost of maintenance has to be decreased and the life of equipment must be enhanced. Total Quality Management (TQM) can be defined as the system for improving various areas of operations of the company. Various kinds of waste can be analyzed and identified in lean management such as large batch sizes, delay in delivery of goods, the state of unclear communication that lead to waste of time, shortage in production due to which not being able to deliver to the customers, etc. Example of lean model in service industry can be seen in the life insurance provider Jefferson Pilot Financials which applied lean model in the year 2000 and it gave desired outcome to the company. Another example is Wisconsin Manufacturing Extension Partnership which witnessed increased capacity by 20%, reduced set-up time by 75% and lead time reduced by 50% after adapting TQM.

Conclusion

It may be concluded that there is a huge application of lean management in contemporary manufacturing and service industries. It saves resources of the organization and brings the results in an efficient manner. Lean management provides competitive advantage over the competitors. Japanese companies have been using techniques like Kaizen, Kanban and Just-in-time for decades now and accomplishing their goals. Some Indian companies have also adopted these techniques and witnessed uninterrupted business with lesser costs. It is seen that service operations are also benefited from the lean model. There is a need to make total quality management as the part and parcel of Indian firms for better and improved operational output.

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