

# Lean manufacturing techniques in Indian automobile industry

## **Introduction**

This article critically analysis the lean manufacturing technique in Indian automobile industry. Mainly TATA motors use lean manufacturing techniques to improve efficiency of operation and reduce the cost. This article discuss about lean manufacturing techniques/tools like Just- In-Time (JIT), Total Productive Maintenance (TPM), Quality management systems (QMS) and correlation of those techniques.

TATA motors is one of among few companies which successfully adopt to lean manufacturing concepts. Nano car is the main product that TATA motors use lean manufacturing techniques to reduce the production cost.

## **Lean Manufacturing techniques with very high commonalities**

### Total productiveness maintenance (TPM) and 5S

Indian automobile industry use these two techniques to improve overall equipment effectiveness. As an example, mainly TATA and automobile companies use these techniques to improve the cleanliness of the machineries and reduce the breakdowns.

### Supplier partnership and Value stream mapping (VSM)

VSM focus on smooth flow of production and reduce the inventory level. This tool is driven through “Pull system”. In the pull system, production orders made upon inventory reaching a certain level. In value stream mapping, raw material reach to required location at required time. Therefore supplier partnership helps to implement VSM in automobile companies. Just in time (JIT) is also part of this process.

### Quality management system (QMS) and Kaizen

Kaizen leads to continuous improvement of the company. Kaizen means change for the better in Japanese. This improvement related to material, technology, process and service of the automobile industry. This lead to minimize reworks. QMS is also concerned of quality of product by improving the operation process. Therefore Kaizen leads to improvement of QMS and both techniques are correlated to each other.

### Kaizen and 7 waste

The seven waste consists of over production, waiting, transporting, inappropriate processing, unnecessary inventory, excess motion and defects. Kaizen apply to continuous improvement and it lead to reduce the waste. This lead to reduce the idle time both machinery and workers. Improvement of product quality cause to reduce waste, scrap and reworks. Therefore there is a high positive correlation between kaizen and 7W.

## TPM and VSM

TPM leads to reduce the occurrence of machine breakdown. This help to improve the high operational condition of the machinery. Therefore TPM lead to improve the value stream mapping of the organization.

## **Lean Manufacturing techniques with high/ moderate commonalities**

### Kanban and supplier partnership

Kanban is also an inventory control system which is related to Just in time. Kanban system design to obtain required amount of raw material to right place to right time. To achieve this JIT need to be implemented. JIT can be achieved with the support of suppliers and Kanban system. This help to develop smooth production line and reduce the waste in specially production related industry like auto mobile.

### SMED (single minute exchange of die) and 7W

SMED assist to achieve a flexible production line. This will further help to reduce the inventory levels of an organization. Inventory is concerned as one element of 7 waste. So therefore SMED and 7W has certain level of correlation.

And also this analysis reveals that there is correlation between supplier partnership and fool proofing, Kaizen and 5S, TPM and 7W, SMED and VSM in Indian automobile industry.

Hence, these lean manufacturing techniques / tools help to improve overall performance of the automobile industry. This helps to save cost and time, reduce waste, improve efficiency and enhance customer relationship. And also automobile companies can gain competitive advantage through lean. As an example TATA produce Nano cars which is the cheapest car in the world.

## **Disadvantage of lean production**

Even though there are many advantage of lean manufacturing, companies need to consider on possible disadvantages could be arise.

Negative perception among employees –

Efficient human resource management is emphasized in lean manufacturing. Therefore companies try to reduce man power. It could lead to frustrate employees. Therefore sometimes employees could be reluctant to implement lean manufacturing techniques.

Lack of strategic focus –

Lean mainly focus on tactics rather than strategy. And employees mainly focus on day to day operation rather than looking at big picture.

Lack of adequate IT system –

To implement lean manufacturing tools such as JIT, TPM need solid IT systems. Therefore company need to allocate funds, resources and expertise to establish IT infrastructure.

## **Conclusion**

Lean manufacturing techniques which are used in automobile industry are changed company to company. This analysis has identified correlations and commonalities of lean manufacturing techniques/ tools. Among these techniques, this study suggests that VSM, TPM, 5S, QMS and supplier partnership can be categorized as very highly correlated tools. Similarly 7W, Kanban, SMED can be categorized as high/ moderate correlated lean manufacturing tools. Based on the finding of this study, it is suggested that lean manufacturing tools need to be implemented holistically for appropriate employment of the lean model to get the best outcome of this manufacturing approach.

## **References**

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