

# LEAN MANUFACTURING IMPLEMENTATION THE MAIN CHALLENGES AND BARRIERS

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## ABSTRACT

Today in this era every organization wants to sustain in their working field for longer duration. But in order to sustain in this volatile economy organizations are trying to utilize the trending tools and techniques. Lean manufacturing tools and techniques play a crucial role in this context. The demand of Lean manufacturing concept has been increasing day by day among the industries, especially in the manufacturing sector. A lot of companies across the world have implemented lean concept and achieved great improvements in their production system. Lean manufacturing focus on reduction of all types of waste in order to improve the productivity and overall customer value toward the product. But still in most of Indian industries it is currently used as improvement tool instead of taking this concept as a work culture. Though if complete adoption of this concept takes place as organizational culture than it can produce significant improvement in organizational performance. But full-scale implementation of lean manufacturing concept is not an easy task within an organization because of the barriers and challenges during its implementation path. So, this paper has an attempt to explore the main barriers and challenges faced during the implementation of lean manufacturing. The main challenges and barriers are identified after the survey held in Indian SMEs. This paper also provides the rating of challenges and barriers faced by SMEs with the help of chart.

Keywords: Volatile,  
Lean, Philosophy, Implementation, TPS, Waste.

## 1. INTRODUCTION

For a considerable length of time, firms have endeavored to work out the best approach to efficiently arrange their organizations for up quality and power, and at indistinguishable time cut back costs and lead times. Lean standards and methods turned into a benchmark for assembling businesses, upheld on the achievement of the Toyota Production System. Regardless of its quality, a few firms still

battle to accomplish a blasting and enduring lean usage. The term "lean" was coined to describe Toyota's business during the late 1980s by a research team headed by Jim Womack [1] and identified as "lean" only in the 1990s. Lean manufacturing is a waste minimization philosophy within the manufacturing system without compromising the productivity and quality of the product. Lean manufacturing reduces non value added activities within the production system. The core idea is to maximize **customer value** while reducing waste from the production system. In short, lean means creating more value for customers using fewer resources. The concept of lean manufacturing is not limited upto manufacturing sector rather it is applied everywhere like services, healthcare, finance, manufacturing sector etc. Lean manufacturing is not a tactic or a cost reduction program rather it is a set of practices and way of thinking to enhance the productivity of organization. In directly lean manufacturing is a waste minimization philosophy. Lean manufacturing is nothing but a systematic way of eliminating all kind of wastes within the production system. Each and every non value added activity within the production system is termed as waste. There are seven types of deadly waste within the production system shortly abbreviated as **TIMWOOD** [2].

## 1.1 SEVEN TYPES OF DEADLY WASTE

- Inventory
- Motion
- Waiting
- Over Production
- Over-Processing
- Transportation
- Defects

A) **Transportation:** Transportation waste refers to unnecessary movement of items within the production system from one location to another.

B) **Inventory:** Inventory means stock in hand at a point of time which will fulfil the future demand.

Excess inventory storage increases the cost as well as occupied precious space.

C) **Motion:** Waste from unnecessary motion includes time spent from performing extra movements, like walking to get the parts needed for assembly.

D) **Waiting:** Waiting waste results from searching for tools, or from waiting for machine setup, materials or information. Waiting waste decreases the production capacity of plant.

E) **Over Production:** Over production waste refers to the practice of making something for which there is no customer, producing the things before its requirements, producing excessproduct, resulting in work-in-progress and surplus stock.

F) **Over processing:** Processing waste occurs when more work is done to an item than is required by the customer's specifications, or when data must be entered into multiple locations.

G) **Defects:** Waste from processing failure refers to any time spent reworking defective components or products.

## 2. LITERATURE REVIEW

Lean manufacturing plays a crucial role in enhancing productivity of the organization by minimizing waste. So, it becomes very important to carry out the literature review of this philosophy in a very accurate manner to analyze the activities has been done over the past time. Various databases were used to support this literature review, including Dissertations and Theses, ProQuest Dissertations and Theses-Full Text, Google Scholar, Emerald, J. Gate and Government database, journals and various other articles. some of the lean manufacturing studies conducted over the years have been reviewed and here a brief detail is given about them.

**Bhasin and Burcher (2006)** signifies that only 10 % or even less companies succeeded in implementation of the lean concept in the organizations.

**Z. Radnor et al. (2006)** talk about three issues that the organizations face during lean implementation: the people issue, the process issue, and the sustainability issue.

**M. F. Bollbach (2012)**depicted the top management involvement, lack of working knowledge, weak supplier performance, market conditions, lack of Lean knowledge, intercultural communication, and work stylesas Lean implementationbarriers.

**H. M. Alinaitwe (2009)** tried to priorities Lean construction barriers.

**Brandão et al. (2011)** were researching the barriers to lean health care implementation.

**PricewaterhouseCoopers (2007)** noted that only 49% of senior leaders are satisfied with their lean implementation.

**Kallage, (2006)** provided information that more than 50% of companies fail in the lean manufacturing implementation efforts and only 4% of these senior leaders report their lean manufacturing results as highly successful.

**Pay (2008)** noted that only 24% of those companies are making good progress with their efforts and only 2% have achieved their objectives.

## 3. RESEARCH METHODOLOGY

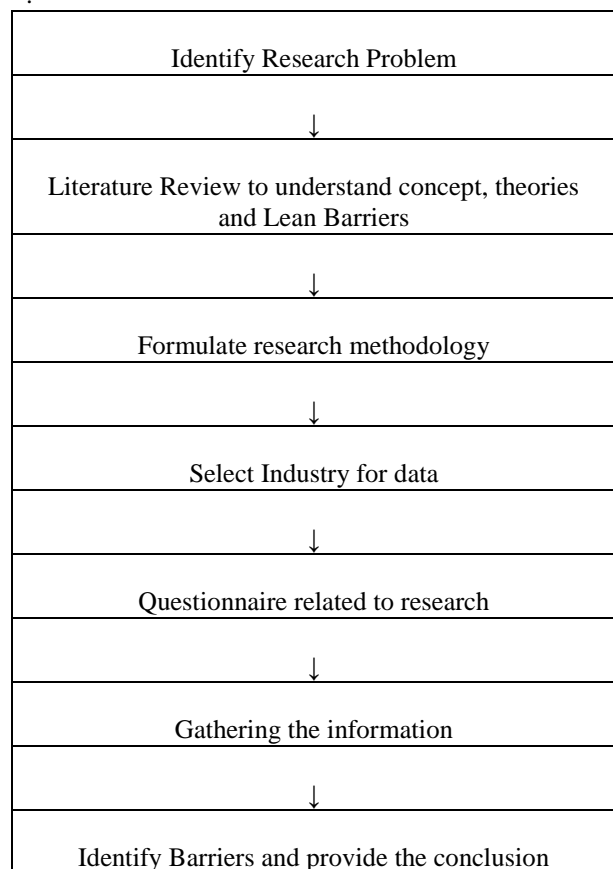


Figure 1. Research Methodology

### 3.1 BARRIERS AND CHALLENGES IN LEAN IMPLEMENTATION

Implementation of lean manufacturing system is not an easy task. In order to bring changes in the organization it is very important to identify the key barriers and understand them properly. Organization must have to spent significant resources and their valuable time in order to properly identified the barriers. Barriers identification and resistance to change the workculture requires a lot of risk and hard work [10,11]

1. Lack of Top management involvement
2. Lack of Middle management involvement.
3. Lack of proper training and guidance
4. Lack of required resources
5. Lack of infrastructure
6. Lack of long-term vision
7. Lack of awareness about lean tools
8. Lack of proper team coordination
9. Lack of proper business planning
10. Resistance to change in work culture
11. Fluctuation in demand
12. Financial restrictions
13. Improper Attitude of shop floor employees
14. Lack of provision of motivation and rewards
15. Conflicts with Initiatives like JIT, TQM, TPM, SMED etc.
16. lack of performance evaluation at each step
17. Employee's resistant to change,
18. Lack of knowledge of market trends
19. Lack of intercultural communication and work styles.
20. Lack of proper lean implementation strategies and Sequence

21. High Cost/Investment in implementation.
22. Lack of Leadership Quality
23. Lack of attention about process

posting an online survey link. All the main challenges and barriers were examined carefully and were rating is being done based on the data collected from various Industries.

#### 4. RESEARCH DESIGN

The research is based on a survey carried out at Indian SMEs. A set of Questionnaire was developed by keeping in mind the main challenges and barriers in lean manufacturing implementation within the Indian small and medium scale industries [9]. Data is being collected through face to face meeting and

#### 5. DATA COLLECTED

In this paper survey method is adopted in order to obtained information about challenges and barriers in lean implementation. A total 9 industries were

| S.N. | Company profile  | Area of Interest   | Major Barriers in LM  |
|------|--|--|---|
| 1.   | AUTO TOOLS PVT. LTD. OPP-JAYBHARAT MARUTI PLANT-II SEC-36, NARSINGHPUR, GURGAON.     | Auto parts, sheet & sheet metal components and tools           | <ul style="list-style-type: none"> <li>• Lack of Top management involvement</li> <li>• Resistance to change in work culture</li> <li>• Lack of required resources etc.</li> </ul> |
| 2.   | BAJAJ MOTOR LTD. 39-40 STONE, DELHI-JAIPUR HIGHWAY, NARSINGHPUR, GURGAON             | All types of auto parts for Hero Honda                         | <ul style="list-style-type: none"> <li>• Lack of top management involvement</li> <li>• Employee's resistant to change etc.</li> </ul>   |
| 3.   | BHARAT SEATS LTD. PLOT NO.1, MARUTI UDYOG JOINT VENTURE COMPLEX, GURGAON             | All kind of Maruti seats                                       | <ul style="list-style-type: none"> <li>• Improper training and guidance</li> <li>• Improper infrastructure etc.</li> </ul>  |
| 4.   | M/S. SONA KOYO STEERING SYSTEMS LTD, NARSINGHPUR, GURGAON.                           | General engineering fabrication of sheet metal auto components | <ul style="list-style-type: none"> <li>• Lack of guidance and training</li> <li>• Lack of team coordination etc.</li> </ul>   |
| 5.   | HEMA ENGINEERING INDUSTRIES LTD. 1/3 KM STONE, KHANDSA ROAD, GURGAON                 | Manufacturer of sheet metal components                         | <ul style="list-style-type: none"> <li>• Lack of top management involvement</li> <li>• Financial constraints etc.</li> </ul>  |
| 6.   | KRISHNA MARUTI LTD. 40-KM STONE, NARSINGHPUR, GURGAON                                | Car seats manufacturer   | <ul style="list-style-type: none"> <li>• Lack of top management involvement</li> <li>• Lack of training etc.</li> </ul>   |
| 7.   | NIRMAL TEXTILES PVT. LTD. MEHRAULI ROAD, GURGAON                                     | Textiles work  | <ul style="list-style-type: none"> <li>• Fluctuation in demand</li> <li>• Lack of resources</li> <li>• Improper infrastructure etc.</li> </ul>                                    |
| 8.   | PRASANNA METAL PRESSINGS (P) LTD. MEHRAULI ROAD, GURGAON                             | Sheet Metal parts  | <ul style="list-style-type: none"> <li>• Lack of top management commitment</li> <li>• Resistance to change work culture</li> <li>• Lack of coordination etc.</li> </ul>           |
| 9.   | PROMPTECH INDUSTRIAL PRODUCTS PVT. LTD. NEAR ESCORT MUJESAR METRO STATION, FARIDABAD | Press Metal components   | <ul style="list-style-type: none"> <li>• Fluctuation in demand</li> <li>• Work culture etc.</li> </ul>  |

selected for this purpose from variety of industries like manufacturing of car sheets, stamping industry,

textile industry and contacted for the survey Questions were provided in order to obtain information about the main challenges and barriers in Lean Manufacturing implementation. Responses from all the industries were collected and table and chart is being made based on their rating

**5.1 SURVEY QUESTIONNAIRES.** "Lack of top management involvement creates a barrier in lean implementation". Provide suitable rating out of 10.2. "Lack of Middle Management involvement creates barrier in Lean manufacturing Implementation". Provide suitable rating out of 10.3. How much the resources unavailability hinders the lean implementation? Provide suitable rating out of 10.4. "Lack of Infrastructure creates barriers in lean manufacturing implementation". Provide suitable rating out of 10.5. "Lack of employees participation is also creating a barrier in lean implementation". Provide suitable rating out of 10.6. "Lack of proper training and guidance is a barrier in lean implementation". Provide suitable rating out of 10.7. "Resistance to change work culture is also a barrier in lean implementation". Provide suitable rating out of 10.

**1.1.1 8. "unavailability of technologies hinders the lean implementation". Provide suitable rating out of 10.z**

**1.1.2 9. "Lack of employees motivation and inspiration create hinderance in lean Implementation". Provide suitable rating out of 10.**

**1.1.3 10. How the lack of team Coordination create the barrier in lean implementation? Provide suitable rating out of 10.**

## **6.RESULTS AND CONCLUSION**

A survey is being carried out mainly in NCR SMEs in order to obtain the information about main challenges and barriers in lean manufacturing implementation. In this survey various industries provides rating out of 10 scale. Based on above rating major barriers are kept in table as well as plotted on chart. Although all the above mentioned 23 barriers creates hindrance in successful lean implementation

but based on above survey of 10-point scale it can be concluded that lack of top administration involvement and resistance to change work culture contributes lion's share as the barriers of lean manufacturing implementation. Apart of this factor lack of resources, financial barriers, lack of infrastructure, improper training and consultancy etc. also creates barriers in the lean implementation. Based on the survey a chart is plotted which gives us detail about highest and least effecting barrier.

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