



## EMPLOYEES AWARENESS TOWARDS LEAN MANUFACTURING

Dr.R Sathydevi

Associate professor &amp;HOD, Dept of International Business, SNGC College, chavadi, Coimbatore

Salma C T

Research Scholar, SNGC College, Chavadi

**ABSTRACT**

Lean manufacturing is a systematic method for the elimination of waste known as Muda takes in to account waste created through over burden and waste through unevenness in workloads known as Muri. Lean manufacturing aimed at maximizing output through elimination of waste. It is a highly praised philosophy which was concentrated at the beginning on the pillars of 3 major lean practices such as Just In Time, Continuous Improvement .Other lean practices include pull production, Total Quality Management ,Preventive maintenance, Batch size reduction/cycle time reduction, Zero defects Line balancing, 5 S and Supply chain management. The main aim of the study was to measure the perception of industrial employees towards the concept of lean manufacturing. Primary data has been collected for the study and data was analysed through statistical measures like mean and standard deviation. The study revealed that Human Resource Management having various tools is the most effective lean practice followed by various industries in order to eliminate waste.

**KEYWORDS :** Lean, 5s, Human Resource Management.**INTRODUCTION**

The term lean was first coined by John Krafcik in his article Triumph of the lean production system. Lean principles originated from the Japanese Manufacturing company. Lean is the set of tools which are useful for elimination of waste. It leads to time saving and cost reduction there by achieve the aim of profit maximization .Second approach to lean manufacturing also known as Toyota way. Toyotism is the prevalent concept relating to lean manufacturing because management philosophy towards lean manufacturing derived mostly from the Toyota production system (TPS). The steady growth of Toyota revealed the effectiveness of lean manufacturing.

**REVIEW OF LITERATURE**

According to Bikash Marasini et al(2014), small scale industries has no other option than implementing lean manufacturing ,so as to improve productivity. In respect of large scale industries lean manufacturing has already been proved success, where as in small scale industries it is comparatively low..Lean manufacturing is not a perfect choice for small scale industries since they cannot maintain higher quality of products and manages the sophisticated business process as that of large scale industries.

Womack et al (1990) explains that the main inspirational source of lean manufacturing in modern industry is Toyota Production System.. Really they focussed on matter how to eliminate waste so as to improve customer satisfaction. In other words lean manufacturing is an aggregation of principles, philosophies and business which helps the implementation of it.

Lathin et al (2001) explains that implementation of lean manufacturing ensures up to an extent the following matters 1)90% Reduction in lead time 2) 90% Reduction in Inventories. 3)50% increase in labour productivity.

**SIGNIFICANCE OF THE STUDY**

In the era of rapid industrialisation the major objective of every industry is maximization of profit and minimization of cost. it is possible only through an effective lean manufacturing practices. The main aim of lean practice is getting the right things to the right place and at the right time in the right quantity in order to achieve perfect work flow by eliminating waste.

**STATEMENT OF THE PROBLEM**

The present study entitled employees perception towards lean manufacturing focused on various lean manufacturing practices followed by industries and its effectiveness can be measured for understanding the best lean implementation tool.

**OBJECTIVES OF THE STUDY**

- \*To understand the effectiveness of lean manufacturing practices
- \*To understand the factors affecting lean management

**\*To identify critical success factors****RESEARCH METHODOLOGY**

The data collected through both primary and secondary sources. Primary data collected from 50 industrial employees in Palakkad district. Primary data have been analysed by using statistical techniques like mean and standard deviation.

**FOUR RULES FOR LEAN MANUFACTURING**

These rules are suggested by Spear and Bowen for effective lean manufacturing

1. Content, sequence ,timing and outcome requires more specification related to all work
2. Scientific method should be adopted for any improvement
3. Simple and direct pathway for every product and service
4. Connection between customer and supplier must be in a direct manner

**MUDA(WASTE)**

1. Transport
2. Inventory
3. Motion
4. Waiting
5. Over production
6. Over processing
7. Defects

Later eighth waste was added known as waste of unused human talent

**5S**

- Sort**-eliminate that which is not needed
- Set in order**-Organize remaining items
- Shine**-clean and inspect work area
- Standardize**-Write standards for above
- Sustain**-Regularly apply the standards

**STEPS TO ACHIEVE AN IDEAL LEAN MANUFACTURING SYSTEM**

- \*Design a simple manufacturing system:
- \*Improvement oriented
- \*continuous improvement in the design of lean manufacturing system

**LEAN IMPLEMENTATION**

The main aim of lean implementation is getting the right things to the right place and at the right time in the right quantity in order to achieve perfect work flow by eliminating waste

**RESULTS AND DISCUSSION****RESPONSES OF DIFFERENT INDIVIDUAL LEAN PRACTICES**

Tools	%
Human resource management	40
Standardised work	12
TQM	10
Cycle time reduction	6
Continuous improvement	7
Just in time	8
Inventory management	3
Supply chain management	6
Preventive maintenance	3
Scrap reduction	3
Single piece flow production	2

Human Resource Management is the most effective lean practice followed by organisations. Second preference goes to standardized work. Single piece flow production is the least effective lean manufacturing practice.

**LEAN CATEGORIES AND ITS MEAN SCORE**

Group	Tools	Mean	Standard deviation
Process & equipment	* Continuous improvent * Equipment layout * Preventive maintenance * 5S	3.45	.612
Human Resources	Employee involvement Cross functional teams Group problem solving Training	3.85	.613
Manufacturing planning and control	Small lot size Levelled production Visual control	3.55	.632
Customer relationship	JIT link Customer participation in quality program Cutomer participation in product design	3.46	.82
Supplier relationship	JIT delivery Supplier involvement in quality improvement program	3.32	.68

It reveals that Human resource management systems which uses various tools such as employee involvement, training etc. having mean value of 3.85 and standard deviation .613 plays a vital role for effective lean manufacturing practices in industries

**Statistics showing participation of industries based on plant age**

5-10 years	10-15 years	15-25 years	Above 25 years
15%	17%	22%	46%

**Lean status of companies based on number of employees**

Number of Employees	Lean status (Out of 100)
Company with less than 25 employees	40%
Between 25-50 employees	55%
Between 50-100 employees	60%
Above 100 employees	76%

Companies having age more than 25 years have adopt highly lean manufacturing technologies. Size of the plant directly affects lean practices. Plants having more number of employees adopt more lean practices than others.

**Table showing critical success factors**

Factors	Mean
Quality	3.56
Skills & Expertise	2.5
Customer focus	3.0
Performance measure	3.3
Employee trust	3.76

Employee trust and quality are the most preferred success factors

**Table showing Lean Barriers**

Lean Barriers	Mean
Company culture	3.3
National culture	3.1
Attitude of middle management	3.4
Nature of manufacturing facility	3
Lack of communication	3.38
Lack of understanding of lean concepts	3.78

Majority of workers are unaware about lean concepts was the main problem faced by industries.

**CONCLUSION**

The main method of lean is not the tools but the reduction of waste in 3 forms such as non value adding work, over burden and unevenness. Design a simple manufacturing system having characteristics such as decreased cycle time, effective utilisation of capital equipment, increased productivity and low level of inventory is the main task for effective lien manufacturing. key lean manufacturing principles include elimination of waste, continuous improvement ,respect for humanity, levelized production, JIT production and quality built in. The study reveals that Human resource management systems which use various tools such as employee involvement, training etc plays a vital role for effective lean manufacturing practices in industries.

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