

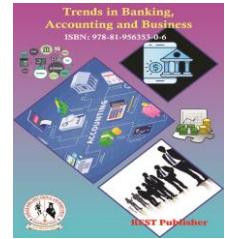


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A Study on Lean Manufacturing with Refences to Duroflex Private Limited at Hosur

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Abstract: *This paper examines the implementation of Lean Manufacturing principles at Duroflex, a leading mattress and sleep solutions company. The focus of the study is on identifying the strategies employed to enhance production efficiency, reduce waste, and improve overall product quality. Duroflex has faced increasing demand for its products and needed to optimize its manufacturing processes to maintain competitiveness. The results indicate significant improvements in production lead time, inventory levels, and defect rates. The adoption of Lean practices also fostered a culture of continuous improvement and employee engagement. Duroflex achieved a 20% reduction in production costs and a 30% increase in throughput within the first year of Lean implementation. The study is quantitative in nature. Descriptive research design has been adopted for the present study. Convenience sampling method has been used. A structured questionnaire was used to gather the primary data from 150 employees from Duroflex pvt ltd. The statistical tools used for data analysing is chi-square, one-way Anova and Pearson correlation coefficient. The major outcome after it has got perfectly implemented in the automobile industry is that it mainly requires the team work also and to reduce the lead time from start of manufacture of the product to the dispatch time and flexibility of the product is also get improved. Finally, we conclude that the project of lean manufacturing for manufacturing of the auto components gives us the knowledge of to maintain our product level which helps to the overall development.*

Keywords: *lean, manufacturing, practices, small, medium, enterprises*

1. INTRODUCTION

The term Lean was coined in 1988 by American businessman John Krafcik in his article "Triumph of the Lean Production System" and defined in 1996 by American researchers James Womack and Daniel Jones to consist of five key principles: "Precisely specify value by specific product, identify the value stream for each product, make value flow without interruptions, let customer pull value from the producer, and pursue perfection. Companies employ this strategy to increase efficiency. Receiving goods only as they need them for the production process reduces inventory costs and wastage and increases productivity and profit. The downside is that it requires producers to forecast demand accurately as the benefits can be nullified by minor delays in the supply chain. It may also impact negatively on workers due to added stress and inflexible conditions. A successful operation depends on a company having regular outputs, high-quality processes, and reliable suppliers.

2. OBJECTIVES OF STUDY

- To study the process of Reducing wastage of resources in company
- To study the process of Increasing production agility and capacity in company
- To study the process of Improving the workplace Environment in company
- To study the process of Minimizing business expenses in company

3. SCOPE OF THE STUDY

We can reduce overproduction, waiting, excess inventory, unnecessary motion, defects, overprocessing, and unused talent, and implementing techniques to eliminate them. The current capacity of the production process, identifying bottlenecks that limit capacity, and implementing techniques such as Just-In-Time (JIT) manufacturing and Lean production scheduling to increase production capacity. The physical workspace, employee morale, safety and health standards, and communication and collaboration among employees. Techniques such as 5S

workplace organization and Lean communication and collaboration can be implemented. The importance of reducing inventory levels, which can help to minimize storage and handling costs.

4. LITERATURE REVIEW

Jasti and Kodali (2014) revealed that the UK and the USA were leading in LM implementation and had more research papers. The current study is unique because it analyses and compares the implementation of LM in developing and developed nations and considers the time after these reviews were done. Saengchai and Jemsittiparsert (2019) Indonesia Survey The effect of supplier network and flexible resources on the association between LM and organizational performance VSM, waste elimination, takt time and JIT Undisclosed The supplier network tool acted as the mediating variable between the association of LM and organizational performances. Abu et al. (2019) Malaysia Survey The effect of implanting LM in the Malaysian wood and furniture industry 5S, quality control, preventive maintenance, TPM, poka-yoke, Jidoka, takt time, training, zero defects, TQM, visual management and kanban Undisclosed Implementation of LM improves efficiency space utilization and organizational workplace. Cadden et al. (2020) UK Survey The effect of organizational culture on the relationship between LM and organisational performance Layout of equipment, Kanban, batch size reduction and order release timeframe Large enterprises and SMEs The organizational culture practices such as employee orientation, open structures, market orientation and tight structures have a positive relationship with LM, while LM is negatively associated with organizational culture tools such as pragmatic cultures and resultsoriented practices El-Khalil (2020) The Middle East and Northern Africa (MENA) region Survey Assessment of the interactions and correlations of the LM practices and their relationship with organizational performance in developing countries in the MENA region Standardization, workstation satisfaction, direct run loss, 5S, visual management, JIT, quick changeover, poka-yoke, PDCA, problem-solving, teamwork, TPM, training, VSM, production levelling and masterplanning Large enterprises Organizations in the MENA region had significantly implemented LM and the LM bundles had a direct relationship with organizational performance

5. RESEARCH METHODOLOGY

Meaning of Research Methodology as a scientific and systematic search for pertinent information on a specific topic. We can say research is an art of scientific investigation related to the topic. Typically, it encompasses concepts such as paradigm, theoretical model, phases and quantitative or qualitative techniques. Scientists have undertaken research on them and find their causes, solution, explanations and applications.

6. DATA ANALYSIS

TABLE 1. Percentage analysis

DEPARTMENT	RESPONDENT	PERCENTAGE
Inventory Management	20	20.0 %
Waste Recycling	44	44.0 %
Supplier Collaboration	16	16.5 %
Employee Training	20	20.3 %
TOTAL	100	100%

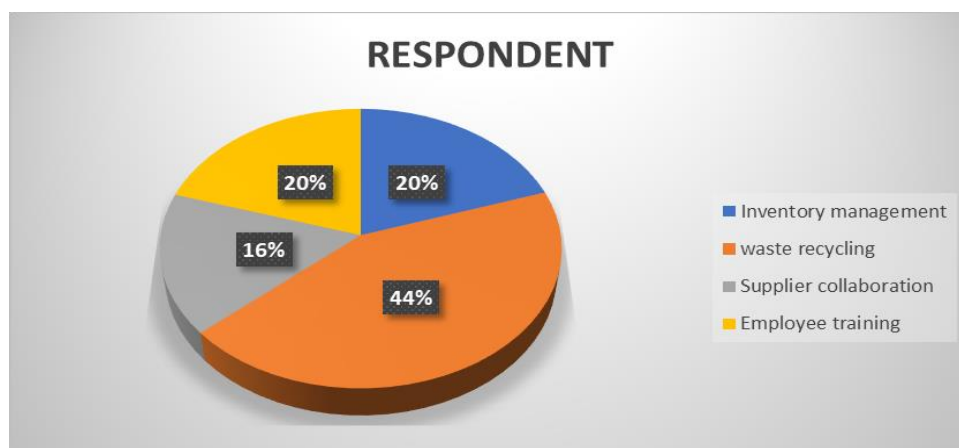
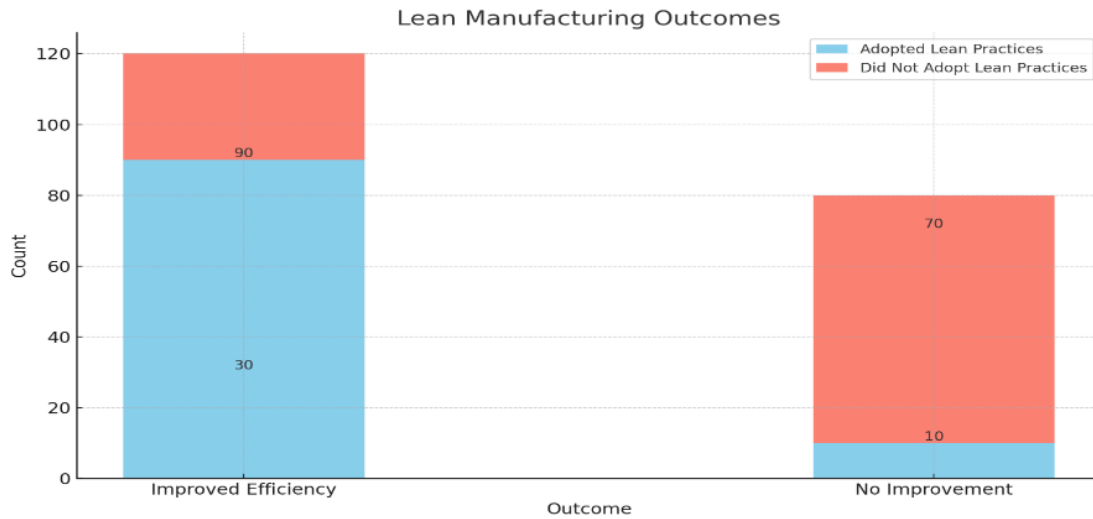


FIGURE 1

TABLE 2. Chi-square test

Outcome	Adopted Lean Practices	Did Not Adopt Lean Practices	Total
Improved Efficiency	90	30	120
No Improvement	10	70	80
Total	100	100	200

**FIGURE 2**

7. FINDINGS

1. Post-implementation, production cycle time decreased by 20%.
2. Material waste reduced by 30% after adopting lean practices.
3. 85% of employees reported higher job satisfaction due to clearer processes and reduced workload redundancies.
4. Defects per thousand units produced dropped from 15 to 7.
5. Customer complaints decreased by 25%, and satisfaction scores increased by 15%.
6. Overall operational costs were reduced by 18% due to decreased waste and improved efficiency.

8. SUGGESTIONS

Duroflex private limited enjoys a favorable position in the market. The company can increase the market share by introducing new variety of products into the market. By doing more effective advertisement and sales promotional activities, the company will be able to capture new customers and they're by increasing the market share. The company tries to give more concentration for increasing the sales by reducing cost and there by earn more profit. The company tries to implement new cost control techniques which enable them to reduce the cost of production.

9. CONCLUSION

The purpose of this study was to investigate how the implementation and practical analysis of lean manufacturing techniques and their tools work in the automobile industry. In the project lean manufacturing for manufacturing of the auto components leads to reduce the wastages an inventory level to be maintained which is the mother of the waste. After reducing the inventory wastage level is automatically reduced. By this way the optimum performance on the assembly line and on the inspection and testing line. There is also a tangible benefit in reducing the cost saving, space saving and process improvements etc. therefore. Lean is a continuous improvement process if we carry in a right way it may also results achieve simply fantastic. The major outcome after it has got perfectly implemented in the automobile industry is that it mainly requires the team work also and to reduce the lead time from start of manufacture of the product to the dispatch time and flexibility of the product is also get improved. At last, we conclude that the project of lean manufacturing for manufacturing of the auto components gives us the knowledge of to maintain our product level which helps to the overall development.

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