A Study on Efficiency of ERP at MM Forgings, Padappai

P. SHANMUGA PRIYA

43410272

SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

ABSTRACT

This study investigates the effectiveness of the Enterprise Resource Planning (ERP) system implemented at MM Forging Pvt. Ltd., Padappai, and its integration with Lean Manufacturing practices. ERP systems streamline operations by integrating core business functions, while Lean principles aim to minimize waste and improve efficiency. By surveying 102 employees across departments and analyzing both qualitative and quantitative data, the study assesses ERP usability, impact on operations, and challenges faced. The findings reveal that while ERP has significantly improved decision-making, workflow coordination, and resource management, there is a need for improved training, better system integration, and leadership support to enhance its overall effectiveness. Recommendations include aligning ERP with Lean tools, continuous training, and fostering a culture of feedback and innovation.

KEYWORDS

ERP, Lean Manufacturing, Operational Efficiency, MM Forging, Waste Reduction, Manufacturing Technology, Productivity, Decision-Making, Resource Planning.

INTRODUCTION

In the rapidly evolving manufacturing sector, organizations must leverage technology and process improvements to remain competitive. Enterprise Resource Planning (ERP) systems offer a unified platform for managing operations, while Lean Manufacturing focuses on reducing waste and optimizing productivity. MM Forging Pvt. Ltd., a leader in India's forging industry, adopted ERP to enhance operational efficiency. This study explores how effectively the ERP system integrates with daily operations, its impact on employee productivity, and the challenges encountered, particularly in the context of Lean implementation.

OBJECTIVES

Primary Objective:

- To evaluate the efficiency of the ERP system at MM Forging Pvt. Ltd., Padappai.

Secondary Objectives:

- To assess the impact of Lean Manufacturing practices.
- To identify gaps or inefficiencies in ERP usage.
- To examine user satisfaction and adaptability.
- To provide actionable suggestions for improvement.

SCOPE OF THE STUDY

- The study focuses on the Padappai unit of MM Forging Pvt. Ltd.
- It evaluates ERP usage across departments such as production, procurement, finance, HR, and quality control.
- The study covers current ERP performance but excludes historical or pre-ERP analysis.
- It includes employee feedback on system usability and effectiveness.

RESEACRH METHODOLOGY

- **Design:** Descriptive
- **Approach:** Mixed-method (Quantitative + Qualitative)
- **Sample Size:** 102 respondents
- **Sampling Technique:** Purposive sampling
- **Data Collection:** Primary (questionnaires, interviews); Secondary (company documents, literature)
- **Analysis Tools:** Percentage analysis, Chi-Square Test, ANOVA

REVIEW OF LITERATURE

Literature highlights the synergy between ERP and Lean systems. Scholars like Davenport (1998) and Monk & Wagner (2013) show how ERP improves integration and real-time decision-making,

while Lean pioneers like Womack & Jones (1996) emphasize waste reduction. Research by Powell et al. (2013) and Chiarini (2011) supports the combined implementation of ERP and Lean for enhanced efficiency. However, common barriers include resistance to change, system complexity, and lack of training.

LIMITATION

- The study is restricted to the Padappai unit.
- Limited to a specific timeframe (Jan–Mar 2025).
- Feedback may be subjective and influenced by current system performance.
- Technical audit of the ERP software was beyond the study scope.
- Results may not be generalizable to other units or industries.

ANOVA TEST

Source of Variation	SS	df	MS	F	p-value	Conclusion
Between Groups	7.70	2	3.85	1.53	0.222	Not statistically significant
Within Groups	251.82	100	2.52			
Total	259.52	102				

INTERPERTATION

Since the p-value is > 0.05, there is no statistically significant difference in perceived efficiency based on the type of tool used (ERP vs Basic vs Others).

CONCLUSION

The ERP system at MM Forging Pvt. Ltd., Padappai, has contributed positively to workflow efficiency, decision-making, and interdepartmental coordination. However, the system's full potential is hindered by limited user understanding, inconsistent training, and partial integration with Lean Manufacturing practices. While statistical results (Chi-Square and ANOVA) did not show significant differences in perceived efficiency among users of different tools, qualitative feedback suggests areas for improvement. Future success will depend on stronger training programs, leadership involvement, system customization, and alignment with Lean principles.

REFERENCES

- Davenport, T.H. (1998). *Putting the Enterprise into the Enterprise System*. Harvard Business Review.
- Monk, E. & Wagner, B. (2013). *Concepts in Enterprise Resource Planning*.
- Womack, J.P., & Jones, D.T. (1996). *Lean Thinking*.
- Powell, D., et al. (2013). *ERP and Lean: Synergistic Effects in Manufacturing*.
- Chiarini, A. (2011). *Lean Tools in Metal Manufacturing*.
- Nah, F.F.H., et al. (2001). *Critical Success Factors for ERP Implementation*.
- Gunasekaran, A., et al. (2017). *ERP Systems and Operational Agility*.
- Subramanian, R. & Ramanathan, R. (2012). *ERP and Waste Reduction in Forging Plants*.
- Markus, M.L., et al. (2000). *Enterprise System Experiences of Leading Firms*.
- Liker, J.K. (2004). *The Toyota Way*.