
Operational Excellence through Lean Management: Enhancing Efficiency in Manufacturing and Service Industries in India.

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Abstract: Studies note how much good improvement in India and service industries in India affect. It also talks about some essential lean practices, people working in them and problems facing these industries in India. The results showed that lean makes people more productive and happy, but it also faces social problems and poor infrastructure. Solutions are proposed to address these roadblocks. However, these barriers were said to have obstructed the fullest potential of lean: cultural barrier, poor infrastructure, lack of support from top management, and skill gap. The study actually cited the aforementioned barriers and suggested practical, evidence-based recommendations to ensure much sustainable practice in lean transformation across Indian industries.

Keywords: *Lean Management, Operational Efficiency, Manufacturing, Service Industries, India, Continuous Improvement, Challenges, Productivity, Customer Satisfaction.*

INTRODUCTION

Background and Context

Conforming to the operational excellence will forever sustain the improvement in the efficiency, quality, and customer satisfaction. It is the continuous improvement of processes, waste elimination, and resource maximization. Lean management is perhaps one of the most well-known operational excellence frameworks and is Japanese methodology primarily derived from the Toyota Production System (TPS) and adapted to many kinds of industries across the globe (Gomaa, 2025). Lean management strives essentially to eliminate wastes—anything that does not add value to the final product or service—and to promote continuous improvement through the standardization of processes where employees at every level in the organization work together to solve issues.

Lean activities are better suited to manufacturing industries. It has been demonstrated that they increase productivity, reduce costs, ensure better quality of products, and provide improved customer service. Lean management practices such as Just-In-Time (JIT), Total Productive Maintenance (TPM), and Kaizen assist lean activities in manufacturing by eliminating wastes and lowering operational costs (Rana and Jani, 2025). Lean practices in the services considered only recently, but their possibilities for accelerating operational efficiency and customer satisfaction are as great. Adopting lean management practices has become increasingly relevant for the fast-growing Indian economy with diversified industries, growing urban centers, and an enormous labor force. As India continues to stand up as a global manufacturing hub, achieving operational excellence through lean management would be an able candidate for addressing the challenges global competition presents, rising customer expectations, and the importance of sustainable development (Kumarasamy et al., 2025). The manufacturing industry in India, being one of the largest contributors to the GDP of the country, is under immense pressure to improve operational efficiency while minimizing costs and meeting quality standards. Similarly, the service sector, especially industries like healthcare, retail, and IT, is also realizing the advantages of lean management in upgrading their service delivery and customer satisfaction (Setyadi, Pawirosumarto and Damaris, 2025).

While there is increasing interest in lean management, lean management implementation in Indian industries is still in its infancy and faces many challenges. These challenges include resistance to change, lack of skilled resources, and industry-specific impediments like underdeveloped infrastructure or weak supplier networks. Also, lean application in India would typically require modifications to address specific culture, economic, and operational realities. These lean principles would

have to be locally adapted to factors that include price consciousness, cultural heterogeneity, and the speed of technology adoption.

Problem Statement

Today, Indian industries have started seeing many challenges as they move towards operational excellence. The first barrier occurs with efficiency. For example, inefficiency of production lines, wastages, huge inventories exist almost always in the manufacturing sector. In service-related industries, you can get everything from waiting and waste from bottling client relationships to waste time and money. These types of problems are really making Indian businesses difficult to grow and compete, especially the Indian economy becomes more connected with the global market (Boumsisse, Benhadou, and Haddout, 2024).

Indian industries are talking a lot about how important it is to be operationally excellent, but it seems to be a great interval that lean functioning actually helps these industries to become operationally excellent. Most of the literature today goes with developed economies, where lean has well moved past any growing phase and now stands as the culture of the business. With India, on the other hand, when you consider socio-economic diversities, regional disparities, and, sometimes highly fragmented, supplier chains, direct transplantation of lean models envisaged for other contexts becomes a matter of absolute impossibility unless of course a few explanations are put forward for their modifications (Kumar, Dutta and Phanden, 2025).

There, however, remains very little research about how lean management implementations could operate in India, particularly in the manufacturing and service industries. Some Indian companies indeed experimented with lean systems; however, till now, very little research has been able to explicate how lean management could be successful within different industries, specifically in developing economies. It is even more important to find out what is really happening in the way of many of those obstacles in India. Infrastructure barrier, lack of skilled workers, or even cultural resistance to change is seen as obstacles to apply lean. For example, small manufacturing businesses and services businesses will have difficult times to achieve resources that can achieve large lean execution. In the service sector, on the other hand, there is a problem of abstraction of services that they provide and the hassle of dealing with customers. In the information, bridge of those partitions will eventually be the key to bringing lean in the Indian industry and making it big.

Rationale

The fact is that India is now an important part of the world economy, which means that its industries need to become more efficient. India's industrial area is one of these largest in the world, but there are many problems when it improves productivity, converting costs into savings, and maintaining quality when it has to deal with strong democratic marketplace forces. Hence, operational excellence through lean management becomes the solution to the production problems facing Indian industries (Milewska and Milewski, 2025). Lean has, therefore, found application in land manufacturing operations as well to ensure Indian manufacturers optimize their operations and eliminate waste with a cause to enhance quality and reduce production costs, hence enhancing competitiveness.

The Indian services sector constitutes an apt arena for the application of lean management practices on a wider scale to increase customer experience and operational efficiency along with them. With the rise of the middle class in India, their expectations as customers increase, hence, putting service providers to be prompt and provide service in a quality manner at the least/affordable cost (Jantjie and Thango, 2024). Following these principles in the service industry will lead to a service process with faster response times, improved use of resources, greater customer satisfaction, and consequently profitability and growth.

Another key driver for promoting lean management in the industries of India is that it achieves customer satisfaction. Customer demands for faster delivery to markets with good quality of products and services

have emerged in both manufacturing and service sectors (Mavhunga, Jantjie, and Thango, 2024). Lean management assists organizations from delivering quickly, higher quality, best service, and through operations excellence and removing non-value adding activities and features from technical systems while aligning processes to customer needs. Satisfied customers perhaps on several occasions put more sales in an unqualified fashion through brand loyalty which in turn becomes commercial gain.

To conclude, an understanding of Lean Management's role in operational excellence within India is indeed of extreme significance for any business attempting to remain competitive and efficient. With Indian industries continuing to grow and compete for space in the global supply chain, it is this ability of applying lean paradigms that will define their future. To cover voids of knowledge about lean application in Indian industries, this research attempts to offer some practical insight for industries seeking ways to apply lean in enhancing efficiency, cutting costs, and satisfying customers.

Research Aim and Objectives

Aim

The aim of this study is to critically examine the role of lean management in enhancing operational efficiency and achieving operational excellence in India's manufacturing and service industries.

Objectives

1. To evaluate the key lean management practices adopted by businesses in the manufacturing and service industries in India
2. To assess the impact of lean management on operational efficiency in Indian industries
3. To identify the challenges and success factors for implementing lean management in India's manufacturing and service industries

Research Questions

1. What are the key lean management practices adopted by businesses in the manufacturing and service industries in India?
2. How does lean management impact operational efficiency in Indian industries?
3. What are the challenges and success factors for implementing lean management in India's manufacturing and service industries?

Significance of the Study

The study claims importance in academic and real domains, especially for India's service-oriented businesses and manufacturing enterprises. India's growth on the global market means that it needs to improve its operational performance to remain competitive. Lean management, which involves low cuts on waste and running everything as efficiently as possible, can help India get rid of problems that slow down development (Goma, 2025). This study clarifies lean practices and their effects, showing their effectiveness in increasing productivity, reducing costs and increasing customer satisfaction.

The study focuses on a notable inequality in the study of lean administration within Indian context, a developed market that requires a complete analysis. This additionally finds us find out what lean work in India and it is difficult to use lean.

If a unit wants to start or become leaner, the following recommendations are good for thinking. Therefore, they can help officers and pineapple and work together to solve some problems and do their ways better for Indian businesses, all in the size of long -term growth and extended performance in all business sectors.

LITERATURE REVIEW

Concept of Lean Management

Lean management is a systematic approach which maximizes value and minimizes waste. Value delivery to customers with improved efficiency, elimination of waste, and continuous process improvement remains the heart of lean. Waste reduction involves identifying steps or activities that do not add value to the product or service and ensuring resources are optimally utilized. Continuous improvement (Kaizen), contracts ongoing efforts performed to improve the process in an incremental manner through employee involvement and collaboration. Respect for people brings employee involvement on board to ensure there is a culture of teamwork and problem-solving. Rana and Jani (2025) stated that value stream mapping is a tool that helps visualize and analyze material flows and information flows throughout a production process so that inefficiencies can be targeted. Lean management history traces back to the Toyota Production System (TPS) made by Taiichi Ohno and others at Toyota. TPS changed the contexts of manufacturing by working to get rid of inefficiency, increase quality, and meet customer demand just at the correct time (Just-in-Time). Kumarasamy et al. (2025) stated that Lean principles, traditionally derived from manufacturing, are now applied across various fields such as services, healthcare, and IT.

Lean Management in Manufacturing Industries

In the industry, lean management concentrates on Operational Excellence through various principles such as Just-in-Time (JIT), 5S, Kaizen, and Total Productive Maintenance (TPM). JIT aims to make only what is needed, when it is needed, with minimal inventory, thereby looking at a total elimination of waste. The 5S methodology serves to keep an environment orderly for efficiency and safety, with an emphasis on Sort, Set in order, Shine, Standardize, and Sustain. Kaizen is a plan for continuous, incremental improvement, involving every employee in being able to spot waste and eliminate it. TPM considers enhancing equipment reliability and minimizing downtime. According to Boumsisse, Benhadou, and Haddout (2024), lean manufacturing benefits include increasing productivity by streamlining processes and reducing waiting times. In that waste elimination means carrying as little unnecessary inventory as possible and as less rework due to defects, it goes directly to cost reduction. Kumar, Dutta, and Phanden (2025) mentioned the enhancement of products being because processes are being monitored and improved on a continuous basis. Lean also improves employee empowerment by engaging workers to identify inefficiencies and improve the processes. There are proven case studies for lean practices entering India successfully through companies like Tata Steel and Maruti Suzuki to reduce costs and improve quality.

Lean Management in Service Industries

The implementation of lean management for service industry sectors has also been successful in healthcare, IT, hospitality, and retail. Service sectors concentrate on lean to improve service delivery, reduce customer sitting times, and increase operational efficiency. Some of the key features considered in service-oriented fields are value stream mapping, which highlights inefficiencies in service processes; customer service improvements; and service flow optimization to provide more efficient and quicker service delivery. Milewska and Milewski (2025) stated that Lean concepts are applied in the healthcare sector to reduce patient waiting times, streamline processes, and increase patient satisfaction; lean principles are applied in IT firms to streamline workflows and accelerate software development cycles; and, in hospitality businesses, lean is used to streamline customer service and back-office operations. Lean practices help retailers make inventory management more effective and supply chain activities smoother so that the items are stocked and ready for demand. Lean benefits service industries

by lowering customer waiting times, improving the level of services, and increasing customer satisfaction, which, to a large extent, promotes brand loyalty and repeat business. In the Indian context, case studies of Apollo Hospitals and HDFC Bank also substantiate how lean has successfully been applied toward operational efficiency and improved customer experience.

Operational Excellence Frameworks

The method of lean management is often used with other programs that aim for operational excellence to make major changes. The main idea behind the "earning to absorb" is the most waste. Six sigma on the other hand, uses statistical devices to better manage these processes and cut differences between them. Jantjie and Thango (2024) also stated that the main goals of TPM are to run well and avoid breakdowns, especially unplanned downtime, which spend money in both manufacturing and service industries. Continuous growth, or CI, is a part of lean functioning. This means often creating a culture that slowly occurs over time. Mavhunga, Jantjie, and Thango (2024) stated that lean can be considered as a pathway to operational excellence, which, in turn, can be defined as sustainable growth because lean allows organizations to reduce cost, maximize process efficiencies, and create value for their customers. From a cost perspective, elimination of wastes in lean would enable continuous development of better products and services.

In any case, there is a rather direct correlation between lean and customer satisfaction since lean makes sure that the customers' wants are taken care of within an appropriate timeframe at the best price and quality. There is more engagement between the workers because they do problem solving and improvement activities together, which increases motivation and ownership. Also, among these cost savings through lean efficiency also lie increased profits and competitiveness.

Challenges in Implementing Lean in India

There are various barriers faced in pursuing lean management in India, which are rendered particularly complex because of the country's diverse and complex market. Among these various barriers, one of the most prominent is cultural resistance, since the majority of Indian organizations are used to a traditional hierarchical structure where decision-making is centralized, and this may come in conflict with the lean philosophy that focuses on employee empowerment. Moreover, Kumar, Dutta and Phanden (2025) stated that with India's dearth of skilled labor and expertise in lean practices, small and medium-sized enterprises (SMEs) are in particular constrained by their incapacity to afford training. This is followed by sector-specific challenges that lie within the manufacturing and service industries. For example, Indian manufacturing units have supply chain inefficiency problems, aggravated by logistical issues and bad infrastructure. In service industries, the intangible nature of services renders it difficult to fit lean process-based methodology for implementation. Gomaa (2025) stated that socioeconomic and regulatory barriers are challenges for implementing lean in India.

Success Factors in Lean Implementation

Successful lean implementation calls for a few critical success factors, namely the commitment of the leadership and employee involvement. Commitment from the leaders is needed, for top management must support lean initiatives and allocate the appropriate resources for their implementation. Employee involvement is just as important because lean works best with employees of all levels engaged in continuous improvement and problem-solving. Training and development are important to equip employees with the skills needed to apply lean practices effectively. Rana and Jani (2025) stated that without training, lean initiatives tend to fail. Technical support such as automated tools or data analytics can help to refine further the lean processes. Continuous improvement is of paramount importance. Sethadi, Pavirosumarto, and Asphalis (2025) said that organizations adopting lean functioning should cultivate a culture of continuous improvement, in which employees constantly identify disabilities and

execute solutions. Innovation is equally important for keeping lean because new techniques and ways to do things can improve more. Tata Steel Limited and Maruti Suzuki are two Indian companies that show how to use lean principles correctly. They focus on developing staff members, including stakeholders and involving leaders.

aps in Literature

The study conducted in Indian settings, which is very advanced, ignored the harmful effects of mostly lean. While widespread research has been done on the principles of lean production, their efficiency and shortcomings have been investigated when implemented in Indian industries, mainly due to variability between regions. There was an unnecessary research difference between Indian manufacturing and services as there were different ways to serve and interact with customers in both regions. Keeping in mind India's unique socio-economic structure, cultural references and building landscapes, extensive research should be done to tailor these behaviours, especially for Indian requirements; However, only a limited number of initiatives have been taken in this regard.

RESEARCH METHODOLOGY

Research Philosophy

In this research process was employed in this research process to understand the individual implications and local insights of agile leadership in India. As a result, research emphasized the understanding of the difficulties, challenges and consequences related to lean management in diverse industries to explain and increase the qualitative information already existing for a better understanding of cultural and company's dynamics.

Research Approach

The method known as Directive began with pre-existing principles and framework, which was related to lean executive management. This method was used to test and confirm these principles, which can be during long industrial settings found across India. Research ends the impact of lean procedures by combining existing additional data with a theoretical structure.

Research Design

The study applied a descriptive design since it summarized and analyzed existing qualitative data from secondary sources. Through the systematic appraisal of the literature, case studies, and reports relevant to lean management in Indian manufacturing and service industries, the study presented a lucid picture of the situation vis-a-vis operational excellence in India and the present practices and challenges thereof.

Research Strategy

The secondary qualitative strategy was pragmatically exploited, synthesizing and analyzing data collected from previous studies, industry reports, case studies, and academic literature. Thus, further primary data collection need not have been embarked upon, for it relied upon existing knowledge to explore the operations of lean management practices and their influence on operational efficiency in India.

Methods of Data Collection

Secondary data were acquired from secondary sources such as peer-reviewed journals, industrial reports, case studies, and government publications. These secondary data provided the best qualitative insights into lean management practices, issues, and outcomes. The data set was selected based on its relationship to the objectives of research and covered the manufacturing and service sectors of India.

Methods of Data Analysis

This method was used to test and confirm these principles, which can be during long industrial settings found across India. Research eliminates the effects of lean procedures by combining existing additional data with a theoretical structure.

Ethical Considerations

In this case, moral challenges were about following the rules of referring and referring to third-party sources to avoid literary theft. The use of data was also needed to follow the rules that the source of information was still reliable. Because there were no first-hand accounts or include, moral questions were mostly about how the truth and proper secondary materials are present.

Limitations

The primary issue was dependence on secondary data in studies, which could not reflect current trends in market or lean management. These limitations were equal to early data insufficiency, which obstruct the acquisition of widespread understanding of field-specific issues. Also, the possible variations with the definitions and measurement methods and even the bias of the existing studies may have had a significant bearing on the analysis.

Findings and Analysis

Theme 1: Lean Management Practices in Indian Industries

The adoption of lean management practices varies across different sectors in India. Manufacturing has become synonymous with the introduction of JIT, 5S, and Kaizen methods. Indian manufacturers have targeted waste reduction, efficient production line layouts, and quality control to enhance efficiency. In the service sector, lean principles are applied for service flow optimizations and value stream mapping with the end goal of reducing waiting time and enhancing customer experience (Kumarasamy et al., 2025). Case studies at Tata Steel and Maruti Suzuki have shown that lean concepts resulted in enhanced productivity and reduced operational costs. Still, lack of infrastructure, scarcity of skilled labor, and resistance to change stand as barriers to the wider diffusion of lean practices in industries across India.

Theme 2: Impact of Lean Management on Operational Efficiency

Lean management practices have influenced greatly the operational efficiency of Indian industries by eliminating waste and resource misuse and expediting processes. In manufacturing, JIT and TPM have immensely cut down costs and improved productivity (Kumar, Dutta and Phanden, 2025). The service industry uses lean methodologies to streamline the service delivery process, thus minimizing customer wait times and maximizing service quality. Lean is being used by Indian companies such as Apollo Hospitals and HDFC Bank for operational streamlining. However, impediments still exist, such as cultural resistance and infrastructure-related bottlenecks, that hinder the realization of the full potential

of lean, especially in smaller companies or less developed sectors (Milewska and Milewski, 2025).

Theme 3: Challenges and Success Factors in Lean Implementation

There are several barriers to implementing lean management in India, such as cultural resistance to change, lack of skilled workforce, and sector-specific problems. In manufacturing, the lean way is slowed down by supply chain inefficiencies and poor infrastructure whereas the intangible form of services further complicates the application of lean practices in the service industry. Key success factors highlighted in the literature include strong leadership commitment, employee involvement, and ongoing training (Kumarasamy et al., 2025). Companies including Maruti Suzuki and Tata Steel have demonstrated that by integrating lean with employee engagement and technological support, it can overcome barriers to lean implementation and provide better outcomes.

DISCUSSION

Indian adoption of lean management practices

Lean methods have been used by Indian industries, especially those involved in manufacturing, to enhance productivity, lessen waste, and boost quality control in production. Service groups have further used certain processes to directly improve customer satisfaction and timely delivery of services, such as service flow optimization and value stream mapping through the bank and healthcare sectors. Yet, it's industries that seem to mount maturity when carrying out the task, with barriers such as resource injury and acceptance by the culture creating hurdles to an extensive commercialization of lean methods.

Impact of lean management on operational efficiency

Lean management essentially increases operational efficiency by reducing waste, using resources better, and enhancing productivity. JIT and TPM have reduced costs in a manufacturing environment while lean has increased customer satisfaction by cutting down wait times and streamlining service delivery in the services environment (Jantjie and Thango, 2024). However, these exemplary results are faced with challenges like cultural resistance and infrastructural constraints which hinder maximum realization of the gains, especially for smaller enterprises.

Challenges and success factors in lean implementation

Challenges faced in lean implementation include cultural resistance, labor unskilled for the job, and infrastructure limitations. The manufacturing industries carry inefficiencies of the supply chains while the service industries are inhibited by the intangibility of services. The factors enabling a successful lean implementation include leadership commitment, employee involvement, and so on training. Hence, the Tata Steel type of successful companies advocate that technological integration and stakeholders' engagement are keys to overcoming barriers for implementation.

CONCLUSION AND RECOMMENDATIONS

Overall Conclusion

This study shows that lean management greatly affects operating efficiency in both manufacturing and customer services in India. Completely reducing roll costs can help in promoting productivity and can help keep the consumer happy, but it may be difficult to fully implement cultures, infrastructure problems, resistance to infrastructure problems, and shortage of productive employees. To use lean

principles, leaders and staff members need to work together and commit, especially when there are problems that continue to grow.

Practical Recommendations

Doctors of the lean administration in India should ensure that the top leaders are dedicated and employees get adequate training to deal with the problems faced by change. To cure operational disability, there is a need to spend too much money on technical solutions and monitor the supply logistics. The company needs a culture of continuous growth so that everyone at all levels is responsible for keeping things in order. Industries should try to customize lean principles to fit problems, especially the hospitality industry where things can be complicated.

Further Areas of Research

More research needs to understand how to change the reputation of Indian businesses and over time how loyal customers are loyal to them. Some studies can focus on sector-specific lean applications, especially in the service sector, and a lean functioning for SMEs in India. Researchers should also see how new technologies can help fix problems with it in developing countries such as India and other places.

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