

REVIEW OF THE LITERATURE ON THE PROBLEMS FACED BY SMALL AND MEDIUM SCALE INDUSTRIES WHEN IMPLEMENTING LEAN MANUFACTURING

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Abstract: The current study aims to better understand the Lean philosophy in small and medium-sized businesses and identify the challenges associated with implementing Lean Manufacturing. The work also tries to record problems like obstacles and crucial success elements in the adoption of lean. Through a thorough evaluation of the literature, an attempt has been made to enumerate the advantages of implementing lean and to draw attention to the key problems that have an impact on an organization's performance. Focusing on and analyzing the most important research publications on Lean Manufacturing in small and medium-sized businesses (SMEs) is part of the process.

Keywords: Lean Manufacturing, SMEs, Critical Success Factors, Barriers Benefits of Lean Manufacturing

II. METHODOLOGY

This assessment of the literature is predicated on a methodical analysis of Lean research articles. The literature is sourced from books on lean and articles that may be found in the top online journals. Access to the top citation databases, which include several thousand journals and conference proceedings, was made possible by the online journals. Important conclusions have been reported based on the books and articles that were reviewed. The primary prerequisites for implementing Lean in SMEs are the main topic of this article. It will facilitate a deeper comprehension of Lean and its constraints for SMEs. Over 70,900 articles were found when the term "Lean Manufacturing" was first searched for on reputable journal websites during the years of 2010 and 2017. When the search was restricted to "Lean Manufacturing in SME," almost 12,900 items on the same websites came up. There were fewer than 10,400 publications available when we restricted the search to 2012–2017. We received fewer than 5,020 articles when we restricted the search to 2015–2016. We found 32 articles when we searched for "Literature Review" and "Lean Implementation in SME" over a broader "2012–17" period. Lastly,

we only had nine articles published online under the categories of "Literature Review" and "Lean Implementation in SME" during the limited time frame of "2016–17."

III. STRENGTH AND WEAKNESS OF SMALL AND MEDIUM SCALE ENTERPRISES (SMES)

Based on their study on SMEs in the UK, Antony Jiju et al. (2005) released the results concerning the benefits and disadvantages of SMEs. The following are SMEs' advantages: Flexible systems allow for quick evolution of modifications. Flat management structure with fewer levels in leadership and departmental conversations. Because they are so visible, top management provides leadership. Maintain a strong sense of employee loyalty. Managers and employees interact with consumers directly. extraordinarily quick decision-making and execution. Give training programs priority. a culture of constant learning and adaptation as opposed to control. It is focused on humans. More creative in recognizing and satisfying consumer needs. most likely to implement changes and reap immediate rewards. However, the flaw is that planning is neglected in favor of operation-related issues. Low level of formalization and standardization. When job quality declines, employee job security is reduced. There is not much investment in the IT industry. There are no incentives or reward programs because of various limitations like funds and resources. lack of strategy-based planning. Decisions are typically made based on responsibility to maximize short-term profitability. insufficient time, money, and expertise. Training is frequently disregarded. There are certain obstacles in the way of Lean implementation in MSMEs. It can, however, be put into practice.

IV. SUCCESS FACTORS TO IMPLEMENT LEAN ON MSMEs

Zargun, S. et al. (2013) carried out research to determine the lean essential elements of success for manufacturing organisations in developing countries. The literature review's findings revealed a number of variables that influence the adoption of lean manufacturing in nations that are developing, including organisational facilities agreements on trade, economic and political settings, the capacity and willingness to change organisational structure and civilization, and the dedication and support of top management. The study by Zargun S. et al. (2013) claims that MSMEs can apply lean using a few different tools. These consist of Focus on the customer: value is decided by the values of the customer. Get rid of waste: anything that doesn't add value has to go because it's waste. To achieve consistent process flow, smooth flow equalizes variations in process steps. Continuous improvement is the process of always looking for methods to get better at anything.

V. TOOLS TO IMPLEMENT LEAN ON MSMEs

A group of instruments centered on any one of these principles is used to accomplish these principles. The following are the most often utilized tools (NSW Department of Education and Training, 2009). Value Stream Mapping (VSM), which identifies value (i.e., what the customer values) throughout a process and reduces non-value (i.e., waste). 5S, which involves keeping the workspace neat, orderly, and maintained to cut down on waste—such as time wasted and wasted movement for searching. Six Sigma uses statistical analysis to identify opportunities for process capability improvement. Continuous improvement, or kaizen, enables numerous tiny improvements to add up to significant advantages over time. Kaizen asks

employees for suggestions for ways to improve the work environment. They use their knowledge, experience, intuition, and common sense to understand the work process, find areas of value addition, and pinpoint waste. Visual Workplace: This refers to the use of visual aids in the workplace to improve operational consistency. These can include visual aids for scheduling and growing workflow, such as painted lines, figures, signs, signals, or shadow boards that show where items should be kept, diagrams that illustrate proper protocol, and real-time displays of productivity data. Just in Time (JIT) is an approach in which every process is initiated by a demand or "pull" system and is executed only when necessary. Error-proofing, also known as Poka-Yoke, is the process of designing processes so that errors are eliminated. For example, electrical fixtures are made to only be used in the proper manner.

VI. BARRIERS IN IMPLEMENTATION OF LEAN MANUFACTURING WITH SMES

The following areas have been identified by A. Yang pingyu et al. (2010) as lean manufacturing implementation barriers for SMEs: Due to constraints on knowledge, many companies are lacking any knowledge regarding lean production. Understanding the gaps in lean production. The employees' opposition to lean production. applying lean production in a mechanical manner without making modifications based on the business environment. Three categories of barriers have been identified by Ciarnien' e and Viena' zindien' e (2013) as obstacles to the implementation of lean manufacturing: organizational, people-related, and technical. One of the primary mistakes and reasons for the Lean concept's inadequate execution is the focus on tools and techniques instead of giving personally relevant issues sufficient thought. The attitude of staff members, organizational culture, resources, and top management's involvement and leadership will all play a part in the success of lean implementation in alongside the right resources and techniques. In accordance to studies done by Rozhan Othman (2016), there's an elevated probability of LPS initiative failure in the literature on lean production system (LPS). It is projected that 50–95 percent of LPS initiatives tumble short of the goals they set. The adoption of LPS is facing challenges, which the author has identified as caused by knowledge stickiness. Utilizing a multiple-case study research design, Manoj Kumar Dora et al. (2016) examined determining or contextual factors. And how that they have an impact the use of lean manufacturing in small and medium-sized businesses (SMEs) that are involved in the food processing sector. The authors learned that it is challenging to apply lean manufacturing in SMEs that process food because of the plant's small size, typical setup, and rigid layout.

VII. WAYS TO OVERCOME THE BARRIERS

Through an in-depth examination of Sri Lankan clothes manufacturers, Silva et al. provided strategies for getting past the challenges and resistance (Silva et al. 2011). The most effective techniques for overcoming employee resistance to Lean execution, according to the authors, include conducting workshops, providing presentations, and implementing belt programs. The authors highlight that an organized staffing plan is necessary when implementing Lean practices, beginning with training programs up to employee empowerment. Most of the manufacturers under their study identified employees as their key assets. All the companies started employee empowerment programs, to sustain the Lean journey.

VIII. CHALLENGES THAT IS FACED BY COMPANIES IN THE IMPLEMENTATION OF LEAN MANUFACTURING

Companies come across an array of challenges if carrying out lean manufacturing. Mr. Kumara M R and Dr. Shobharani H (2021) published a few of the difficulties that may occur in the Indian context. Four primary classifications have been employed for organizing the challenges. issues with finance, organization, management, and additional issues. The following is a list includes management-related challenges to lean implementation: lack of capital funding, a lack of management support, lack of focus on management, lack of experience in failure, lack of long-term vision, as well as lack of need to instill a sense of urgency. Lack of labor resources, company culture, creative ideas, limited time, insufficient interaction, insufficient education, apathy of lean ideas, disputes with other initiatives like TQM, TPM, JIT 9, and different manufacturing environments can all be thought about organizational issues. Furthermore, big companies will find it more costly to understand lean; that they are also unlikely to meet financial targets and come to their previous state when they lack the required staying power; they will additionally fail to acknowledge the financial benefits. Unstable demand, conflicts with ERP implementations, resistance to change between middle management, and resistant employees to change are further issues.

IX. SUCCESS FACTORS FOR THE IMPLEMENTATION OF LEAN MANUFACTURING IN MSME

To be carried out successfully in MSME, lean manufacturing calls for some essential components. As stated by the president of Toyota Motor Company, some of these factors are as follows. Give long-term decisions about management, even if it means giving up short-term financial goals. The problems must be identified by creating a continuous process flow. Use the "pull" system for getting rid of excess inventory. Work like the tortoise, not the hare, by providing your workload evenly. Eliminating muri (overburden) and smoothing mura (unevenness) are just as crucial as eliminating muda (waste) when trying to achieve flow. The key to success is workload stability. Develop a mindset that rejects solving issues and values performing things correctly the first time. Continuous improvement starts with standard operating procedures. To make sure that all problems are hidden, use visual control. Use only trustworthy, examined technology that enhances the way you work and people. Create leaders who represent the philosophy, understand the work in every aspect, and share it to others. Develop remaining people and groups that adhere to the ethos of your company. Respect your larger network of suppliers and partners by pulling them to grow and furthering them. Stop by the spot to gain an in-depth knowledge of the situation, Gemba. Observe the production floor logically and without prejudice. Request yourself why five times for every problem to dig deeper into the problem. Make decisions slowly by consensus, placing the team's confidence in you, thoroughly considering all the possibilities, and performing quickly to put decisions through action. Change into a learning organization through regular assessments and ongoing growth.

X. PERFORMANCE MEASUREMENT FRAMEWORK

Giovanni's Sousa According to Elaine Aspinwall (2010), a performance measurement framework comprises several steps that originate from various methods of self-assessment and QMS/improvement frameworks. The steps are as

follows, based to the authors: Overview, commitment to leadership, and motivation. Clearly state and express your strategy, mission, and vision. Identify the initial and finishing states. Define and prioritize objectives: In this step the SME objectives are grounded. Develop a PMS: The information got in the first three steps form the basis for the PMS's design phase. organizing for the execution. Put plans into action. Consider, coincide, and acquire knowledge: The developed PMS acts as a way of recognizing the improvements which have been made and will help in the results' dissemination inside the organization.

XI. CONCLUSION

The challenges that that small and medium-sized enterprises have when trying to implement lean manufacturing are the primary topic of the literature review stated above. With regard to the location of industry, the quality of labor, etc., these issues will shift. A number of authors finished the analysis, depending on how they determined to carry out their research. Because these issues differ from place to setting, there won't be a single procedure for fixing them. This review has taken issues and worries from various fields, created them, standardized the problems that could arise, and offered steps for solving them. This review starts off with the advantages and disadvantages came across throughout lean manufacturing implementation, then moves on to significant success factors and then addresses the tools used for this strategy. Following that, I focused on the challenges that have been avoiding lean manufacturing to being implemented as well as ways to overcome them, as I noticed them in different countries. After that, I conducted research on the challenges that I encountered in putting lean manufacturing into practice prior to moving on to success factors at that juncture. The most recent research concentrated on how to keep these programs going in small and medium-sized enterprises and how to successfully implement lean manufacturing in these businesses.

Conflicts of Interest: “The authors certify that they have no competing interests with regard to this research.”

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