Applications of Lean Manufacturing Techniques in various organizations: A Review

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Abstract : Lean manufacturing is a philosophy which guides the organizations in order to improve their productivity by way of eliminating various kinds of waste. The major industrial organizations in the world have adopted these techniques to improve their efficiency and productivity. Depending on type of organization and specific requirement lean tools such as Just in time (JIT), SMED, visual management, 5S, Value Stream Mapping (VSM), kanban etc. can be employed to improve the efficiency. This paper presents a review of literature on the applications of lean manufacturing techniques in various organizations considering research papers published during last 10 years (2007-2017) in leading   international and national journals. It has been observed that lean techniques have been adopted by manufacturing industries at large scale. Second major user is found to be the automobile industry. A very little literature is available on use of Lean tools in textile industry, process industry, metal and glass industry, agriculture industry, plastic industry etc.

1. Introduction : The present scenario of highly competitive global marketplace has resulted in reduced profit margin of majority of the business organizations in the world. Organizations are facing several problems such as wastage of resources during production, environmental pollutions, high production cost and low production rates etc. To survive in the highly competitive market the companies have to optimize production processes by reducing various wastes such as material, man power and time and by improving overall plant efficiency. These challenges have motivated the organizations and researchers to find the solutions or ways to continuously improve the productivity with minimum possible cost for sustainable growth of the organizations.

In the past few years, a philosophy termed as "Lean Manufacturing" has emerged which can guide the manufacturing organizations to improve their productivity by way of optimizing the processes and eliminating various types of wastes.   The concept of lean was originated in Japan after the second world war. The lean manufacturing (LM) basically is a Toyota production system that has evolved at Japan. According to Shah and Ward (2007), Lean Manufacturing (LM) is an integrated socio-technical system whose main objective is to eliminate waste by concurrently reducing or minimizing supplier, customer and internal variability. Bhamu and sangwan (2014) have presented a large number of definitions in their research paper. According to Krafcik (1988), compared to mass production it uses less every thing-half the human effort in the factory, half the manufacturing space, half the investment in the tools, half the engineering hours to develop the new product in half the time. Womack (1990) defined the lean to be a dynamic process of change driven by systematic set of principles and best practices aimed at continuous improvement.

2. The Present work

The primary purpose of the present work is to identify the effective lean practices which are being adopted by the industries now a days. The work also deals with assessing the usefulness of various tools such as Just in time (JIT), SMED, visual management, 5S, Value Stream Mapping (VSM), kanban etc. in various types of industries. In addition to this the present work also aims at identifying the research gap in this area for this purpose the research papers published during last 10 years (2007-2017) in leading international and national journals have been procured and reviewed. The papers are classified in some groups according to tools used, types of industry and the years of publications and reviewed critically.

3. Literature review

3.1 Previous literature reviews