Review of Implementation of Lean Manufacturing in Manufacturing System

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Abstract— Implementation of lean manufacturing very helpful to all manufacturing arrangement. It reduces all kind of waste and non-value added activities. Today many companies choose lean concept because today market is very tough and to survive its product to this market lean is beneficial. Lean is very wide concept. It is applicable to all type of different organization like automotive, piece of clothing, electronics, ceramic objects etc. There are many tools and techniques available for lean. Companies are selected tools as per its requirement. There are many large, small and medium sized companies obey the lean manufacturing concept. Lean mainly includes involvement of management and involvement of employees. Some companies develop its own lean strategy which helpful to reduce wastes and improve quality. Here I motivated to apply lean concept in manufacturing system i.e. automobile industry.Today industries are facing various problems related to quality and customer demand. The present study has been undertaken for analyzing different types of wastes in a Diesel Locomotive Plant's Light Machine Shop (camshaft section) with an aim to design strategies for developing and implementing a Lean Manufacturing Program in such machine shops. The study has been carried out in a phased manner. For the purpose of modeling for developing a strategy for implementation, the controls identified have been grouped into broad generalized category Expert opinion has been utilized to identify factors and parameters affecting development of a generalized approach for implementation. . Generalized of various measures for developing an approach to be used by industry in future has been suggested using expert belief. It has further been suggested that the implementation of the development approach be carried out in three phases. With the help of lean we increase production rate and improve quality.

Key words: Lean Manufacturing, Camshaft Section, Automobile Industry

I. INTRODUCTION

Now in these days Lean Manufacturing is very helpful to all manufacturing system. Lean it means less everything which not good for company. Lean reduces human effort, space requirement, investment etc. Lean concept is developed by Toyota Company and it known as Toyota production system. Lean it means manufacturing without waste. Lean consist various tools and techniques. Lean is adjustable approach to customer demand. It covers quality circle, just-in-time, supply chain management, kaizen, kanban etc. Lean reduces all kind of waste and reduces non-value added activities. Aim of the every industry that reduces waste, improve quality, reduce cost and shorten lead time. Lean also minimize inventory level; improve labour productivity, utilization of equipment. By using lean concept industry satisfy its customer requirement. Many Companies choose lean concept because today competition is very tough and survive in this market lean concept is very helpful. Some companies implement lean practice by using its own way. Companies develop its own lean strategy which helpful to reduce wastes and improve quality of product. Hence company very flexible to its customer requirement.

Lean concept is not use for particular industry. Lean is wide concept use in various industry like electronics, automotive, ceramic, garment etc. Research will study some standard steps for lean implementation which are helpful to various organization. By using this lean concept we achieve quality system. Produce finished goods as per customer requirement.

The research aim will be proficient through following objectives.

- Understanding and Map the process of industry.
- Identify different factors which are associated with process and its effects on performance of process.
- Analyze and valuing result.

II. LITERATURE REVIEW

John S. W. Fargher, Jr., Ph.D., Director [1] the presentation and paper represent several actual case studies of firms that the Missouri Enterprise has been involved as the facilitator and consultant. These case studies are used to illustrate the steps in implementation of lean manufacturing and remanufacturing, providing actual, very positive results.

Nor Azian Abdul Rahman, Sariwati Mohd Sharif, Mashitah Mohamed Esa [2] The Kanban system is one of the manufacturing strategies for lean production with minimal inventory and reduced costs. However, the Kanban system is not being implemented widely by manufacturing companies in Malaysia. Thus, the objectives of this case study are 1) to determine how does the Kanban system works effectively in multinational organization; and 2) to identify factors hindering Malaysian small and medium enterprises (SME) from implementing Kanban. Findings of the study suggest that top management commitment, vendor participation, inventory management and quality improvement are important for Kanban deployment and towards lean manufacturing.

U. Dombrowski, T. Mielke [3] In this paper common approach can be explained by using the 4P Model. It consists of 4 levels that are all necessary for a sustainable lean implementation. The levels are: philosophy (long-term thinking), process (eliminate waste), people and partner (respect, challenge and grow them) and problem solving (CIP and learning). After reformulating the indicators into requirements for leaders, they were assigned to the five principles improvement culture, self-development,

qualification, , gemba, and hoshin kanri. These requirements shall help executives in realizing lean leadership.

Norani Nordin, Baba Md Deros and Dzuraidah Abd Wahab[4] This paper mainly focus on automotive industry in Malaysian. It focus on customer demand and continuous improvement in organization. This survey is on lean implementation barriers. The main barriers to implement lean manufacturing system are the lack of understanding lean concepts and shop floor employees' attitude.

Lucas Simmons, Robbie Holt, Glenn Dennis, Clay Walden [5] This paper focuses on the implementation of lean in a small manufacturer of all electric 4-wheel drive vehicles. The goal was to increase the capacity and throughput rates, reduce lead-times, and improve quality and efficiency while reducing operating costs. Through the implementation of basic lean tools such as 5S, standardized work, line balancing, visual controls, point of use storage, and quality at the source, the small manufacturer was able to rapidly increase throughput and reduce quality defects by 80%. Based on observations derived from this case study, hypothesis statements are generated regarding obstacles and solutions to lean implementation in small and medium manufacturing enterprises.

Thorsten Ahrens[6] The goal of this paper shed light on the concept of lean production. Analyze tools and concepts that have to be applied in order to be-come a lean operating organization and evaluate how and in which functions these tools can be used and Investigate how important the lean philosophy and management behavior are as well as related implementation issues.

Shuhairy Bin Said[7] The purpose of this project is to analyze the implementing of the lean methodology to low volume car production. There are many problem occurs at the production line such as breakdown of the machine. The project has started with identifying problem at the AMM plant focus at the Trim and Finale Department. Then, the data has been analyzed by using Total Quality Management Tools such as fishbone diagram and Pareto chart. By applying the lean tools, the problem can be minimized and gain the high profit at the same time. The lean tools only can be suggested without implementation because of the rules and policy of the company.

Amelia Natasya Abdul Wahab, , Muriati Mukhtar, Riza Sulaiman[8] This paper describes a preliminary study in developing a conceptual model to measure leanness in manufacturing industry. In this research, a conceptual model for leanness measurement in the manufacturing industry has been developed and designed in two main levels, namely the dimensions and the factors.

Conrad Volkmann, Senior Program Manager, Manufacturing [9] this document gives an overview of how to use the kanban framework. It introduces the concepts of kanbans as signals and kanban rules as supply policies. This document provides a small set of ideas and application examples that illustrate how to model pull scenarios. This document also attempts to raise the level of interest and curiosity to try additional scenarios.

Noor Azlina Mohd.Salleh, Salmiah Kasolang, Ahmed Jaffar [10] TQM and LM can bring more benefits to a company but there is still lack of case study on company that has implemented both initiatives. Preliminary status of Integrating TQM and LM has been established from survey conducted on the highly practices LM in Malaysian automotive companies in 2011. It was found out that the company has been practicing TQM and LM separately. Other type of software can also be used to measure the level of TQM and LM implementation and can determine whether the model is adaptable for other industry and for all type of manufacturing process.

Suprasith Jarupathirun, Andrew P. Ciganek, Thaloengsak Chotiwankaewmanee, Chayanun Kerdpitak[11] This paper presents a case study of the use of an e-Kanban system to minimize operational and logistics issues for a parts supplier within the automotive industry. Measures of operations and logistics performance are examined both before and after the implementation of the e-Kanban system through a series of observations, in-depth interviews, and documentation reviews.

III. CONCLUSION

By these review paper we conclude following points

- Lean Manufacturing concept is very helpful to all type of organization like large scale, medium scale and small scale.
- The company follows some strategy which are very helpful to increase production rate and improve quality.
- The using lean concept reduces waste of all kinds and increase productivity.

The objective for my PG dissertation is to implement Lean manufacturing to cement industry and improve the productivity of the same.

REFERENCES

[1] John S. W. Fargher, Jr., Ph.D., Director "Lean Manufacturing And Remanufacturing Implementation Tools" Missouri Enterprise, University of Missouri - Rolla Rolla, MO

[2] Nor Azian Abdul Rahmana, Sariwati Mohd Sharif, Mashitah Mohamed Esa "Lean Manufacturing Case Study with Kanban System Implementation" in International Conference on Economics and Business Research 2013 (ICEBR 2013), Procedia Economics and Finance 7 (2013) 174 – 180

[3] U. Dombrowski, T. Mielke "Lean Leadership – 15 Rules for a sustainable Lean Implementation". Proceedings of the 47th CIRP Conference on Manufacturing Systems, Procedia CIRP 17 (2014) 565 – 570

[4] Norani Nordin, Baba Md Deros and Dzuraidah Abd Wahab "A Survey on Lean Manufacturing Implementation in Malaysian Automotive Industry" International Journal of Innovation, Management and Technology, Vol. 1, No. 4, October 2010 ISSN: 2010-0248

[5] Lucas Simmons, Robbie Holt, Glenn Dennis, Clay Walden"Lean Implementation in a Low Volume Manufacturing Environment: a Case Study " Mississippi State University – Center for Advanced

Vehicular Systems Extension Canton, MS 39046, USA Proceedings of the 2010 Industrial Engineering Research Conference

[6] Thorsten Ahrens "Lean production: Successful implementation of organisational change in operations instead of short term cost reduction efforts" 2006 Lean Alliance. Im Schlosshof 4a • D-82229 Seefeld • Germany.

[7] Shuhairy Bin Said" Lean Manufacturing Implementation For Low Volume Car Production" Faculty of Mechanical Engineering University Malaysia Pahang November-2008

[8] Amelia Natasya Abdul Wahab, , Muriati Mukhtar, Riza Sulaiman" A Conceptual Model of Lean Manufacturing Dimensions" The 4th International Conference on Electrical Engineering and Informatics (ICEEI 2013). Procedia Technology 11 (2013) 1292 – 1298

[9] Conrad Volkmann, Senior Program Manager, Manufacturing" Lean Manufacturing: Kanban and Pull Based Manufacturing" Microsoft Dynamics AX 2012 July 2011.

[10] Noor Azlina Mohd.Salleh, Salmiah Kasolang, Ahmed Jaffar. "Simulation of Integrated Total Quality Management (TQM) with Lean Manufacturing (LM) Practices in Forming Process Using Delmia Quest" IRIS-2012.Procedia Engineering 41(2012)1702-1707

[11] Suprasith Jarupathirun, Andrew P. Ciganek, Thaloengsak Chotiwankaewmanee, Chayanun Kerdpitak."Supply Chain Efficiencies Through E-Kanban: A Case Study "Ramkhamhaeng University, Thailand, Jacksonville state University,USA

