A Review : feasibility and Implementation of VSM and 5'S lean tools in S.S. pipe manufacturing industries.

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Abstract

The purpose of this study is to discuss the lean implementation process and its quantified benefits with the help of value stream mapping (VSM) and 5'S lean tools.

Both current and future state map's of the organization's shop floor are discussed using VSM techniques in order to highlight improvement areas and to bridge the gap between the existing state and the proposed state of shop floor of the selected industries.

Key Word :   *5's, VSM, Takt time, Up time, Cycle time.*

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1) INTRODUCTION:

   Lean manufacturing is one of the initiative that many major businesses in the word have been trying to adopt in order to remain competitive in an increasingly global market. Lean manufacturing has been the buzzword in the area of manufacturing for past few years in world. To understand what lean is it is helpful to understand why it developed lean (and the Toyota production system) have two main purpose; provide customer satisfaction and do so profitably. Principal of lean manufacturing are widely used by industries to eliminate waste. A lean organization understands customer value and focuses its key processes to continuously increases it. The ultimate goal is to provided perfect value to the customer through a perfect value creation process that has zero waste.

   After second word war Japanese manufactures were faced with big shortage of material, money, and human resources. These condition resulted in the birth of the lean manufacturing concept (Womack et al. 1990). Early Japanese industrial leaders such as Toyoda, Shigeo Shingo, and Taiichi Ohno devising a new, disciplined, process oriented system, which is know today as the " Toyoda production system" or " lean manufacturing".

2) value stream mapping :

   The use of value stream mapping (vsm) has been attributed to the cause of much of the success that Toyota of japan has had since the 1980'sl. Developed during the work conducted by Taiichi ohno at Toyota in the 1960,s and 70's, at its basic level VSM is a systematic methodology to identify wasted time and action in a re-engineer businesses because it identified unnecessary effort and resources to permit simplification of operational processes.

2.1) why value stream mapping is an essential tool

- It helps you visualize more than just the single-process   level in production. You can see the flow.
- It help you see more than waste. VSM helps you see the sources of waste in your value stream.
- It provides a common language for talking about manufacturing processes. It's quick and easy to lean.
- It's group exercise and therefore can involve your workers as part of your lean improvement program.

3) The 5'S :

- Seiri-sort: (elimination that which is not needed)
- Seiton- set in order (organization remaining items)
- Season- shine (clean and inspect work area)
- Seiketsu-standardize (write standards for above)

5'S helps to eliminate waste that results from a poorly organized work area.

4) Main review work on lean manufacturing :

Adam brown et al 1) : The sustainable value stream mapping (sus-vsm) in different manufacturing system configurations achieving sustainability in manufacturing requires a holistic view spanning product design. Manufacturing processes. Manufacturing system and the entire supply chain. Such an approach must be taken to ensure the economic. Environment and societal goals of sustainability are achieved. Value stream mapping (VSM) is an important technique used in lean manufacturing to identify and visualize waste.The ability of visually assess manufacturing sustainability through VSM increase its usefulness as a tool to identify potential areas of improvement.

A.deif et el 2) : The assessment lean system using variability mapping a new approach to assess lean manufacturing based on system's variability is proposed. The assessment utilizes a new tool called variability

sources mapping (VSMII) which focuses on capturing and reducing variability across the production system. The new tool offers a new metric called variability index to measure the overall variability level of the System. Based on the mapping and the metrics.

Benjamin haefner et el 3) : The quality value stream mapping companies in the manufacturing industries today are faced with increasing challenges with respect to cost effectiveness, lead time and quality of the production system. Dealing with these contradictory goals, an important task is the selection of the production system.dealing with these contradictory goals, an important task is the selection of suitable solution for the integration of inspection processes within the process chain, which are necessary to ensure the required production quality. For this, supportive and easily applicable planning techniques are required to analyze and design the configuration of a respective process chain.

Bhim singh et el 4) : The lean implementation and its benefits to production industry with help of value stream mapping (VSM). Both current and future state maps of the organization's shop floor scenarios are discussed using VSM techniques in order to highlight improvement areas and to bridge the gap between the existing state and the proposed state of floor the selected industry.

Danijela gracanin et el 5) : The using cost-time profit for value stream optimization is very is very important for lean manufacturing efforts. This paper introduces the framework for value stream optimization by combining value stream costing and cost-time profile.value stream mapping represented very efficient tool for visualization of activities within production flow focused on activity duration with the purpose to eliminate non-value activities.

Fawaz a. a bdulmalek et el 6) : The analysing the benefits of lean manufacturing and value stream mapping via simulation the "lean " approach has been applied more frequently in discrete manufacturing than in the continuous / process sector. Mainly because of several perceived barriers in the latter environment that have caused manager to be reluctant to make the required commitment. Value stream mapping was the main tool used to identify the opportunities for various lean techniques.

k. venkataraman et el 7) : The application of value stream mapping for reduction of the cyclr time in a machining process lean manufacturing initiative is being followed by various organization in the recent year which mainly focuses in improving the efficiency of the operations by eliminating and reducing wastes. This paper aimed to explain to explain the implementation of lean techniques in the crankshaft manufacturing system at an automotive manufacturing plan located in south India. Cost and delivery target crankshaft manufacturing was manufacturing in a single pieces flow system with the low cost machines developed indigenously and the results are that the crankshaft have passed the testing.

William m. goriwondo et el 8) : The use of the value stream mapping tool for waste reduction in manufacturing. Companies are experiencing intense competitive pressure due to globalisation hence they cannot afford to operate with waste in their processes. This paper details the use of the VSM tool in reducing waste in bread manufacturing for a company in Zimbabwe. The case study shows how the VSM tool was used to identify and reduce defect by 20%. Unnecessary inventory by 18% and motion by 37%. It incorporates waste relationship ranking and the important of management commitment in waste reduction.

5).Value stream mapping methodology

- Collection of data :
    1. Customer demand :
    - What is the product family.
    - How many product are required and when,
    - How many product are dispatched at a time.

    2. Information flow
    - What kind of forecast information is given by the customer
    - How long does it stay there before being processed
    - How do they pass it to as it moves to ward suppliers.

    3. Physical flow
    - How many product are wanted and when ,

- How many different parts are required.
- What sort packing is making.

6).Current state mapping:

- Understand the customer demand
- Map the process flow
- Map the information flow
- Map the material flow

7).Improvement future state mapping:

- The improvement in the existing flow using various lean tools which will ultimately help in reducing inventory lead time change over time and improving productivity comes to this phase of work.

8).Conclusion :

The reffering number of paper it is not inconsistent to conclude that value stream mapping works to be an effective tool in order to improve and gather the information at each and every stations about station cycle time uptime or utilization of setup time requirement the information flow from raw materials to finished goods.

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